Otay Hills Construction Aggregate and Inert Debris Engineered Fill Operation Project

Appendix E

Biological Technical Report

for the

Public Review
Draft Environmental Impact Report

PDS2004-3300-04-004 (MUP);
PDS2004-3310-04-001 (RP);
PDS2010-3813-10-002 (SPA);
Log No. 04-190-04

June 2020

Prepared for:

County of San Diego
Planning & Development Services
5510 Overland Avenue, Suite 310
San Diego, California 92123

HELIX
Environmental Planning

Otay Hills Construction Aggregate and Inert Debris Engineered Fill Operation Project

Project Nos.:PDS2004-3300-04-004 (MUP);
PDS2004-3310-04-001 (RP);
PDS2010-3813-10-002 (SPA); Log No. 04-190-04

Biological Technical Report

June 2020

Prepared for:
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Biological Technical Report

Otay Hills Construction Aggregate and Inert Debris Engineered Fill Operation Project

PDS2004-3300-04-004 (MUP); PDS2004-3310-04-001 (RP); PDS2010-3813-10-002 (SPA); Log No. 04-190-04

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June 2020

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GLOSSARY OF TERMS AND ACRONYMS

AMA	Additional Management Area
AMSL	above mean sea level
APCD	Air Pollution Control District
BACT	best available control technology
BGEPA	Bald and Golden Eagle Protection Act
BMO	Biological Mitigation Ordinance
BRCA	Biological Resource Core Area
CAGN	coastal California gnatcatcher
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	County of San Diego
EOMSP	East Otay Mesa Specific Plan
ESA	Endangered Species Act
FGC	Fish and Game Code
HCP	Habitat Conservation Plan
HELIX	HELIX Environmental Planning, Inc.
IDEFO	Inert Debris Engineered Fill Operation
I-	Interstate-
MSCP	Multiple Species Conservation Program
NCCP	Natural Communities Conservation Planning
NE	Narrow Endemic
NEPA	National Environmental Policy Act
NPPA	Native Plant Protection Act
Ogden	Ogden Environmental and Energy Service Company
OHV	off-highway vehicle
QCB	Quino checkerspot butterfly
RMP	Resource Management Plan
RPO	Resource Protection Ordinance
SDG&E	San Diego Gas & Electric
SR	State Route

GLOSSARY OF TERMS AND ACRONYMS (cont.)

SSC	State Species of Special Concern
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

SUMMARY (ABSTRACT)

This report describes biological conditions for the proposed Otay Hills Aggregate Extraction and Inert Debris Engineered Fill Operation project (Proposed Project). The approximately 414.4-acre, undeveloped Proposed Project site is located in southwestern San Diego County (County) at the edge of Otay Mesa 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.

The applicant proposes to establish a mineral resource recovery and processing operation and associated activities on approximately 102.7 acres (development footprint) of the 414.4-acre site. Acreage along the southern boundary of the site contains an easement and will not be impacted by the Proposed Project, but will be included in the Major Use Permit (MUP) area. The easement area is considered "impact neutral" and will result in a total MUP project area of 105.1 acres. An approximate acreage of 105 acres is used in other technical reports to describe the project area. The 414.4-acre total includes 4.7 acres of existing open space on the Otay Crossings Commerce Park project located off site to the west that will be isolated by the Proposed Project, and is therefore considered impacted and proposed for future development. In the eastern portion of the Proposed Project site, the applicant proposes to dedicate 304.6 acres to open space (including 137.8 acres as mitigation for direct and indirect impacts to sensitive vegetation communities associated with the Proposed Project as well as an additional 166.8 acres in excess of this mitigation to meet mitigation obligations for removal of Quino checkerspot butterfly (*Euphydryas editha quino*; QCB) habitat. 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. The Project will require a Major Amendment to the Multiple Species Conservation Program.

In addition to developed land, 12 vegetation communities/habitats occur on the Proposed Project site: mule fat scrub, cismontane alkali marsh, southern interior cypress forest, disturbed wetland, 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. Diegan coastal sage scrub, non-native grassland, and disturbed habitat are present on the off-site parcel. The Proposed Project would result in direct removal of approximately 98.7 acres of sensitive (Tier I through III) vegetation.

U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and California Department of Fish and Wildlife (CDFW) jurisdictional areas as well as County Resource Protection Ordinance (RPO) wetlands occur on site (not on the off-site parcel). Direct impacts to USACE jurisdictional areas resulting from Proposed Project implementation include 0.28 acre of wetlands and 0.07 acre of non-wetland Waters of the U.S. Direct removal of RWQCB jurisdictional areas resulting from Proposed Project implementation include 0.28 acre of wetlands and 0.13 acre of streambed. Direct removal of CDFW jurisdictional areas resulting from Proposed Project implementation include 0.34 acre of wetlands and 0.16 acre of streambed. Implementation of the Proposed Project would directly impact 0.34 acre of County RPO wetlands; however, the Proposed Project is exempt from RPO requirements.

Eighteen sensitive plant species are known to occur on the Proposed Project site. One of these, Otay tarplant (*Deinandra conjugens*), is federal listed threatened and State listed endangered, and one, Dunn's mariposa lily (*Calochortus dunnii*) is California rare. Four plant species that occur on site are included in the MSCP narrow endemic plant list: Otay tarplant, Dunn's mariposa lily, variegated dudleya (*Dudleya variegata*), and Gander's pitcher sage (*Lepechinia ganderi*).

In addition to the four sensitive species discussed above, 14 species considered sensitive by the California Native Plant Society were observed on site: Tecate cypress (*Hesperocyparis* [*Cupressus*] *forbesii*), San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*), summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*), Orcutt's bird's beak (*Cordylanthus orcuttianus*), San Diego barrel cactus (*Ferocactus viridescens*), San Diego marsh-elder (Iva hayesiana), Munz's sage (*Salvia munzii*), San Diego needlegrass (*Achnatherum diegoensis*), western dichondra (*Dichondra occidentalis*), Palmer's grapplinghook (*Harpagonella palmeri*), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), Coulter's matilija poppy (*Romneya coulteri*), San Diego sunflower (*Viguiera laciniata*), and ashy spike-moss (*Selaginella cinerascens*). San Diego barrel cactus, San Diego sunflower, and ashy spike-moss also occur on the off-site parcel.

The following sensitive plant species would be directly impacted by the Proposed Project: Otay tarplant, variegated dudleya, San Diego goldenstar, San Diego barrel cactus, San Diego marsh-elder, San Diego needlegrass, western dichondra, southwestern spiny rush, San Diego sunflower, and ashy spike-moss.

Nineteen sensitive animal species were observed/detected or assumed to occur on the Proposed Project site including the federal listed endangered QCB and the federal listed threatened coastal California gnatcatcher (*Polioptila californica californica*; CAGN). Four of the sensitive animal species are listed as Birds of Conservation Concern by the U.S. Fish and Wildlife Service: Bell's sage sparrow (*Amphispiza belli belli*), golden eagle (*Aquila chrysaetos*), burrowing owl (*Athene cunicularia*), and loggerhead shrike (*Lanius ludovicianus*). Five animal species observed/detected are listed as a State Species of Special Concern (SSC): red-diamond rattlesnake (*Crotalus ruber ruber*), coast horned lizard (*Phrynosoma blainvillii*), grasshopper sparrow (*Ammodramus savannarum*), northern harrier (*Circus cyaneus*), and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). (Note that although not observed on site, Belding's orange-throated whiptail [*Aspidoscelis hyperythra beldingi*; an SSC] is assumed to be present throughout the entire Project site.) Two species are designated as Watch List species by the American Bird Conservancy: southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) and California horned lark (*Eremophila alpestris actia*). Five County sensitive species (coastal whiptail [*Aspidoscelis tigris stejnegeri*], Cooper's hawk [*Accipiter cooperii*], turkey vulture [*Cathartes aura*], common barn owl [*Tyto alba*], and southern mule deer [*Odocoileus hemionus fuliginata*]) also occur on site.

In addition to its federal status, QCB is also a County listed rare, narrow endemic animal species. Other rare, narrow endemic animal species observed on site include burrowing owl and golden eagle.

The following sensitive animal species would be directly impacted by the Proposed Project most particularly by loss of habitat: QCB, coast horned lizard, coastal whiptail, red-diamond rattlesnake,

CAGN, burrowing owl, loggerhead shrike, grasshopper sparrow, southern California rufous-crowned sparrow, California horned lark, Bell's sage sparrow, turkey vulture, northern harrier, barn owl, southern mule deer and San Diego black-tailed jackrabbit.

In addition to direct removal of sensitive vegetation and species from the Proposed Project, indirect impacts from noise, non-native plant species, animal entrapment or pit falls, and public access to the proposed open space are indirect impacts that may occur to these sensitive resources.

Mitigation for direct significant impacts to sensitive vegetation communities would occur primarily through on-site preservation of habitat in 137.8 acres of dedicated open space, although some on or off-site restoration and/or off-site acquisition would also be necessary. Mitigation ratios for wetland community impacts would occur at a 3:1 ratio, and upland community impacts would be mitigated at ratios of 1:1 to 2:1. In addition to this mitigation, the applicant proposes to preserve an additional 166.8 acres of the Project site in dedicated open space. Removal of 104.9 acre of QCB occupied habitat will be mitigated at a 2.89:1 ratio through preservation of 303.5 acres of QCB occupied habitat on site, and provision of management funds for the 61-acre AMA.

Mitigation for direct significant removal of sensitive plant species would occur at ratios of 1:1 to 7.3:1 in accordance with Section 86.507 of the County's Biological Mitigation Ordinance, which requires that "in-kind preservation shall be required at a 1:1 to 3:1 ratio [of listed or County List A or B plant species]." Mitigation for direct significant impacts to sensitive animal species would include preservation of habitat and avoidance of impacts to nesting.

Mitigation for significant indirect noise impacts to CAGN habitat would include preservation of an additional 20.6 acres of Diegan coastal sage scrub on site at a 1:1 ratio for the area impacted by noise, as well as additional measures to minimize potential adverse noise effects on the habitat and the CAGN.

Mitigation for potential significant impacts from invasive, non-native plant species would include revegetation of impacted, but undeveloped, areas (e.g., cut and fill slopes) with native species.

Mitigation for potential animal entrapment or pitfalls would include measures to: (1) deter animals from entering the development footprint; (2) measures to exclude animals from potentially dangerous areas within the development footprint; and (3) measures to help animals escape if entrapment were to occur.

Mitigation to protect the proposed open space from public access includes implementation of a Resource Management Plan (RMP; by a conservation entity approved by the County, USFWS, and CDFW) to be funded by an endowment from the applicant for in-perpetuity management. The RMP would include stewardship measures including, but not limited to, posting and upkeep of fencing and trespassing signs along the western and southern boundaries of the open space and on alternating sides along the portion of Otay Truck Trail that traverses the open space, as well as at locations of any unauthorized trails entering the open space to preclude unauthorized access.

Implementation of the above-prescribed mitigation measures would reduce the significant impacts to sensitive biological resources to less than significant levels.

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1.0 INTRODUCTION

1.1 PURPOSE OF THE REPORT

This report describes biological conditions for the proposed Otay Hills Aggregate Extraction and Inert Debris Engineered Fill Operation project (Proposed Project). It provides the Proposed Project applicant (applicant; Superior Ready Mix), County of San Diego (County), resource agencies (U.S. Fish and Wildlife Service [USFWS] and California Department of Fish and Wildlife [CDFW]), and the public with current biological data to satisfy review of the Proposed Project under the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA), and to demonstrate compliance with federal, state, and County regulations. This report describes the site's current biological conditions, vegetation communities, plant and wildlife species observed or detected during the surveys, and identifies those resources that are sensitive. It also identifies sensitive species with potential to occur on the Proposed Project site. In addition, avoided resources are identified, Proposed Project impacts are assessed, and mitigation is proposed to offset the Proposed Project's unavoidable significant impacts to sensitive biological resources including to those off site.

1.2 PROJECT LOCATION AND DESCRIPTION

Four alternatives are analyzed in this report: Proposed Project, Extraction to Varying Depth, Extraction to Natural Grade, and No Project Alternative, as described in Sections 1.2.2 through 1.2.5 below.

1.2.1 Project Location

The approximately 414.4-acre Proposed Project site (all or portions of Assessor's 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) is located in southwestern San Diego County at the edge of Otay Mesa approximately one mile north of the border with Baja California, Mexico (Baja), one mile east of the Otay Mesa border crossing and east of the intersection of Otay Mesa and Alta Roads (Figures 1, 2a, 2b, and 3). The Proposed 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 2a). It is located within the South County Segment of the County's Multiple Species Conservation Program (MSCP) Subarea Plan. 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 (see Section 1.5.3, for an explanation of these designations).

An additional 61-acre Additional Management Area (AMA) has an existing conservation easement in favor of CDFW but lacks management funding, and the Project is providing funding for management of this area. This AMA is not considered part of the Proposed Project site (see Figure 3) but is included the description of areas being managed for conservation purposes. The AMA is part of APN 648-050-17.

1.2.2 Proposed Project Description

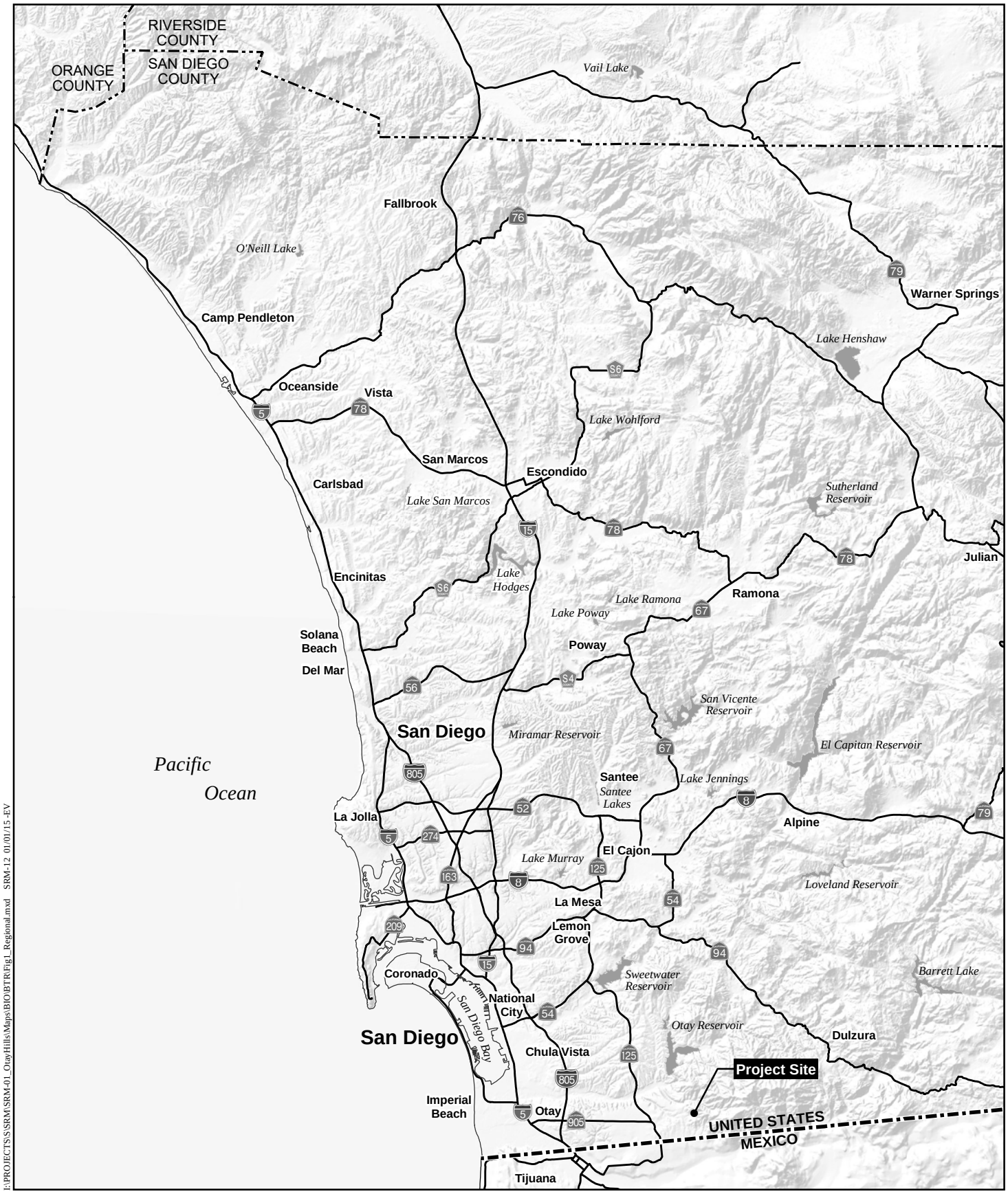
The applicant proposes to establish a mineral resource recovery and processing operation and associated activities on approximately 102.7 acres (development footprint) of the 414.4-acre site. With the inclusion of the "impact neutral" area along the southern boundary of the site, the total MUP project area will be approximately 105.1 acres. The 414.4-acre total includes 4.7 acres of existing open space on the Otay Crossings Commerce Park project located off site to the west that will be isolated by the Proposed Project, and is therefore considered impacted and proposed for future development (Figure 3). The total on-site and off-site impact footprint is 107.4 acres. The Proposed Project is to fulfill rising demand for construction aggregates in the south San Diego County market area for approximately 90 years. 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 as well as an additional 166.8 acres in excess of this mitigation to meet mitigation obligations for removal of Quino checkerspot butterfly (*Euphydryas editha quino*; QCB) habitat. An additional 2.4 acres along the southern boundary of the site (south of the development footprint) would not be impacted by the Proposed Project, but are also not proposed to be dedicated to open space. This area is considered "impact neutral" (Figure 3).

During and after mineral resource recovery operations, the open pit would serve as a receiver site for inert debris such as concrete, asphalt, rock, and soil. Approximately 85.4 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. Prior to commencing operations, the Proposed Project would require the approval of a Specific Plan Amendment, Major Use Permit, Reclamation Plan, and financial assurance. These requirements are set forth in the County of San Diego Grading Ordinance Chapter 87.700 et seq. and the California Surface Mining and Reclamation Act PRC 2770(a) et seq.

Rock that has been processed for use in manufacturing other products (such as concrete or asphaltic concrete) is typically referred to as aggregate. Aggregates are necessary for the construction, maintenance, and renovation of buildings and existing homes, and construction of new homes and supporting infrastructure.

The aggregate extraction operation would occur within the 105.1-acre MUP area while the majority of processing activities would take place within this area on an approximately 16.1-acre pad at the northern portion of the development footprint area. Hours of operation primarily would be from 5:00 AM to 10:00 PM. Maintenance and exporting of aggregate by truck, however, could occur 24 hours per day. Following completion of resource recovery operations, the development footprint area would be reclaimed to a beneficial land use consistent with the underlying land use regulations. Slopes abutting the proposed open space would be revegetated with native upland habitat.

Mineral resource recovery operations would be conducted through the use of drilling and blasting to fracture rocks. Based on anticipated production levels of 0.6 to 1.6 million tons per year, blasting would occur approximately once each week. Blasting operations would be conducted by a licensed blasting contractor with all blasting materials transported to the development footprint



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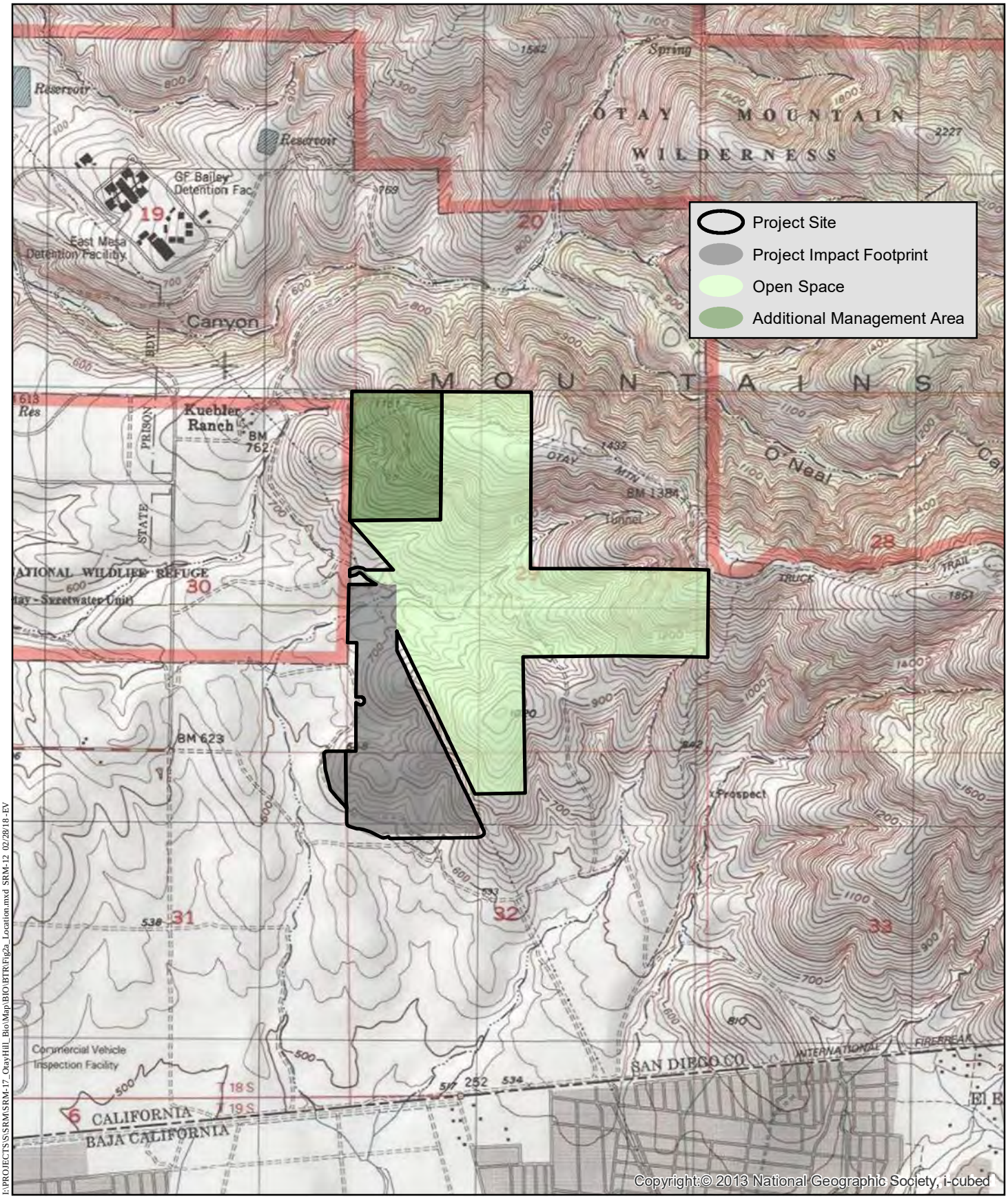
Regional Location

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

N 0 8 Miles

Figure 1



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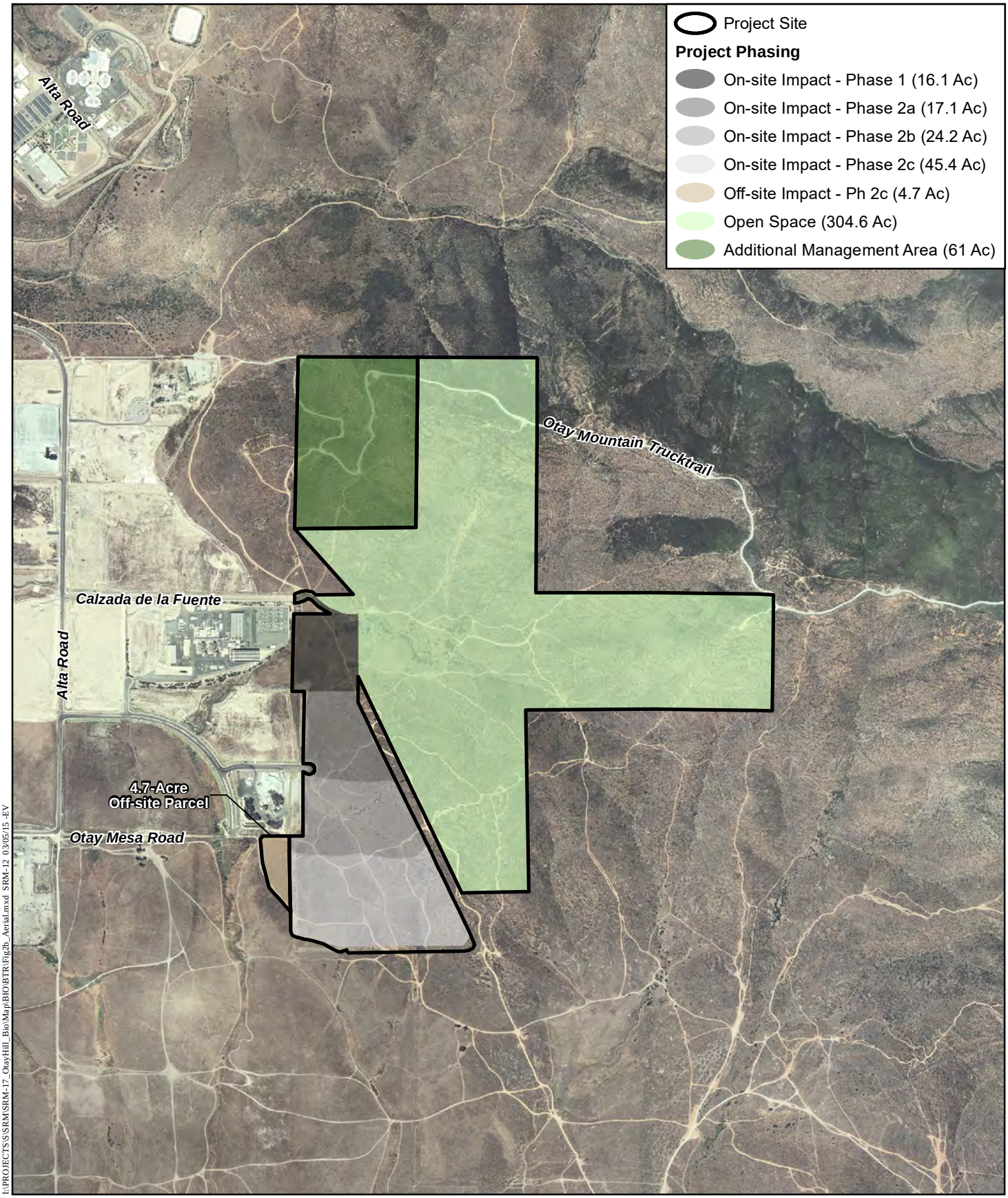
Project Location - USGS

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

N 0 2,000 Feet

Figure 2a



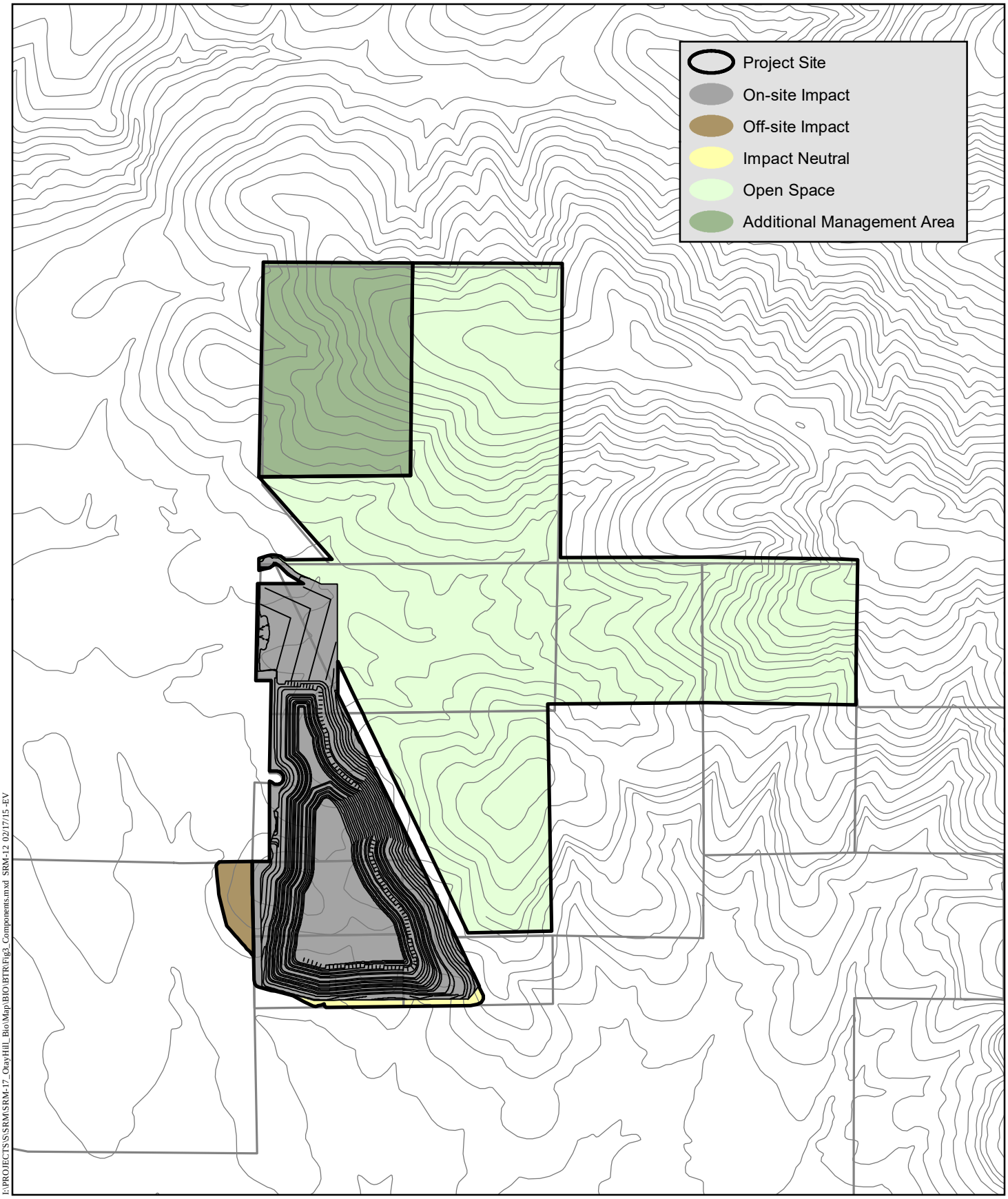
Project Location/Phasing

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

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Figure 2b



Proposed Project Components

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

N

0 1,200 Feet

Figure 3

for each blasting sequence. No explosives would be stored at the site. A single drill rig would be used to drill a pattern of bore holes three to six inches in diameter. Typically, the pattern would be laid out in a 60- by 120-foot grid, with 45-foot deep holes. A contractor would then load the holes with carefully metered explosives. The "shot" would be timed to detonate each hole(s) in sequence. This procedure minimizes the ground vibration and noise of the blast, while maximizing fracture of the rock. Some dust would be created as a result of the blast; however, the dust would be fully dissipated within 30 to 60 seconds following the shot. The goal of the blasting program would be to fracture the rock to sizes less than 18 inches in diameter.

Following blasting, the rock resource is fractured and can be moved with conventional earthmoving equipment. A front-end loader is used to load off-highway rock trucks for transport of fractured rock to the primary processing plant.

The bulk of the processing activities would take place on an approximately 16.1-acre pad located at the northern portion of the proposed site. The primary processing (which includes the use of a jaw crusher) may be extended to the extraction areas using conveyor belts. Some crushing and screening will eventually occur below grade, within the pit area. The hot mix asphalt (HMA) plant, aggregate processing plant, and concrete ready mix plant will be stationary and, therefore, will not be relocated. Equipment shown on the southern end of the 16.1-acre pad, including the recycling plant and primary crusher, is portable and will eventually be relocated to the quarry floor as excavation progresses below grade.

Primary Plant

The primary plant is loosely defined as the area required to process the raw material and crush it to a size suitable for further processing and screening. Typically, a primary plant would crush the rock, screen out unusable fines, and deposit the crushed rock in a surge pile for use by the secondary plant. The primary plant is independent of the secondary plant and can be used without operating the secondary plant. It is anticipated that the primary plant would consist of a jaw crusher, a screen, and a primary crusher. Depending upon the distance from the processing plant, it may be feasible to use a remote jaw crusher and overland conveyor to move materials to the secondary processing plant.

Secondary Plant

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 end 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 stockpiles would be approximately 35 feet in height. The aggregate would then be loaded onto trucks either with a front-end loader or by gates on the bottom of overhead loading bins. Prior to leaving the development footprint area, loaded trucks would be top-watered to prevent roadway dust and would pass across a scale to determine the total weight of the truck and identify the type and weight of the aggregate.

Operation of the processing plants would require approval of permits from the San Diego Air Pollution Control District (APCD). Dust would be controlled by state-of-the-art dust control system using the best available control technology (BACT) with full review and monitoring by the APCD.

Concrete Batch Plant

A concrete batch plant would be located within the development footprint. The plant would likely be set up so that materials could be conveyed directly from the aggregate stockpiles to the concrete batch plant. Within a concrete batch plant, appropriate quantities of aggregate of various types (i.e., sand and rock), cement, and water are weighed to make up a batch of concrete. These materials are then discharged into a mixer drum on a ready mix concrete truck. A concrete batch plant is relatively quiet, and compliance with the APCD permits, requiring BACT, would ensure a relatively emission- and dust-free operation.

Asphaltic Concrete Batch Plant

An asphaltic concrete batch plant also would be located within the development footprint. The plant would likely be set up so that materials could be conveyed from the aggregate stockpiles for direct loading of the asphalt plant by conveyor. The asphalt plant would discharge the various types of aggregate into a large rotating drum, where the aggregate would be heated to drive off water. The heated materials would then be mixed with asphalt to make asphaltic concrete. An asphaltic concrete plant also is relatively quiet and compliance with APCD permits, requiring BACT, would ensure a relatively emission- and dust-free operation.

Cement Treated Base Plant

A cement treated base plant would be located within the development footprint. Cement treated base is a rock/sand mixture that has been mixed with cement powder to provide improved strength and stability for highway and foundation projects.

Recycling of Concrete and Asphalt Products

Efficient use of resources requires that all used concrete and asphalt products (also known as construction and demolition materials) are recycled for beneficial use. This process involves the import of used concrete and asphalt materials that have been salvaged from redevelopment and/or reconstruction projects. These materials are crushed and then exported for use as road base or as a foundation material. These materials may also be blended with crushed rock originating from the development footprint to improve performance characteristics.

Office Buildings

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. These facilities would be located near the secondary plant. Operations would likely employ approximately 10 to 15 persons, and parking within the development footprint is proposed.

Truck Access

Operations would produce approximately 0.6 to 1.6 million tons of aggregate annually during the most active phase of activity. There would be no trips related to mining or landfilling activities during Phase 1. It is anticipated that less than 148 average daily passenger care equivalent (PCE) trips would be experienced during this time. During Phase 2, truck trips would be limited to trips required for the extraction operation and materials imports for the onsite processing facilities. There would be no trips related to landfilling activities during Phase 2. Operations would produce approximately 0.6 to 1.6 million tons of aggregate annually. This level of activity would result in 1,332 PCE trips per day, related to Phase 2 and Phase 3 activities and based on an average production scenario. During Phase 4, 390 PCE trips on an average day would result from imported material and landfilling operations. Therefore, 1,722 average daily PCE trips should be expected when both extraction and Inert Debris Engineered Fill operations are occurring (Phases 3 and 4).

Primary access to the site would be from Calzada de la Fuente, a dedicated access road that connects the northern end of the site with Alta Road. The access road connects with Alta Road approximately 0.5 mile north of the intersection with Otay Mesa Road. A number of potential truck routes are possible. Potential access routes include the following:

- Trucks leaving the site would follow Alta Road to Otay Mesa Road. Trucks would turn right (west) onto Otay Mesa Road to the intersection with Highway 905. Truck traffic would then disperse for deliveries on Otay Mesa or extend to other areas in the region via State Route (SR-) 125 or Interstates (I-) 805 and 5.

- Trucks leaving the site would follow Alta Road to Otay Mesa Road. Trucks would turn right (west) onto Otay Mesa Road to the intersection with Sanyo Avenue. Trucks would then turn south on Sanyo Avenue to the intersection with Airway Road and then turn west. Airway Road extends across Otay Mesa to the intersection with Cactus Road. Traffic would then turn north on Cactus Road to the intersection with Otay Mesa Road and then turn west to connect with I-805 and/or I-5.

Phasing

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 phases would include Phase 1: Site Preparation, Phase 2: Extraction to Natural Grade Elevation, Phase 3: Open Pit Extraction, and Phase 4: Inert Debris Engineered Fill Operation (IDEFO), as further discussed below.

<u>Phase 1 – Site Preparation</u>

Phase 1 operations would be located in the northern portion of the development footprint. Site preparation would involve initial grading to establish access routes; extending water and power service to the development footprint; grading pad areas for processing plant location; and

constructing the processing plant, concrete batch plant, asphalt plant, cement treated base plant, and site office. Phase 1 would consist of cutting the landform to create a relatively flat working surface for the processing plant. This initial phase would include approximately 16.1 acres within the development footprint, plus associated activities required to construct the access road. Activities in Phase 1 are expected to continue for about one year. Refer to Figure 4 for the proposed facilities layout.

Phase 2 – Extraction to Natural Grade Elevation

Phase 2 would involve commencement of extractive operations within the development footprint. This phase is divided into three sub-phases, with Phase 2a occurring in the north and ending with Phase 2c in the south. Phase 2 would consist of cutting the landform to the natural grade elevation that exists along the western perimeter of the site. During Phase 2a, aggregate resources would be recovered immediately adjacent to Phase 1 and over an approximate 17.1-acre area of the development footprint. Extractive operations in Phase 2a are expected to remove 4.2 million tons and would continue for approximately 4.5 years depending on the demand for aggregate resources. Upon completion of extraction operations within Phase 2a, Phase 2b would commence.

Phase 2b operations would include extraction of material from a 24.2-acre area and is expected to continue for approximately 5.5 years depending on the demand for aggregate resources. This phase is expected to remove 4.7 million tons of material.

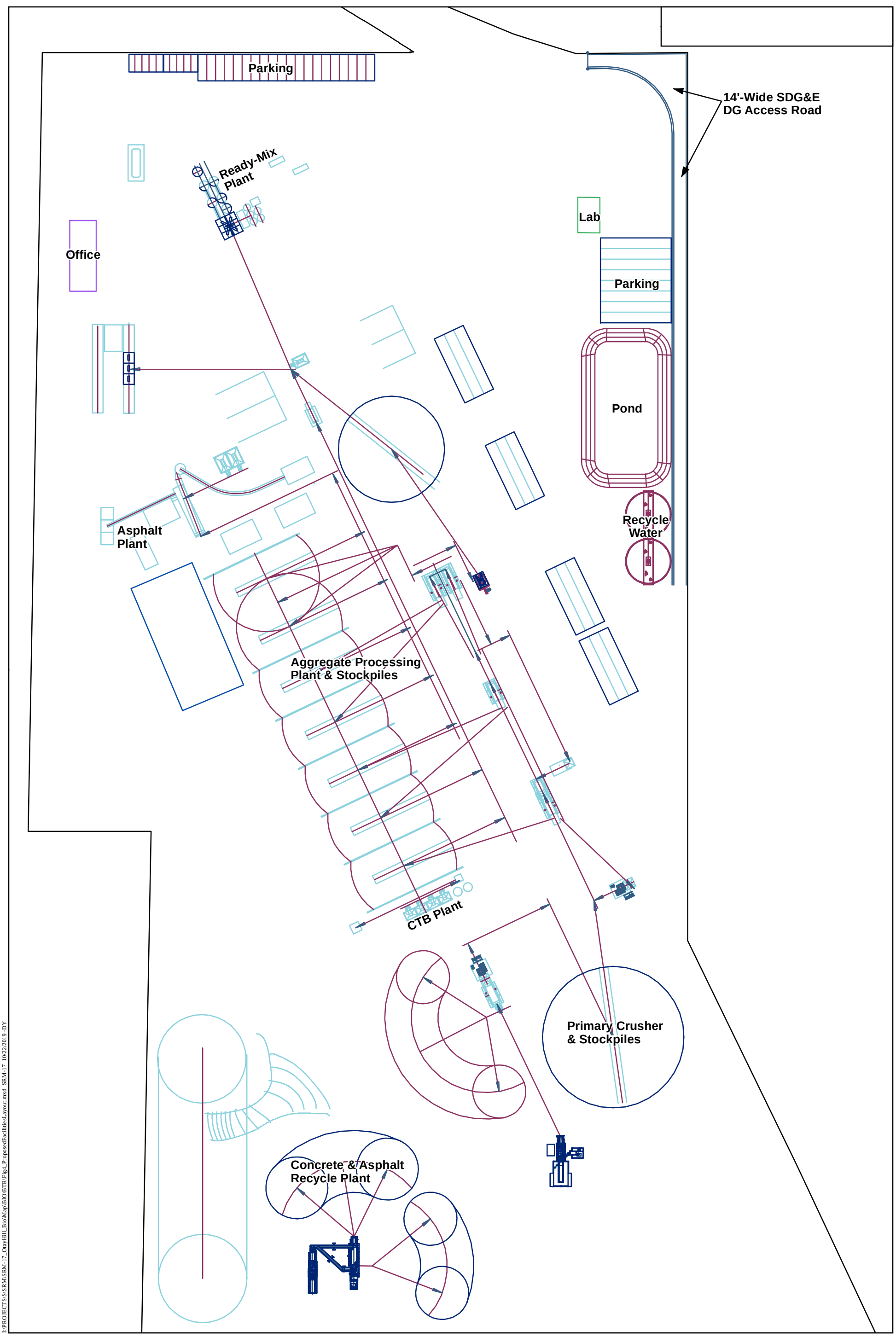
Phase 2c operations would begin immediately following the completion of extraction operations within Phase 2b. Phase 2c would consist of extracting approximately 10.5 million tons of material from the remainder of the extraction footprint (approximately 45.4 acres). This phase is expected to continue for approximately 11 years depending on the demand for aggregate resources.

As operations progress in Phase 2, slope areas within Phases 1 and 2 would be seeded with a non-invasive erosion control mix. Phase 2 would consist of cutting the landform to the natural grade elevation that exists along the western perimeter of the site. Slopes that are seeded along the eastern perimeter of the pit would be used as a biological buffer adjacent to sensitive habitats proposed to be set aside as open space for mitigation by the Proposed Project. Salvaged topsoil and a native seed mix would be used for these areas.

Phase 3 – Open Pit Extraction

At the completion of Phase 2, mine operations would continue to Phase 3. Like Phase 2, Phase 3 is divided into sub-phases. Phases 3a through 3d would also progress in a north to south direction. Extraction operations that would occur during Phases 3b through 3d would extend to a maximum depth of approximately 525 feet from the existing grade. As part of the reclamation process, the site would be used as an IDEFO. Backfilling is expected to continue throughout the Phase 3 operations, on a phase-by-phase basis.

The Phase 3a operations would involve additional extraction of material from an 8.5-acre area that would extend below the finished grade to form a sub-grade depression. Phase 3a extraction operations would extend below the Phase 2a area and have a maximum depth of approximately



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Proposed Facilities Layout

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

Figure 4

285 feet from the existing grade. This phase is expected to remove approximately 2.9 million tons and would continue for approximately three years, depending on the demand for aggregate resources. As extraction operations advance in Phase 3a and space becomes available, backfilling of the Phase 3a sub-grade depression would commence. Inert fill material would be used to backfill the depression. Phase 3b operations would consist of extracting 12.2 million tons of material from a 22.1-acre area, over approximately 12 years depending on the demand for aggregate resources.

It is anticipated that Phase 3c would extract 18.3 million tons of material from a 22.1-acre area, over approximately 18 years depending on the demand for aggregate resources. Lastly, Phase 3d operations are expected to extract 32.6 million tons from a 33.7-acre area, over approximately 33 years depending on the demand for aggregate resources.

Phase 4 – Inert Debris Engineered Fill Operations

As extraction operations advance in Phase 3, the pit would be backfilled with inert fill material (fill dirt) on a phase-by-phase basis. The rate of backfill is estimated at 500,000 cubic yards per year. This backfill rate was determined by studying backfill rates at other sites in San Diego County. Throughout the phased mine plan, fill material that is used for backfilling would be compacted to form pad areas. All fill material would be inspected upon arrival to ensure that contaminated soils or garbage are not present. All backfilling operations would be supervised by a geotechnical engineer to ensure that the materials are adequately compacted to satisfy the needs of the post-mining land use. Inert fill is produced from a variety of sources, but typically is a by-product of sub-grade excavations for parking garages or development that results in export of naturally occurring soil. In addition, clean demolition materials from redevelopment projects need to be placed in an inert fill materials site.

Depending on the rate at which fill material is imported to the site, it is anticipated that Phase 4 activities would continue for approximately 64 years throughout the extraction operation and for approximately 15 years beyond extraction operations.

Reclamation

Upon completion of each phase, reclamation would commence. Although reclamation would occur in each phase as recovery operations are concluded, these activities would be similar on all areas of the development footprint. Final reclamation would occur when all recovery operations have been completed. These activities would include final grading to establish the final land form, removal of plant equipment, application of topsoil resources, and revegetation.

Following completion of all recovery operations, processing and operating equipment would be removed from the site unless this equipment continues to be used following reclamation. At this time, it is anticipated that the concrete and asphalt plants would remain on the site following reclamation.

Pad areas would be treated with appropriate erosion control measures to stabilize the development footprint against accelerated erosion and sedimentation. The development footprint would be

managed in this manner until an appropriate land use is identified. Post-mining land uses would be consistent with the underlying land use designations.

Portions of the slopes would be prepared for seeding as a biological buffer adjacent to sensitive biological habitats proposed to be set aside by the applicant as open space as mitigation for Proposed Project impacts. The proposed biological open space dedications would occur on undisturbed lands located to the east of the proposed extractive operations. A six-foot tall fence would be placed along the outside edge of extraction areas (within the impact area) during construction for safety and security reasons. The fencing will be galvanized chain link. The fence also would help keep people out of the adjacent, proposed open space.

1.2.3 Extraction to Varying Depth Alternative Description

The Extraction to Varying Depth Alternative would include the same operations and footprint as the Proposed Project. Similar to the Proposed Project, the proposed construction aggregate operation would be developed in four phases. These phases would be consistent with Phases 1 through 4 of the Proposed Project, except that the ultimate pit depth would be reduced from approximately 525 feet below the existing grade (Proposed Project) to a shallower depth (between 50 and 200 feet) below the existing grade. Phase 1 would include site preparation and the construction of the processing plant. 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 630 feet above mean sea level (AMSL). Extraction would progress in a north to south direction. Extraction operations during Phase 3 would extend below the Phase 2 area, to a maximum pit floor elevation of 380 to 530 feet AMSL. Phase 4 would involve backfilling the pit with inert fill material and compacting the material to form pad areas (IDEFO). Similar to the Proposed Project, the pit would be backfilled consecutively with extraction that occurs during Phase 3. The timing for Phases 1 through 4 could change in the future depending upon aggregate needs in southern San Diego County, such that the phases presented herein could change and/or more than one phase could be in use at any one time.

The total anticipated production of the quarry under this alternative would have an estimated life of 36 to 60 years and would extract approximately 35 to 60 million tons of mineral resource from the site. Annual production amounts are anticipated to be similar to the Proposed Project (i.e., between 0.6 and 1.6 million tons of aggregate per year). Therefore, daily production and trip generation would also be consistent with the Proposed Project.

1.2.4 Extraction to Natural Grade Alternative Description

The Extraction to Natural Grade Alternative would include the same operations and development footprint as the Proposed Project. Similar to the Proposed Project, the proposed construction aggregate operation would be developed in phases. This alternative would consist of Phases 1 and 2 of the Proposed Project. The timing for Phases 1 and 2 could change in the future depending upon aggregate needs in southern San Diego County, such that the phases presented herein could change and/or more than one phase could be in use at any one time.

The total anticipated production of the quarry under this alternative would have an estimated life of 20 years and would extract approximately 19 million tons of mineral resource from the site. Annual production amounts are anticipated to be similar to the Proposed Project (i.e., between 0.6 and 1.6 million tons of aggregate per year). Therefore, daily production and trip generation would also be similar to the Proposed Project. Truck trips would be slightly less than the Proposed Project (approximately 78 trips per day) due to the elimination of an IDEFO in this alternative. Following completion of extraction to natural grade, the site would be reclaimed, and would be available for post-mining land uses consistent with the underlying land use designations.

1.2.5 No Project/Existing Plan Alternative Description

The No Project/Existing Plan Alternative would assume that the site would be developed pursuant to the existing land uses approved in the East Otay Mesa Specific Plan (EOMSP; County 1994) as the site lies within this Specific Plan's boundaries. Land use designations would allow for mixed industrial (e.g., Mixed Industrial District) and rural residential uses (e.g., Hillside Residential District). The Mixed Industrial District is primarily for wholesale storage and distribution, research services, and general industrial. Compatible commercial uses are also permitted within the Mixed Industrial District (e.g., construction sales and services, automotive and equipment uses, and custom manufacturing). The Hillside Residential District along the eastern portion of the site allows low density (one dwelling unit per 20 acres). As outlined in the EOMSP, buildout of the "planning area" is expected to occur by the year 2020. During this development period, interim uses such as agriculture, vehicular storage, public recreation, and spectator events are allowed within the Mixed Industrial District of the site.

1.2.6 No Project/No Action Alternative Description

Under the No Project/No Action Alternative, there would be no construction aggregate facility developed by the applicant on the site. The site would remain vacant, and no changes in the existing environment would be expected.

1.3 SURVEY METHODS

Vegetation communities and sensitive plants and wildlife were identified during surveys of the Proposed Project site. In addition, this report identifies sensitive species with potential to occur on the Proposed Project site but that were not observed or detected. Surveys discussed in this report were conducted by HELIX Environmental Planning, Inc. (HELIX) and EDAW, Inc. (EDAW) from 2000 through 2019. Biological survey limits are shown on Figures 5 through 7. In addition, data from Ogden Environmental and Energy Services Company (Ogden; 1991) was reviewed as historical data. The off-site parcel was surveyed as part of the Otay Crossings Commerce Park project (HELIX 2010). Survey methods described below are for the 409.7-acre on-site portion of the Proposed Project only. Where survey data was available on the AMA from the above surveys, these data were included on report figures but are not discussed in this report.

1.3.1 General Biological Surveys

In June and July 1991, Ogden completed general plant and animal surveys. Vegetation was mapped on a 1"=200' scale map. Ogden also provided historical survey data completed prior to 1991 (Ogden 1991).

From March through June 2000, HELIX completed vegetation mapping and general botanical and zoological surveys. Vegetation was mapped on a 1"=200' scale topographic map. Mapping was aided with the use of an aerial photograph. The survey area included an approximately 347-acre area that included all of Parcel A and land to the west of Parcel A.

From February through June 2001, EDAW completed general botanical and wildlife surveys and vegetation mapping. These surveys were completed for the EOMSP on behalf of the County; the survey limits of which are shown on Figure 5. EDAW surveys were conducted on foot using meandering transects across the EOMSP area. Vegetation was mapped on 1"=400' scale orthotopographic maps of the EOMSP area (EDAW 2001a and 2001b).

In winter 2010, HELIX verified vegetation mapping in the development footprint.

1.3.2 Sensitive Plant Surveys

From March through June 2000 and in spring 2001, HELIX completed sensitive plant surveys (Figure 5). Plant counts were provided throughout the survey area.

From February through June 2001, EDAW completed sensitive plant surveys on behalf of the County for the EOMSP. The sensitive plant surveys did not include counting individual plants except in limited cases.

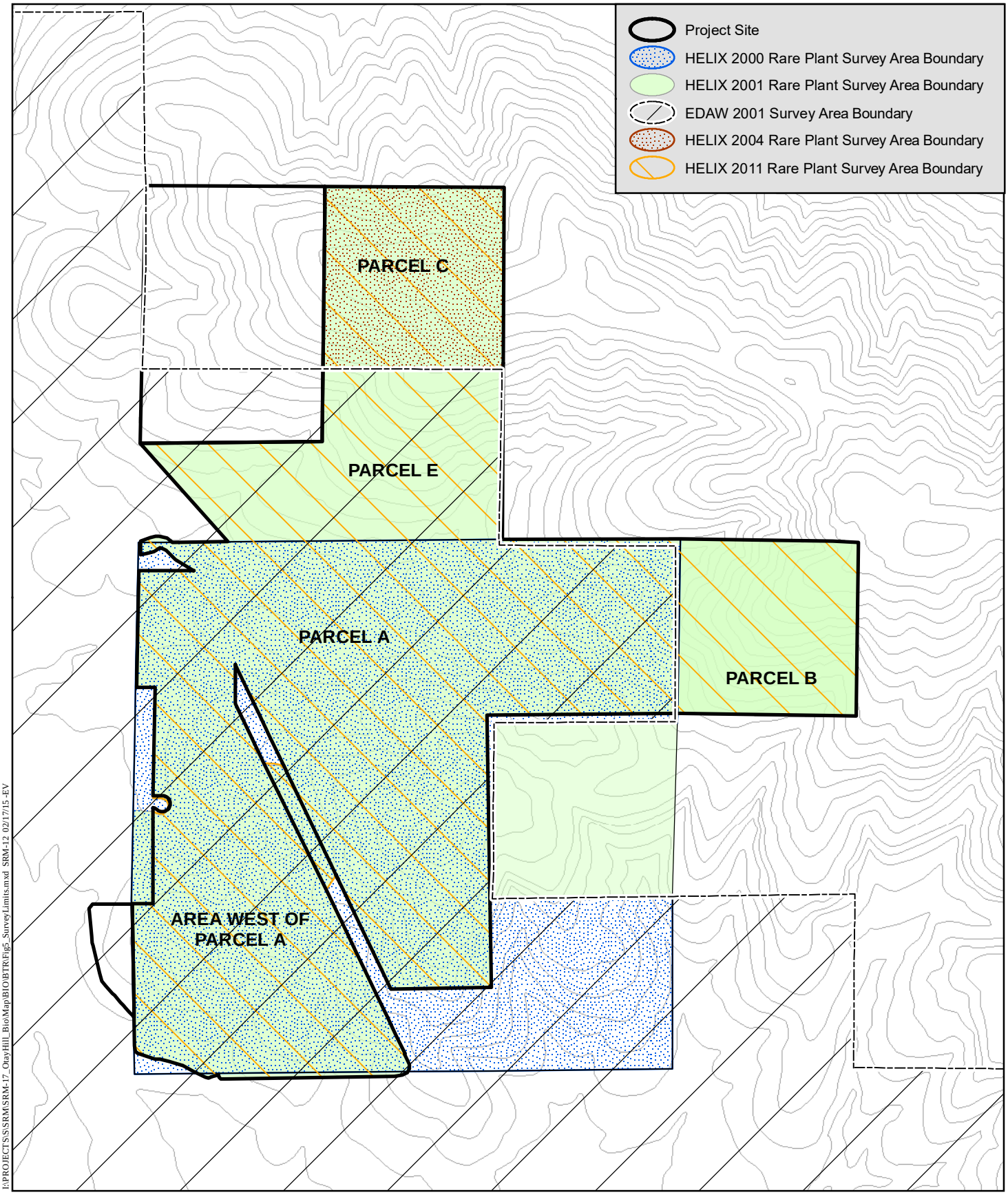
In spring 2004, HELIX conducted sensitive plant surveys on Parcel C.

In spring and summer of 2011, HELIX conducted sensitive plant surveys of the entire Proposed Project site. Both spring and summer surveys were conducted to ensure coverage of the flowering period for all sensitive species potentially occurring on site. Information about the sensitive plant surveys is provided in Appendix A-1.

In January of 2016, HELIX analyzed the Likely Limits of Occurrence on site for Otay tarplant (*Deinandra conjugens*), variegated dudleya (*Dudleya variegata*), and San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*). These species were selected for analysis based on their Narrow Endemic status in the MSCP. The Likely Limits of Occurrence (LLO) for these species was determined by comparing the on-site distribution with slope orientation and vegetation type. The Likely Limits of Occurrence analysis is provided in Appendix A-2.

1.3.3 Focused Species Surveys

Focused surveys for several sensitive animals are described below. A summary of survey dates, personnel, and times/weather conditions for surveys is included as Appendix A-1.



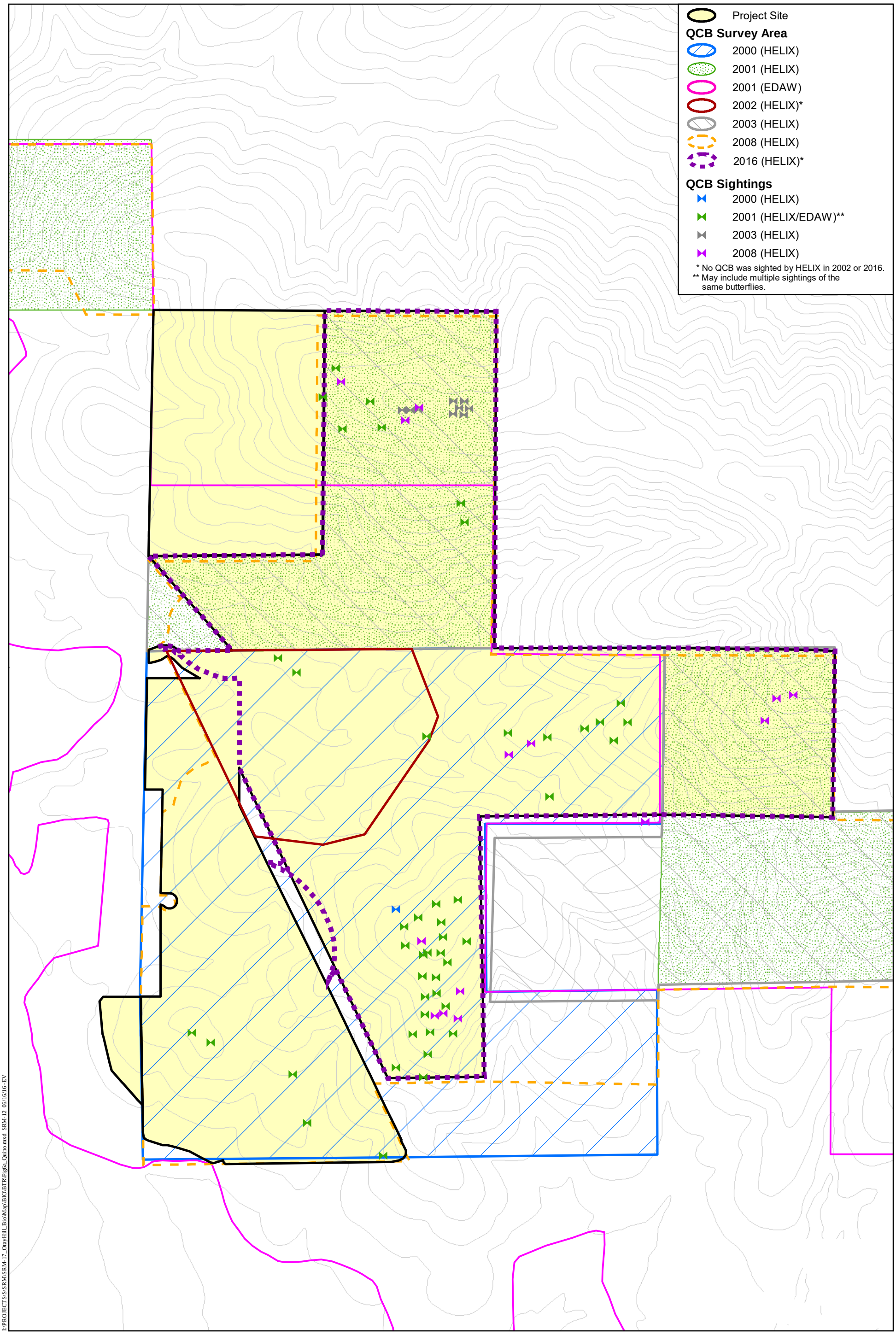
Rare Plants Survey Limits

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

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N 0 1,000 Feet

Figure 5



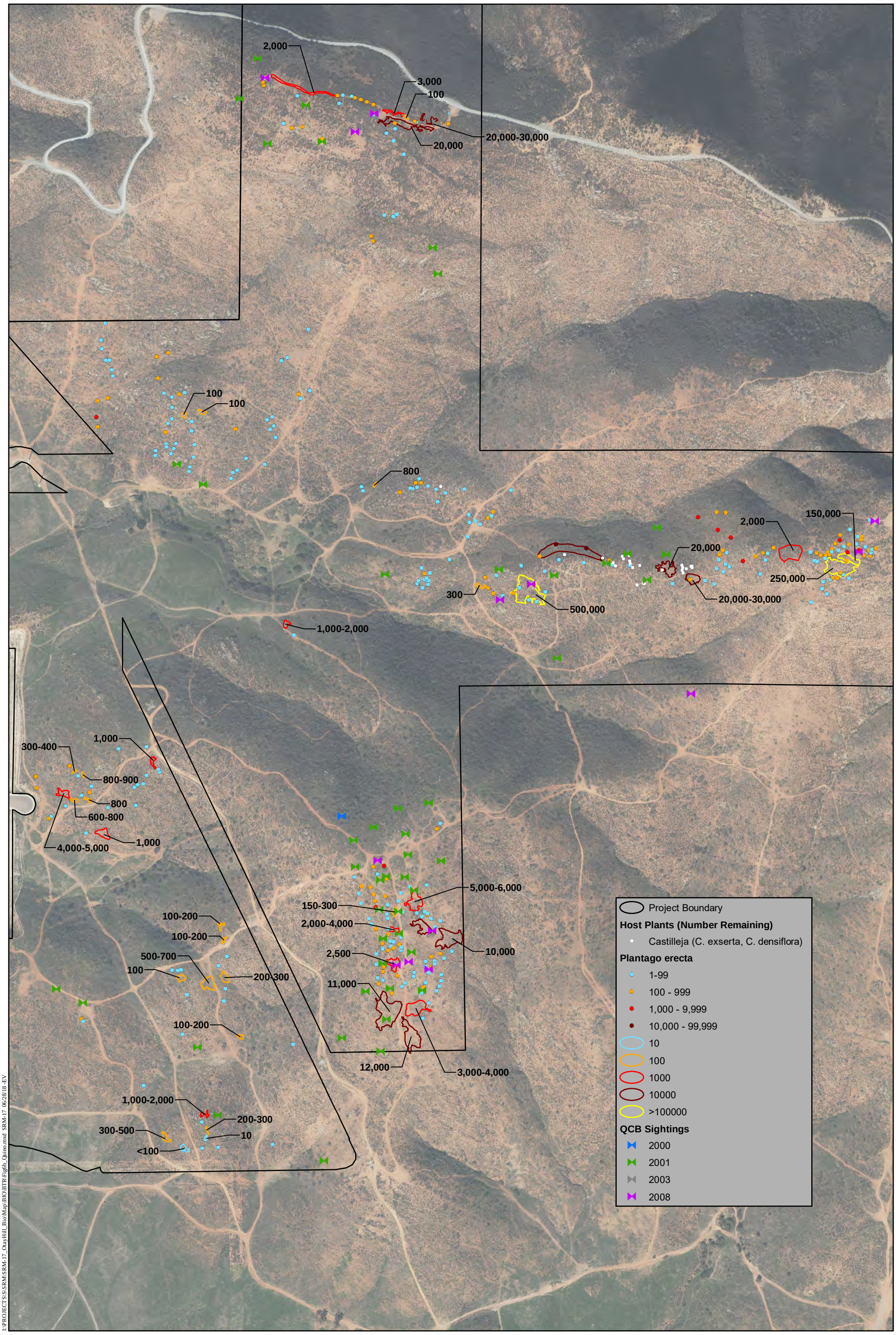
Quino Checkerspot Butterfly (QCB) Survey Limits and Sightings

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

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N 0 700 Feet

Figure 6a



2016 Quino Checkerspot Butterfly Host Plant Locations

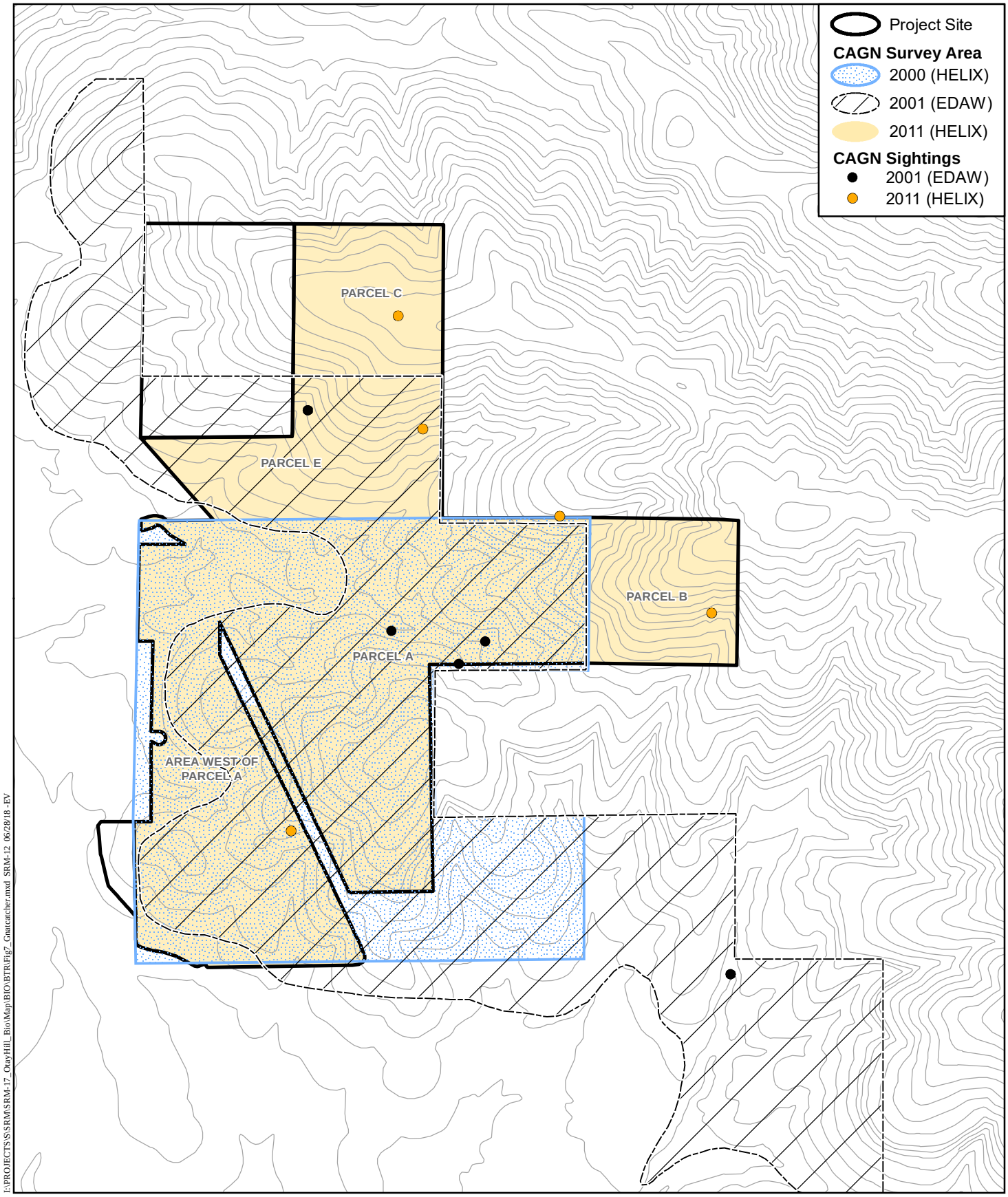
BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

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Figure 6b



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Coastal California Gnatcatcher (CAGN) Survey Limits and Sightings

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

Figure 7

HELIX Environmental Planning

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Quino Checkerspot Butterfly

Due to the presence of potential habitat for the federal listed endangered Quino checkerspot butterfly QCB, protocol surveys were deemed necessary. The Proposed Project site is located within the San Diego County USFWS QCB Adult Focused Survey Area 1.

In 2000, HELIX conducted a protocol survey under Year 2000 Survey Protocol (USFWS 2000) for QCB within Parcel A and west of Parcel A on approximately 347 acres (Figure 6; HELIX 2000a; Appendix B-1). In 2000, this 347-acre area was recovering from a large fire that swept through the area in 1997. During the habitat assessment, no significant quantities of habitat on Parcel A and land west of Parcel A qualified for any of the three survey exclusion categories; therefore, it was decided that surveys were required for the entire 347 acres. Observed larval host plants such as dwarf plantain (*Plantago erecta*), owl's clover (*Castilleja exserta*), and bird's beak (*Cordylanthus rigidus*) were noted. Nectaring resources such as goldfields (*Lasthenia californica*), *Layia* spp., *Ericameria* spp., popcorn flower (*Cryptantha* spp. and *Plagiobothrys* spp.), and onion (*Allium* spp.) species were also noted.

In 2001, HELIX conducted surveys pursuant to the USFWS Year 2000 Survey Protocol to determine presence of QCB within Parcels C, E, and additional land adjacent to these parcels (Figure 6; HELIX 2001; Appendix B-2). The frequency of surveys was based on the quality of potential habitat and site accessibility. As a result, these surveys do not prove absence of QCB in areas where it was not observed. Dwarf plantain was observed on both ridgelines. Nectar resources were plentiful towards the foothills and lower portions of ridgelines in many of the parcels surveyed.

In 2001, EDAW also conducted a protocol survey to determine presence/absence of QCB (EDAW 2001b). The survey followed USFWS Year 2000 Survey Protocol. A habitat assessment was conducted in February and the entire EOMSP area was surveyed from March through April. The area surveyed that occurs on site includes Parcels A, C, and E (Figure 6).

In 2002, HELIX surveyed approximately 50 acres of the northwestern portion of Parcel A (Figure 6). Prior to conducting the 2002 QCB protocol survey, a habitat assessment was performed in early March. No significant quantities of habitat within this 50-acre area qualified for any of the survey exclusion categories; therefore, a survey was required for the entire 50 acres (HELIX 2002; Appendix B-3).

In 2003, 42 acres of Parcel A were surveyed by HELIX (2003a) for QCB (Figure 6) using USFWS Year 2002 Survey Protocol (USFWS 2002a). This 42-acre portion of Parcel A was first assessed for potential QCB habitat (HELIX; 2003a; Appendix B-4). HELIX also conducted a QCB survey on approximately 269 acres encompassing portions of Parcels C, E, and additional land adjacent to the site (HELIX 2003b; Appendix B-5). The methods employed during the QCB habitat assessment did not follow protocol; rather, the amount of time spent surveying areas within the potential mitigation areas was based on the quality of potential habitat and site accessibility.

In 2008, a portion of the Proposed Project site was surveyed by HELIX (2008; Appendix B-6) for QCB (Figure 6) pursuant to the USFWS Year 2002 Survey Protocol for the QCB (USFWS 2002a) and QCB Survey Recommendations (USFWS 2002b). Because portions of the site have frequently been surveyed for QCB, an updated habitat assessment was not deemed necessary. Two QCB host plant species, dwarf plantain and purple owl's-clover, were mapped by assessing the number of plants within a given habitat patch and categorizing as 1-50 individuals and greater than 50 individuals. Potential QCB nectar sources were abundant including California buckwheat (*Eriogonum fasciculatum*), popcorn flower, blue dicks (*Dichelostemma capitatum*), goldfields, ground pink (*Linanthus dianthiflorus*), onion, and goldenstar (*Bloomeria* sp.).

Detailed larval host plant mapping of the entire Project site was conducted in 2016 (Figure 6b). Biologists conducted pedestrian surveys within the host plant mapping area recording the location, size, and conditions of host plants. Host plants were mapped with the aid of global positioning system (GPS) units. Patches of host plants larger than approximately 250 square feet were mapped as polygons. Dwarf plantain numbers are approximate because large populations were visually estimated rather than counting each individual plant. Polygons were categorized as 10-99, 100-999, 1,000-9,999, 10,000-99,999, and over 100,000, with patches of over 1,000 defined as moderate and patches of over 10,000 defined as high.

Following the host plant mapping, the entire proposed open space was surveyed by HELIX (2016c; Appendix B-7) for QCB (Figure 6a) under HELIX's active 10(a)(1)(A) recovery permit (TE 778195-12). The non-protocol survey consisted of four focused surveys conducted between March 1 and March 23, 2016. Larval host plants not previously documented were mapped with the aid of GPS units when encountered during surveys, and potential nectar plant species also were documented. Surveys covered between five and 10 acres per hour.

Coastal California Gnatcatcher

Due to extensive amounts of Diegan coastal sage scrub present on the Proposed Project site, protocol surveys for the federal listed threatened coastal California gnatcatcher (*Polioptila californica californica*; CAGN) were conducted.

In June and July 1991, Ogden (1991) conducted protocol surveys for CAGN.

In June 2000, a focused CAGN survey was conducted by HELIX (2000b; Appendix C). The focused survey followed protocol (USFWS 1997) for presence/absence of this species on approximately 360 acres (within Parcel A and west of Parcel A; Figure 7). The survey route followed dirt roads and trails where available and traversed brushy areas where roads or trails were not available. Taped vocalizations were played four or five times per hour during each site visit. Generally, the tape was played for no longer than five seconds, with intervals of non-play entailing eight minutes or longer.

In 2001, a CAGN survey was conducted by EDAW (2001b). The focused survey followed the 1997 USFWS protocol for presence/absence of this species on a portion of Parcel A (Figure 7). Taped vocalizations were occasionally played throughout all site visits but discontinued when

CAGN were detected. Due to the size of the survey area, each of the three protocol site visits was conducted over a two-day period.

A CAGN survey was conducted again in 2011 by HELIX (2011; Appendix C) following USFWS protocol for presence/absence (USFWS 1997). The survey was conducted in all appropriate habitat on the Proposed Project site(Figure 7). The CAGN survey area encompassed approximately 301 acres of potential CAGN habitat, including Diegan coastal sage scrub, Diegan coastal sage scrub-disturbed, and coastal sage-chaparral scrub, which last burned in 1997 and appears to have recovered from that fire. Due to the size of the CAGN survey area, two days were needed to complete each of the three site visits. The survey was conducted by walking through potential CAGN habitat and infrequently playing recorded CAGN vocalizations to elicit a response from any potentially present, non-vocal CAGN.

Burrowing Owl

In 1991, Ogden (1991) conducted surveys for burrowing owl. In 2001, EDAW (2001b) conducted surveys for burrowing owl. Following County survey guidelines (County 2010a), burrowing owl surveys were completed in January 2012 and April/May 2012 by HELIX (2012a and b; Appendix D). Burrowing owls also have been looked for opportunistically during numerous other surveys (e.g., QCB, coastal California gnatcatcher, sensitive plants) over the course of 11 years.

Golden Eagle

The USGS is currently studying golden eagles in southern California through the use of radio telemetry, and initial telemetry data have been published (USGS 2016).

San Diego and Riverside Fairy Shrimp

Protocol surveys for the federal listed endangered San Diego and Riverside fairy shrimp were conducted within the EOMSP area. Surveys for these species followed current protocol (USFWS 1996a).

In 2001, EDAW conducted eight wet season surveys of 43 pools for San Diego and Riverside fairy shrimp within the EOMSP area. The majority of the pools sampled were artificially created road ruts and man-made pools on maintained gravel roads and non-maintained unpaved roads and trails. Most of the pools were subjected to varying degrees of disturbance from use by the Border Patrol and off-highway vehicle (OHV) use (EDAW 2001b).

1.3.4 Jurisdictional Delineation

On February 8, 2018 and March 22, 2019, HELIX biologists W. Larry Sward and Beth Ehsan conducted a jurisdictional delineation of the Proposed Project site (HELIX2019a).

Prior to beginning fieldwork, aerial photographs (1"=200' scale), USGS topographic maps, and soil survey maps were reviewed to determine the location of potential jurisdictional areas that may be affected by the Proposed Project.

USACE Jurisdictional Areas

All areas with depressions, drainage channels, or wetland vegetation were evaluated for the presence of U.S. Army Corps of Engineers (USACE) Waters of the U.S., including jurisdictional wetlands. If an area was suspected of being a wetland, vegetation and hydrology indicators were noted, and a soil pit was dug and described. The area was then determined to be a federal (USACE) wetland if it satisfied the three wetland criteria (vegetation, hydrology, and soil) described in the Wetlands Delineation Manual (Environmental Laboratory 1987). Areas were determined to be non-wetland Waters of the U.S. if there was evidence of regular surface flow (e.g., bed and bank) but the vegetation and/or soils criterion were not met. Non-wetland areas encompassed by the ordinary high water mark were measured, and vegetation (if present) was noted. All non-wetland Waters of the U.S. were measured and mapped in the field. Wetland affiliations of plant species follow the National List of Vascular Plants that Occur in Wetlands (USFWS 1996b). In most cases, two sample points were evaluated: one inside the suspected wetland and one where hydrology and/or vegetation criteria were not satisfied.

California Regional Water Quality Control Board

Areas regulated by the State Regional Water Quality Control Board (RWQCB) are generally coincident with the USACE, but can also include isolated features that have evidence of surface water inundation pursuant to the state Porter Cologne Act. These areas generally support at least one of the three USACE wetlands indicators but are considered isolated through the lack of surface water hydrology/connectivity downstream.

California Department of Fish and Wildlife Jurisdictional Areas

CDFW jurisdictional boundaries were determined based on the presence of riparian vegetation or regular surface flow. Streambeds within CDFW jurisdiction were delineated based on the definition of streambed as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports riparian vegetation" (Title 14, Section 1.72). This definition for CDFW jurisdictional habitat allows for a wide variety of habitat types to be jurisdictional, including some that do not include wetland species (e.g., oak woodland and alluvial fan sage scrub). CDFW jurisdictional habitat includes all riparian shrub or tree canopy that may extend beyond the banks of a stream.

County Resource Protection Ordinance Wetlands

Areas were considered County wetlands if they met one of the three following attributes pursuant to the County Resource Protection Ordinance (RPO): (1) at least periodically, the land supports a predominance of hydrophytes (plants whose habitat is water or very wet places); (2) the substratum is predominantly undrained hydric soil; or (3) an ephemeral or perennial stream is present, whose substratum is predominately non-soil and such lands contribute substantially to the biological functions or values of wetlands in the drainage system.

1.3.5 Survey Limitations

All animal species were identified by direct observation, vocalizations, or the observation of scat, tracks, or other signs. There are some limitations as to the comprehensiveness of the direct results of the zoological surveys. Many nocturnal, secretive, or seasonally restricted animal species would not have been detected during the general zoological surveys. Examples include rodents, migrant birds that winter in or visit the Proposed Project site, nocturnal lizards, snakes, and many invertebrate species. Focused surveys generally are not performed unless animal species are federal or State listed.

1.3.6 Nomenclature

Nomenclature used in this report generally comes from Holland (1986) and Oberbauer (2008) for vegetation; Hickman, ed. (1993) and Rebman and Simpson (2006) for plants; Emmel and Emmel (1973), Scott (1986), Garth and Tilden (1986), Tilden and Smith (1986), Brown et al. (1992), Pyle (1995), Opler and Wright (1998 and 1999), Glassberg (2001), and Stewart (1997) for butterflies; Collins and Taggart (2006) for reptiles and amphibians; American Ornithologists' Union (2007) for birds; and Baker et al. (2003) for mammals. Plant species status is taken from the California Native Plant Society (CNPS; 2018), and specific plant species habitat information is from Reiser (1994). Animal species status is from CDFW (2017).

1.4 ENVIRONMENTAL SETTING

The undeveloped Proposed Project site consists of several low hills at the western foothills of the San Ysidro Mountains (Figures 2 and 3). The presence of hills and taller mountains adjoining the site to the east create diverse site topography consisting of multiple canyons and ridgelines. Undeveloped open space surrounds the site to the north and east. The closest development is a power plant on a lot abutting the northeastern edge of the site.

Elevation on the site varies. Parcel A ranges from approximately 600 to 1,020 feet AMSL; Parcels C and E (north of Parcel A) range from 700 to 1,300 feet AMSL; Parcel B (east of Parcel A) extends to above 1,500 feet AMSL; and land west of Parcel A ranges from 600 to 800 feet AMSL. Soils on site consist almost entirely of San Miguel-Exchequer rocky silt loam (9 to 70 percent slopes), which is typically found in mountainous uplands and consist of silt loams with a clay subsoil. The northwestern tip of Parcel A as well as a small portion of land west of Parcel A consist 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 site was burned during a fire that swept through the area in 1997; however, vegetation has largely recovered showing little sign of fire with moderate cover by perennial species. As a general characterization of the site, the south-facing slopes support thinner soils, and are more sparsely vegetated. The north-facing slopes have deeper, heavier soils, support more vegetation, and support the majority of the sensitive annual plant species. Openings in the vegetative canopy are common, especially on the south-facing slopes. The site was not burned in the October 2007 Harris fire.

In addition to natural habitat, numerous dirt roads cross the site. These roads are frequently used illegally by operators of OHVs, especially dirt bikes. Hundreds of dirt bikes and OHVs have been observed on the site during surveys. The Border Patrol traverses the site in vehicles and OHVs during daily patrols. In addition, San Diego Gas & Electric (SDG&E) maintains access roads and transmission facilities on the site. These activities degrade the biological resources but not to an extent that appreciably decreases their value.

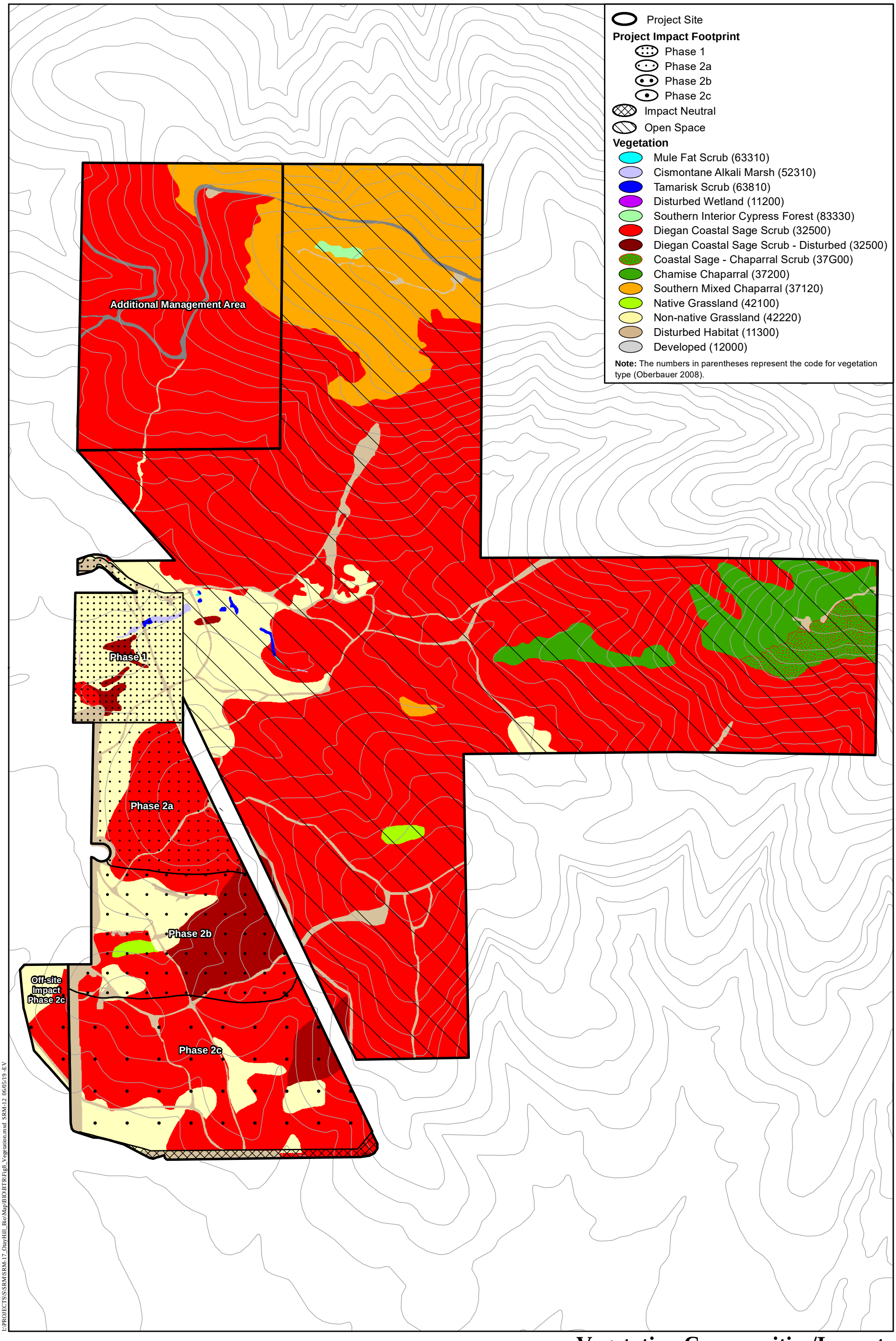
1.4.1 Regional Context

The Proposed Project site is located within the South County Segment of the County's MSCP Subarea Plan and is not within a designated Pre-approved Mitigation Area (PAMA) because it is within amendment areas. The County's Habitat Evaluation Model indicates that approximately 355.6 acres of the site are designated as Very High quality habitat, 9.1 acres have been designated as High quality habitat, 34.3 acres have been designated as Medium quality habitat, and 13.9 acres have been designated as Low quality habitat. The remaining acreage is designated as developed or agriculture. Given that 88.0 percent of the site has been designated as High or Very High value habitat by the County; the site meets the criteria of a Biological Resource Core Area (BRCA), as further discussed in Section 1.5.3, below.

The site is part of a large block of undeveloped land, the majority of which is vegetated with native habitats. The Proposed Project's development footprint supports three native vegetation communities, including: cismontane alkali marsh, native grassland, and Diegan coastal sage scrub (including disturbed). Non-native vegetation communities considered sensitive and/or requiring mitigation that occur within the development footprint include non-native grassland. A number of plant and animal species occurring or potentially occurring on the Proposed Project site are considered sensitive by the federal and/or State resource agencies and/or County with most typically being associated with Diegan coastal sage scrub habitat. The habitat of greatest value on the site is the Diegan coastal sage scrub as it supports many sensitive plant and animal species, including the federal listed Otay tarplant, QCB, and CAGN.

1.4.2 Vegetation Communities/Habitat Types

In addition to developed land, 12 vegetation communities/habitats occur on the Proposed Project site (three of these are on the off-site parcel): mule fat scrub, cismontane alkali marsh, southern interior cypress forest, disturbed wetland, 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 8; Table 1).



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Vegetation Communities/Impacts

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

N

0 650 Feet

Figure 8

Table 1
VEGETATION COMMUNITIES/HABITATS ON AND OFF SITE
(acres)[3]

Vegetation Community/Habitat[1]	Tier[2]	On Site	Off Site	Total
Mule fat scrub (63310)	I	0.03	0.00	0.03
Cismontane alkali marsh (52310)	I	0.34	0.00	0.34
Southern interior cypress forest (83330)	I	0.5	0.0	0.5
Disturbed wetland (11200)	I	0.01	0.00	0.01
Tamarisk scrub (63810)	I	0.10	0.00	0.10
Native grassland (42100)	I	1.2	0.0	1.2
Diegan coastal sage scrub (including disturbed; 32500)	II	284.1	2.5	286.6
Coastal sage-chaparral scrub (37G00)	II	5.4	0.0	5.4
Chamise chaparral (37200)	III	14.8	0.0	14.8
Southern mixed chaparral (37120)	III	38.6	0.0	38.6
Non-native grassland (42220)	III	45.4	2.0	47.4
Disturbed habitat (11300)	IV	18.4	0.2	18.6
Developed land (12000)	IV	0.7	0.0	0.7
	TOTAL	**409.7**	**4.7**	**414.4**

[1]Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008).
[2]Tiers refer to County MSCP Subarea Plan habitat classification system.
[3]Upland habitats are rounded to the nearest 0.1 acre. Wetland habitats are rounded to the nearest 0.01. Totals reflect rounding.

Sensitive habitat is defined as land, which supports unique vegetation communities, or the habitats of rare or endangered species or subspecies of animals or plants as defined by Section 15380 of the CEQA Guidelines. Sensitive vegetation communities on the Proposed Project site include: 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, and non-native grassland.

Mule Fat Scrub

Mule fat scrub is a 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). On the Proposed Project site, mule fat scrub is dominated by mule fat; other species include arroyo willow (*S. lasiolepis*), tamarisk (*Tamarix* sp.), and broom baccharis (*B. sarothroides*). Approximately 0.03 acre of this vegetation community occurs in the northwest corner of Parcel A.

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.). On the Proposed Project site, cismontane alkali marsh is dominated by San Diego marsh-elder (*Iva hayesiana*) and southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*). Approximately 0.34 acre of cismontane alkali marsh occurs in the northwest corner of Parcel A.

Southern Interior Cypress Forest

Southern interior cypress forest is a fairly dense, fire-maintained, low forest dominated by piute cypress (*Hesperocyparis* [*Cupressus*] *nevadensis*), Tecate cypress (*H.* [*C.*] *forbesii*), or Arizona cypress (*H.* [*C.*] *stephensonii*). This forest often occurs as isolated groves within a matrix of chaparral or piñon-juniper woodland (Holland 1986). On site, southern interior cypress forest is dominated by Tecate cypress with a matrix of chaparral species. The other two cypress species do not occur on the Proposed Project site. Southern interior cypress forest covers approximately 0.5 acre and occurs within Parcel C.

Disturbed Wetland

This vegetation community is dominated by exotic wetland species that invade areas that have been previously disturbed or undergone periodic disturbances. These non-natives become established more readily following natural or human-induced habitat disturbance than the native wetland flora. Characteristic species of disturbed wetlands include giant reed (*Arundo donax*), ox tongue (*Picris echioides*), cocklebur (*Xanthium strumarium* var. *canadense*), and tamarisk (*Tamarix* sp.).
Dominant species in this plant community within the Proposed Project site include hyssop loosestrife (*Lythrum hyssopifolia*). Approximately_0.01 acre of disturbed wetlands occurs within the Project Site.

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 covering approximately 0.10 acre occur within the northwest corner of Parcel A.

Native Grassland

Native grassland is a vegetation community dominated by perennial bunchgrasses such as purple needlegrass (*Nassella 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.

Mapped native grassland occurs in two patches on northwest-facing slopes on the Proposed Project site. One patch occurs on the main hill located in the center of Parcel A, and one patch occurs on a smaller hill located in the southwestern corner of the land west of Parcel A. Additional native grasses occur in smaller patches within Diegan coastal sage scrub habitat on these same slopes. Approximately 1.2 acres of this vegetation community occur on site.

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 approximately 70 percent of the Proposed Project site, covering 284.1 acres. Plant species observed within the Diegan coastal sage scrub on site include California sagebrush (*Artemisia californica*), lemonadeberry (*Rhus integrifolia*), California buckwheat, and laurel sumac (*Malosma laurina*). Diegan coastal sage scrub (2.5 acres) also occurs on the off-site Otay Crossings Commerce Park parcel. An additional 51.8 acres of Diegan coastal sage scrub occurs within the AMA.

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. A small patch of disturbed Diegan coastal sage scrub occurs in the southwest corner of Parcel A, and a larger area of this vegetation community occurs on land west of Parcel A. 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.

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 contains floristic elements of both communities including California sagebrush, California buckwheat, laurel sumac, chamise (*Adenostoma fasciculatum*), and Ramona ceanothus (*Ceanothus tomentosus*). One area of coastal sage-chaparral scrub occupying approximately 5.4 acres occurs in Parcel B.

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 on the Proposed Project site. Chamise chaparral occurs on approximately 14.8 acres of Parcel A.

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 on the Proposed Project site includes such species as chamise, mission manzanita, and Ramona ceanothus. Southern mixed chaparral occupies approximately 38.6 acres within Parcels A and C. An additional 7.0 acres of southern mixed chaparral occurs in the AMA.

Non-native Grassland

Non-native grassland is a dense to sparse cover of annual grasses. Characteristic species on site 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).

Approximately 45.4 acres of non-native grassland occur within Parcel A and west of Parcel A. Non-native grassland (2.0 acres) also occurs on the off-site Otay Crossings Commerce Park parcel. The primary value of this vegetation community is as foraging habitat for many raptor species and as habitat for rare plants.

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 ornamentals or ruderal, exotic species) that take advantage of disturbance (previously cleared or abandoned landscaping), or shows signs of

past or present animal usage which has reduced the land's capability of providing higher quality wildlife habitat.

On the Proposed Project site, disturbed habitat includes dirt roads crisscrossing the area that have been carved through the native vegetation and non-native grassland by dirt bikes and U.S. Border Patrol vehicles. In addition, SDG&E maintains access roads and transmission facilities on site. Disturbed habitat occupies approximately 18.4 acres on site. Disturbed habitat (0.2 acre) also occurs on the off-site Otay Crossings Commerce Park parcel. An additional 0.3 acres of disturbed habitat occurs in the AMA.

Developed Land

Developed land exists where permanent structures and/or pavement has been placed (preventing the growth of vegetation) or where landscaping is clearly tended and maintained. Developed land on the Proposed Project site occupies 0.7 acre and consists of a paved roadway (Otay Mountain Truck Trail) in Parcel C. An additional 1.8 acres of developed habitat consisting of the paved roadway for Otay Mountain Truck Trail occurs in the AMA.

1.4.3 Flora

HELIX observed a total of 195 plant species on the Proposed Project site during the 2001 and 2004 sensitive plant surveys as well as during other biological surveys. Appendix E provides a list of those plant species. Surveys by EDAW within the EOMSP area identified 202 plant species (EDAW 2001a).

1.4.4 Fauna

A total of 101 animal species were observed/detected during the HELIX 2001, 2004, and 2008 surveys, including 30 butterfly, seven other invertebrate, six reptile, one amphibian, 52 bird, and 12 mammal species. A complete list of these animals is included in Appendix F. All of the animal species were identified by direct observation or vocalizations, the presence of scat and/or tracks, or other signs. Surveys by EDAW within the EOMSP area identified 119 animal species (EDAW 2001b).

1.4.5 Sensitive Plant Species

Sensitive species are those considered unusual or limited in that they are: (1) only found in the San Diego region; (2) a local representative of a species or association of species not otherwise found in the region; or (3) severely depleted within their ranges or within the region.

Eighteen sensitive plant species are known to occur on the Proposed Project site. Figures 9a and 9b show historic observations from 1991 through 2011. High-interest plants include those listed or regulated by the USFWS, CNPS, or County.

One federal listed threatened and State listed endangered plant species, Otay tarplant, was observed on site (Figure 9a). One California rare plant species occurs on site: Dunn's mariposa lily (*Calochortus dunnii*; Figure 9a).

The County's MSCP Subarea Plan (1997) includes a list of narrow endemic plant species, which are protected under the MSCP with limited geographic ranges whose long-term survival necessitates additional conservation measures. Four plant species that occur on site are included in the MSCP narrow endemic plant list: Otay tarplant, Dunn's mariposa lily, variegated dudleya, and Gander's pitcher sage (*Lepechinia ganderi*).

In addition to the four sensitive species discussed above, 14 species considered sensitive by the CNPS were observed on site: Tecate cypress, San Diego goldenstar, summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*), Orcutt's bird's beak (*Cordylanthus orcuttianus*), San Diego barrel cactus, San Diego marsh-elder, Munz's sage (*Salvia munzii*), San Diego needlegrass, western dichondra (*Dichondra occidentalis*), Palmer's grapplinghook (*Harpagonella palmeri*), southwestern spiny rush, Coulter's matilija poppy (*Romneya coulteri*), San Diego sunflower (*Viguiera laciniata*), and ashy spike-moss (*Selaginella cinerascens*).

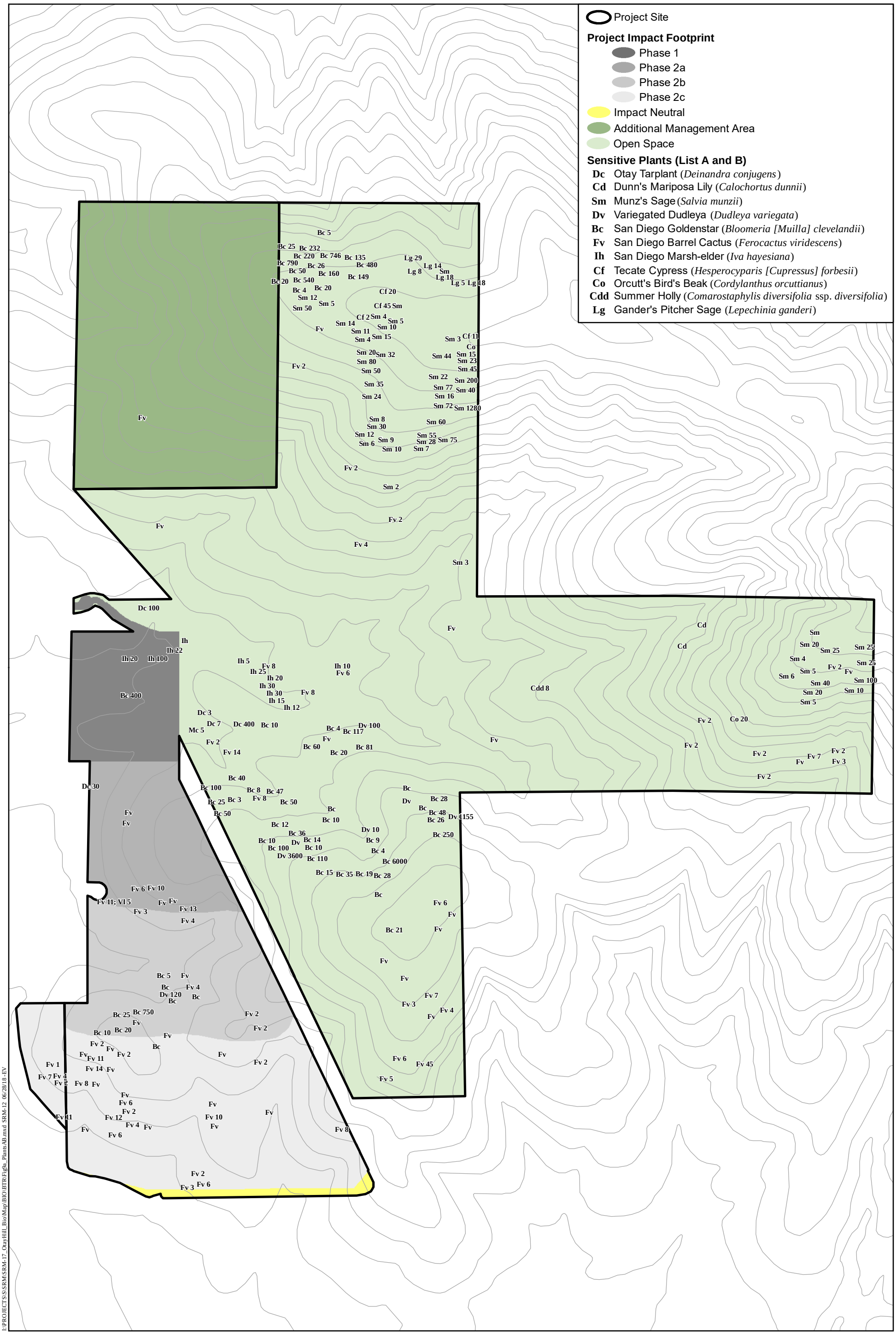
The County's Biological Mitigation Ordinance (BMO) differentiates between plant species in terms of Lists. The table below and Figure 9a depicts County List A and B plants observed on site; Figure 9b depicts County List D plant species. No County List C plant species were observed.

COUNTY BMO PLANTS ON THE PROPOSED PROJECT SITE[1]

List A	List B	List D
• Otay tarplant	• San Diego barrel cactus[2]	• San Diego needlegrass
• Dunn's mariposa lily	• San Diego marsh-elder	• western dichondra
• variegated dudleya	• Munz's sage	• southwestern spiny rush
• Gander's pitcher sage	• Orcutt's bird's beak	• Coulter's matilija poppy
• Tecate cypress		• San Diego sunflower
• San Diego goldenstar		• ashy spike-moss[2]
• summer holly		• Palmer's grapplinghook

[1] No County List C plant species were observed on the Proposed Project site.
[2] Also present on the off-site Otay Crossings Commerce Park parcel.

A brief description of each sensitive species observed is provided below. Each species is listed in order of status; where more than one species has the same status, species are listed alphabetically by scientific name. A key of the status codes presented can be found in Appendix G. California Native Species Field Survey Forms were completed and submitted to CDFW for California Natural Diversity Database (CNDDB)-tracked plant species observed by HELIX (Appendix H).



Federal, State, and County (List A and B) Sensitive Plant Species/Impacts

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

N 0 600 Feet

Figure 9a

Project Site

Project Impact Footprint

- Phase 1
- Phase 2a
- Phase 2b
- Phase 2c

Impact Neutral

Additional Management Area

Open Space

Sensitive Plants (List D)

- **Ad** San Diego Needlegrass (*Achnathrerum diegoensis*)
- **Do** Western Dichondra (*Dichondra occidentalis*)
- **Ja** Southwestern Spiny Rush (*Juncus acutus* ssp. *leopoldii*)
- **Rc** Coulter's Matilija Poppy (*Romneya coulteri*)
- **Vl** San Diego Sunflower (*Viguiera laciniata*)
- **Vl** San Diego Sunflower (*Viguiera laciniata*)
- **Sc** Ashy Spike-moss (*Selaginella cinerascens*)
- **Hp** Palmer's Grapplinghook (*Harpagonella palmeri*)

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County (List D) Sensitive Plant Species/Impacts

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

N

0 600 Feet

Figure 9b

Otay tarplant (*Deinandra conjugens*)
Status: FT/SE; CNPS Rare Plant Rank 1B.1; County List A; County MSCP Narrow Endemic (NE)
Distribution: San Diego County to Baja California, Mexico.
Habitat: May be found on clay soils in coastal sage scrub and grasslands.
Status on site: Approximately 10 individuals occur within Parcel A as observed by HELIX. According to the Botanical Technical Report for the EOMSP Amendment Area (EDAW 2001a) 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 Proposed Project site and include 530 individuals. Data from EDAW (2001a) and HELIX are cumulative, not duplicative for this species. As such, a total of 540 individuals are addressed in this document, and they 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 development 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 lower soil horizon of this mapped soil type 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 analysis by HELIX (2016a) determined that the site contains 23.27 acres of potential Otay tarplant habitat based on soil, slope orientation and vegetation type.

Dunn's mariposa lily (*Calochortus dunnii*)
Status: --/SR; CNPS Rare Plant Rank 1B.2; County List A; County MSCP NE
Distribution: San Diego County to Baja California, Mexico.
Habitat: Rocky openings in chaparral or grassland/chaparral ecotone are preferred habitat of this species, which seems restricted to metavolcanic- and gabbroic-derived soils.
Status on site: Two individuals observed in the northwest corner of Parcel B by EDAW (2001a). This species was not observed by HELIX.

Tecate cypress (*Hesperocyparis* [*Cupressus*] *forbesii*)
Status: --/--; CNPS Rare Plant Rank 1B.1; County List A; County MSCP Covered
Distribution: Found from southern San Diego County to Baja California, Mexico.
Habitat: Chaparral along foothills or in canyons and valleys along drainages or on north-facing slopes in association with closed cone coniferous forest and southern mixed chaparral.
Status on site: This species was observed by Ogden (1991) prior to the 1997 fire. EDAW reported two individuals in the vicinity of these previous observations (2001a). Approximately 69 individuals were observed on Parcel C within southern interior cypress forest during 2004 HELIX surveys. Approximately 78 individuals were observed in this vicinity during 2011 HELIX surveys. As this is a conspicuous perennial species, the most recent survey total of 78 individuals is addressed in this document.

San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*)
Status: --/--; CNPS Rare Plant Rank 1B.1; County List A; County MSCP Covered
Distribution: Found from southwestern San Diego County to northwestern Baja California, Mexico.
Habitat: Prefers clay soils on dry mesas and hillsides in coastal sage scrub or chaparral.
Status on site: Species observed on north-facing slopes on site by Ogden (1991), EDAW (2001a), and HELIX in 2000/2001, 2004, and 2011. 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 proposed open space. Two smaller populations (1,214 individuals) occur within the development footprint. The site contains 82.53 acres of potential habitat for this species (HELIX 2016a).

Summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)
Status: --/--; CNPS Rare Plant Rank 1B.2; County List A
Distribution: San Diego, Riverside, and Orange counties; Baja California, Mexico.
Habitat: Southern mixed chaparral (usually on mesic north-facing slopes) is preferred habitat.
Status on site: Eight individuals were observed by HELIX in 2011 in the eastern portion of Parcel A.

Variegated dudleya (*Dudleya variegata*)
Status: --/--; CNPS Rare Plant Rank 1B.2; County List A; County MSCP NE
Distribution: San Diego County to Baja, California Mexico.
Habitat: Found on dry hillsides and mesas in both foothill and coastal areas.
Status on site: Approximately 1,887 individuals were observed on Parcel A and west of Parcel A by HELIX in 2000. None were observed during the 2011 surveys. According to the Botanical Technical Report (EDAW 2001a), approximately 6,100 individuals of variegated dudleya in six locations within grasslands in the southeastern portion of the EOMSP area and within sage scrub in the eastern portion of the EOMSP were mapped during surveys conducted by EDAW. Of these 6,100 individuals of variegated dudleya, approximately 3,100 individuals occur on the Proposed Project site that are not duplicative with HELIX data. As such, 4,987 individuals are discussed in this report, and they represent six primary populations (one in the development 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 2016a).

Gander's pitcher sage (*Lepechinia ganderi*)
Status: --/--; CNPS Rare Plant Rank 1B.3; County List A; County MSCP NE
Distribution: Southwestern San Diego County near Otay and Chula Vista; Baja California, Mexico.
Habitat: Gabbroic or metavolcanic soils in closed-cone coniferous forest, chaparral, coastal sage scrub, and grasslands.
Status on site: Approximately 92 individuals were observed in the eastern portion of Parcel C by HELIX in 2011.

Orcutt's bird's beak (*Cordylanthus orcuttianus*)
Status: --/--; CNPS Rare Plant Rank 2.1; County List B; County MSCP Covered
Distribution: Southwestern San Diego County near Otay, Chula Vista, and Imperial Beach; Baja California, Mexico.
Habitat: Seasonally dry drainages and upland adjacent to riparian habitat are preferred habitat. Grows in a cobbly ecotone with sage scrub upslope, and disturbed broom baccharis and southern willow scrub near the watercourse.
Status on site: Approximately 20 individuals were observed on Parcel B in 2001 and one individual was observed on Parcel C in 2011 by HELIX. The species was not observed by EDAW. As the observations occurred in different portions of the site, the total of 21 observed individuals is addressed in this report.

San Diego barrel cactus (*Ferocactus viridescens*)
Status: --/--; CNPS Rare Plant Rank 2.1; County List B; County MSCP Covered
Distribution: San Diego County and Baja California, Mexico.
Habitat: Prefers dry slopes in coastal sage scrub.
Status on site: The species was observed on Parcel A and the area west of Parcel A by Ogden (1991). San Diego barrel cactus is scattered on south-facing slopes throughout much of the Proposed Project site. Approximately 700 San Diego barrel cacti occur throughout the sage scrub and chaparral communities in the eastern portions of the EOMSP area according to the Botanical Technical Report (EDAW 2001a), which includes the Proposed Project site. Approximately 635 individuals were observed on Parcels A, B, C, E, and land west of Parcel A by HELIX during the 2000 and 2004 sensitive plant surveys. Approximately 109 individuals were observed on land west of Parcel A during 2006 sensitive plant surveys. Approximately 337 individuals were observed on Parcels A, B, C, E, and land west of Parcel A 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 for the on-site portion of the Proposed Project site. Twenty-five barrel cacti occur on the off-site Otay Crossings Commerce Park parcel (HELIX 2010). Barrel cacti have also been recorded in the AMA.

San Diego marsh-elder (*Iva hayesiana*)
Status: --/--; CNPS Rare Plant Rank 2.2; County List B
Distribution: San Diego County and Baja California, Mexico.
Habitat: Prefers moist or alkaline places areas along the coast, typically along drainages.
Status on site: 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.

Munz's sage (*Salvia munzii*)
Status: --/--; CNPS Rare Plant Rank 2.2; County List B
Distribution: Ranges from the San Miguel Mountains to northern Baja California, Mexico.
Habitat: Prefers sage scrub and chaparral along southern foothills and coastal areas.
Status on site: Approximately 251 individuals were observed in two locations in the eastern portions of Parcels C and E by EDAW (2001a). Approximately 1,040 individuals were observed in the eastern portion of Parcel B by HELIX in 2001. Approximately 3,915 individuals were observed on Parcels B, C, and E by HELIX in 2011. As the data from previous surveys is

duplicative of the most recent surveys for this perennial species, the most recent count of 3,915 individuals is used in this report.

San Diego needlegrass (*Achnatherum diegoense*)
Status: --/--; CNPS Rare Plant Rank 4.2; County List D
Distribution: Ranges from south San Diego County into northern Baja California, Mexico.
Habitat: Found along vernal streams and on clay slopes within chaparral and coastal sage scrub.
Status on site: Approximately 15 individuals were observed by HELIX on land west of Parcel A in 2000, and 136 individuals were observed by HELIX on Parcel B in 2001. In 2011, approximately 1,596 individuals were observed by HELIX on Parcels A, B, C, E, and land west of Parcel A. The species not observed on the Proposed Project site by EDAW. As the data from previous surveys is duplicative of the most recent surveys for this perennial species, the most recent count of 1,596 individuals is used in this report.

Western dichondra (*Dichondra occidentalis*)
Status: --/--; CNPS Rare Plant Rank 4.2; County List D
Distribution: Sonoma and Marin counties (questionable) disjunct to San Barbara County south and along the coast to Baja California, Mexico.
Habitat: Found in understory of chaparral and other shaded places, along foothills and coastal areas.
Status on site: Approximately eight localities were sparsely located on Parcel A and west of Parcel A, as recorded by HELIX in 2000. EDAW recorded six localities on Parcel A and land west of Parcel A in 2001. HELIX recorded four localities on Parcel B in 2011. The amount of this species that is present from year to year varies due to factors such as fire history and weather conditions. Because this plant can remain dormant in the soil, and the observations occurred in differing locations across the site, the combination of data from all three surveys (totaling 10 localities) is addressed in this report.

Palmer's grapplinghook (*Harpagonella palmeri*)
Status: --/--; CNPS Rare Plant Rank 4.2; County List D
Distribution: Below approximately 3,300 feet in elevation in Los Angeles, Orange, Riverside, and San Diego counties; Baja California and Sonora, Mexico; San Clemente Island; Arizona.
Habitat: Clay soils in annual grasslands and coastal sage scrub.
Status on site: Approximately 100 individuals were observed by EDAW (2001a) on Parcel A. This species was not observed during subsequent surveys.

Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)
Status: --/--; CNPS Rare Plant Rank 4.2; County List D
Distribution: Los Angeles, San Bernardino, San Luis Obispo, Ventura, and San Diego counties; Baja California, Mexico.
Habitat: Moist, saline, or alkaline soils.
Status on site: Approximately 335 individuals were observed in the northwest corner of Parcel A by HELIX in 2000. Two individuals were observed in the same vicinity by EDAW (2001a). In subsequent surveys, 13 individuals were observed by HELIX in 2010 during a jurisdictional delineation, and 21 individuals were observed by HELIX in 2011. Given that this is a readily

observable perennial species, only the 21 individuals observed by HELIX in 2011 are addressed in this document.

Coulter's matilija poppy (*Romneya coulteri*)
Status: --/--; CNPS Rare Plant Rank 4.2; CA Endemic; County List D
Distribution: San Diego, Orange, Los Angeles, and Riverside counties.
Habitat: This suffruticose perennial is a fire follower, which may occur in areas of sage scrub, or more typically, in chaparral or along rocky watercourses.
Status on site: Approximately two individuals were observed on Parcel C as recorded by EDAW (2001a). Approximately 51 individuals were observed on Parcel C and the northern portion of Parcel E by HELIX in 2011. Because the observations on Parcel C are duplicative of the earlier EDAW observations, the combination of 51 individuals observed by HELIX on Parcels C and E(total of 51 individuals), are addressed in this document.

San Diego sunflower (*Viguiera laciniata*)
Status: --/--; CNPS Rare Plant Rank 4.2; County List D
Distribution: San Diego County and Baja California, Mexico.
Habitat: Generally occurs between approximately below 4,000 feet AMSL within chaparral and rocky slopes.
Status on site: Populations of this species were observed on Parcels A, B, C, E, and land west of Parcel A as recorded by HELIX during surveys in 2000 (9,314 individuals), 2001 (7,551 individuals), and 2011 (46,272 individuals). EDAW (2001a) recorded a minimal amount of individuals on the Proposed Project site. As the previous survey points are duplicative of the 2011 data, only HELIX 2011 data for this species are addressed in this document for the on-site portion of the Proposed Project. Fifty San Diego sunflower occur on the off-site Otay Crossings Commerce Park parcel (HELIX survey data 2000/2001 and HELIX 2010). San Diego sunflower has also been recorded in the AMA.

Ashy spike-moss (*Selaginella cinerascens*)
Status: --/--; CNPS Rare Plant Rank 4.1; County List D
Distribution: Orange and San Diego counties; northwestern Baja California, Mexico.
Habitat: Flat mesas in coastal sage scrub and chaparral.
Status on site: Approximately 99 locations were found on Parcel A and west of Parcel A by HELIX. In 2011, 268 locations were found by HELIX in these areas, as well as on Parcels C and E. The species was not observed on the Proposed Project site by EDAW. As the previous survey points are duplicative of the 2011 data, only the most recent data for this species are addressed in this document for the on-site portion of the Proposed Project site. Two locations of ashy spike-moss were mapped on the off-site Otay Crossings Commerce Park parcel (HELIX survey data 2000/2001).

Sensitive Plants with Potential to Occur

Because the Proposed Project site was burned in 1997, the vegetation was open, and plant species were readily observable. The potential for additional sensitive plant species to occur on site is considered low because, if present, they are very likely to have been observed during the numerous plant surveys. Listed or sensitive plant species with potential to occur on site are listed in Appendix

I (alphabetically by scientific name). Refer to Appendix G for a listing and explanation of status codes.

1.4.6 Sensitive Wildlife Species

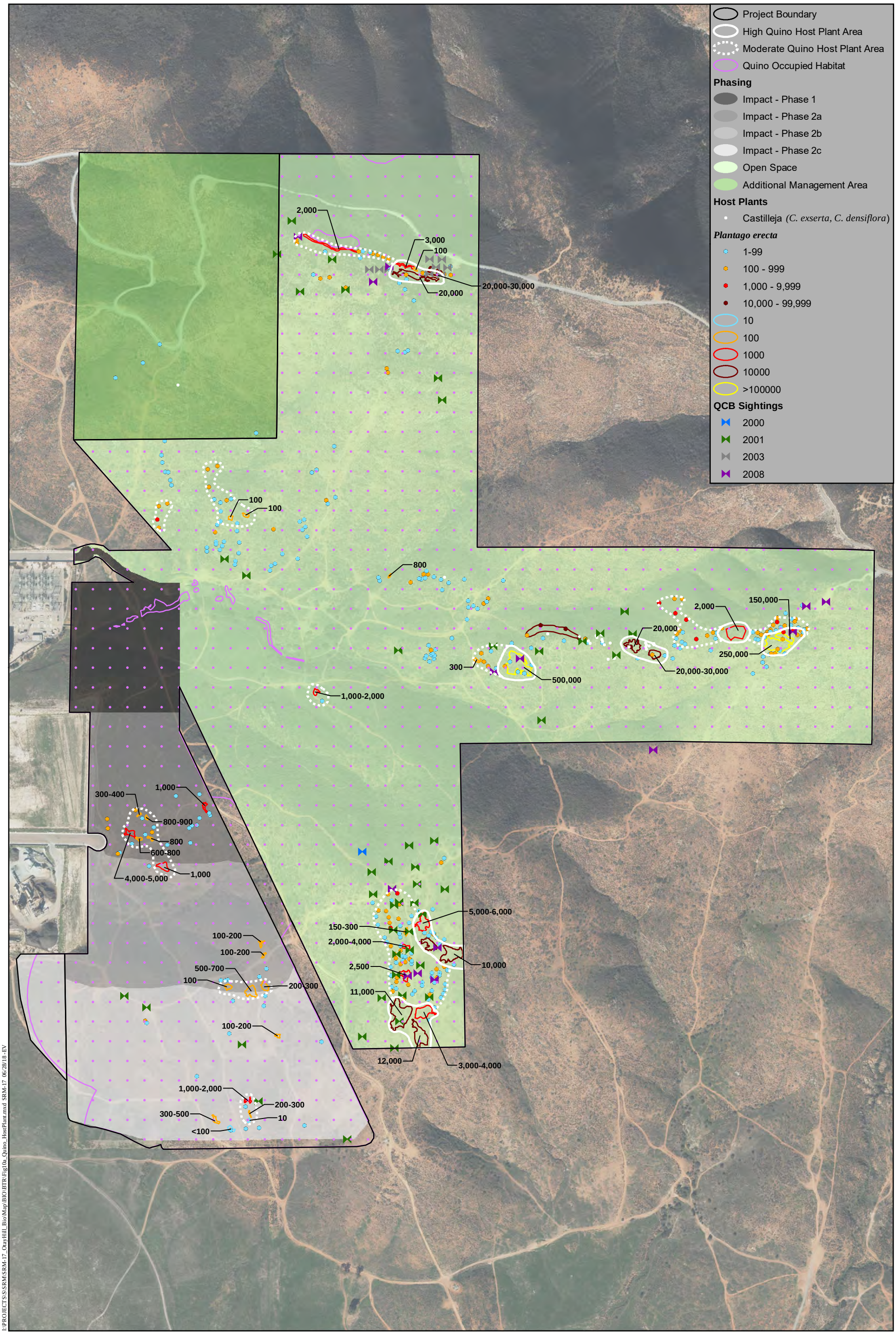
Nineteen sensitive animal species were observed/detected or assumed to occur on the Proposed Project site (Figures 10a and 10b) including the federal listed endangered QCB and the federal listed threatened CAGN. Four (4) species are listed as Birds of Conservation Concern by the USFWS: Bell's sage sparrow (*Amphispiza belli belli*), golden eagle, burrowing owl, and loggerhead shrike (*Lanius ludovicianus*). Five animal species observed/detected are listed as a State Species of Special Concern (SSC): red-diamond rattlesnake (*Crotalus ruber ruber*), coast horned lizard (*Phrynosoma blainvillii*), grasshopper sparrow (*Ammodramus savannarum*), northern harrier (*Circus cyaneus*), and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). (Note that although not observed on site, Belding's orange-throated whiptail [*Aspidoscelis hyperythra beldingi*; an SSC] is assumed to be present throughout the entire Project site.) Two species are designated as Watch List species by the American Bird Conservancy and include southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) and California horned lark (*Eremophila alpestris actia*; CDFW 2017). Five County sensitive species (Cooper's hawk [*Accipiter cooperii*], coastal whiptail [*Aspidoscelis tigris stejnegeri*], turkey vulture [*Cathartes aura*], common barn owl [*Tyto alba*], and southern mule deer [*Odocoileus hemionus fuliginata*]) also occur on site.

In addition to its federal status, QCB is also a County listed rare, narrow endemic animal species. Other rare, narrow endemic animal species observed on site include burrowing owl and golden eagle.

EDAW (2001b) identified San Diego and Riverside fairy shrimp in two pools within the EOMSP area; however, those pools are not on the Proposed Project site.
A brief description of each animal species is provided below. A key to the status codes presented can be found in Appendix G. California Native Species Field Survey Forms were completed and submitted to the CDFW for California Natural Diversity Data Base-tracked animal species observed by HELIX (Appendix H).

Invertebrates

Quino checkerspot butterfly (*Euphydryas editha quino*)
Status: FE/--; County Group 1; County MSCP Rare, NE
Distribution: Populations are known to exist only as several (probably isolated) colonies in southwestern Riverside and southern San Diego counties as well as northern Baja California, Mexico.
Habitat: The principal larval host plant of this species in San Diego is dwarf plantain. Potential QCB habitat in the region includes vegetation communities with relatively open areas that typically include patches of dwarf plantain, purple owl's clover, and various nectaring plants. These habitats include open coastal sage scrub, vernal pools, lake margins (Emmel and Emmel 1973), non-native grassland, perennial grassland, disturbed habitat, disturbed wetlands, and open areas within shrub communities.



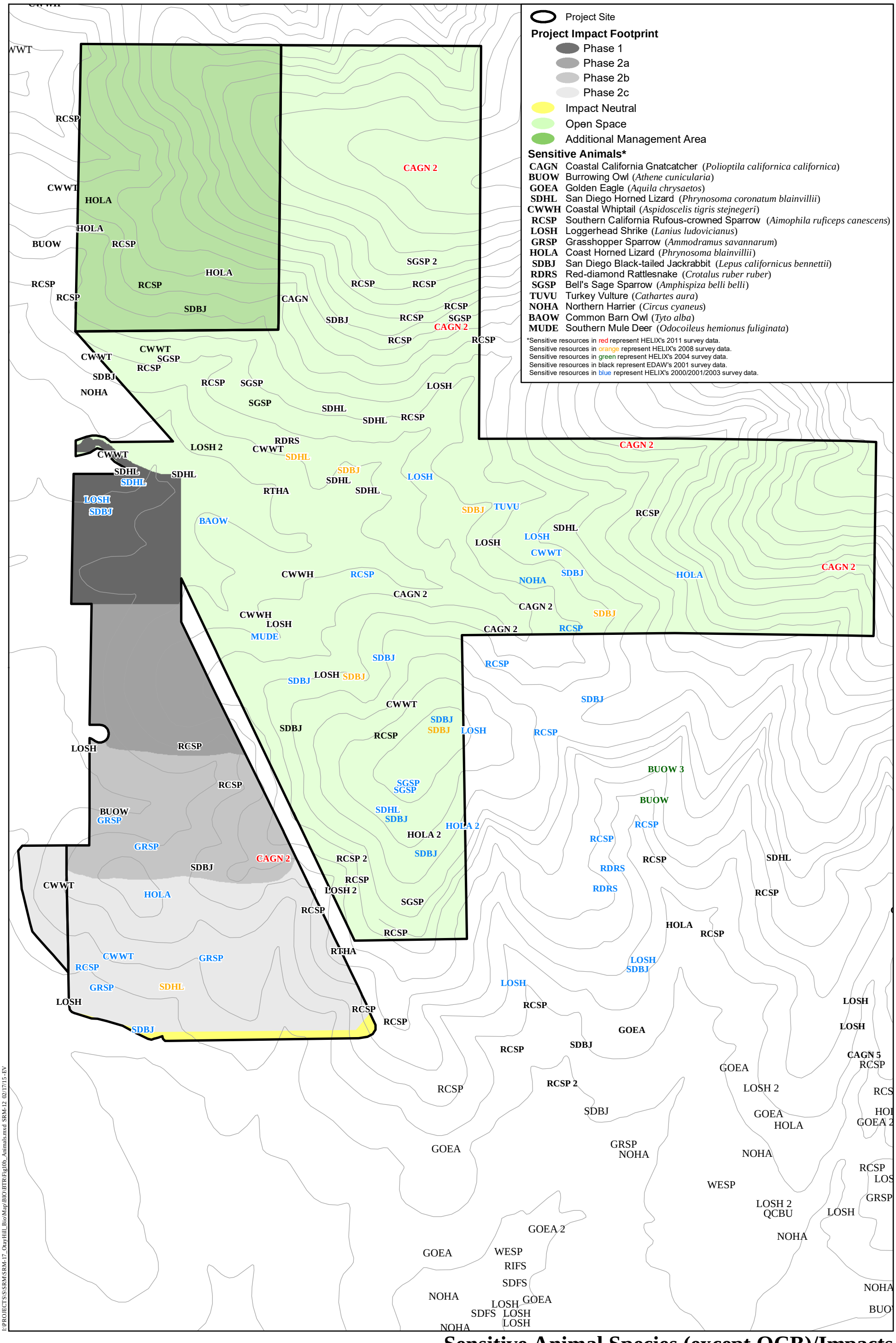
Quino Checkerspot Butterfly Sightings and Host Plant Locations/Impacts

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

N 0 600 Feet

Figure 10a


Project Site
Project Impact Footprint
Phase 1
Phase 2a
Phase 2b
Phase 2c
Impact Neutral
Open Space
Additional Management Area
Sensitive Animals*
CAGN Coastal California Gnatcatcher (Polioptila californica californica)
BUOW Burrowing Owl (Athene cunicularia)
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)
GRSP Grasshopper Sparrow (Ammodramus savannarum)
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.
CAGN 2
SGSP 2
BUOW 3
CAGN 5
RCSP 2
HOLA 2
LOSH 2
GOEA 2
QCBU
WESP
RIFS
SDFS
RTHA
I:\PROJECTS\SRMSRM-17_OtayHill_BioMap\BIO\BTR\Fig10b_Animals.mxd SRM-12 02/17/15 -EV
Sensitive Animal Species (except QCB)/Impacts
BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS
HELIX Environmental Planning
N
0
600
Feet
Figure 10b

Status on site: One QCB was sighted during the HELIX 2000 survey on Parcel A. During HELIX 2001 surveys, 14 QCBs were observed within Parcels B, C, E, and additional land in the immediate vicinity of the Proposed Project site 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. 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 QCB larval host plant species were not present, though 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. 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. The QCB host plant species dwarf plantain was present but occurred sparsely. Potential nectar sources that were noted include deerweed, goldfields, and California buckwheat. During surveys of Parcels B, C, E, and additional land in the immediate vicinity of the Proposed Project site in 2003, nine QCBs were observed along a dirt road just south of the Otay Mountain Truck Trail (Figure 10a). These sightings occurred within sparse chaparral containing dwarf plantain and popcorn flower. The QCB was not observed within the proposed open space during non-protocol surveys by HELIX in 2016 (HELIX 2016c), which was consistent with low detection of QCB County-wide in 2016.

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), as shown on Figure 10a. No QCB were observed on the off-site Otay Crossings Commerce Park parcel (HELIX 2010).

Detailed larval host plant mapping of the entire Project site was conducted in 2016 (Figure 6b). Using the mid-point of the estimated host plant populations, there are approximately 1,206,059 individuals of dwarf plantain and 47 individuals of purple owl's clover on site. The 13,752 dwarf plantain individuals within the impact footprint 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) occur in the southern portion of the impact footprint. All of the QCB locations within the impact footprint occur in the southern two clusters. No purple owl's clover was observed in the impact area in the 2016 habitat mapping.

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. QCB adults, host plants, and occupied habitat occur on the AMA.

Reptiles

Red-diamond rattlesnake (*Crotalus ruber ruber*)
Status: --/SSC; County Group 2
Distribution: Extreme southeastern Los Angeles (Diamond Bar) into southern San Bernardino County and southern Baja California, Mexico.
Habitat: Favors rocky outcrops in coastal sage scrub, chaparral, creosote bush scrub, and areas dominated by cactus. Also encountered along rocky canyon bottoms and on the flats adjacent to rocky desert foothills.
Status on site: One individual observed in Parcel A within Diegan coastal sage scrub by EDAW (2001b; Figure 10b).

Coast horned lizard (*Phrynosoma blainvillii*)
Status: --/SSC; County Group 2; County MSCP Covered
Distribution: Found in most of western California into Baja California, Mexico.
Habitat: Frequents a variety of habitats from sage scrub and chaparral to coniferous and broadleaf woodlands. Habitat requirements include open areas for sunning, bushes for cover, fine loose soil for rapid burial, and native ant species such as harvester ants (*Pogonomyrmex* sp.).
Status on site: Eleven individuals were observed on Parcels A, E, and west of Parcel A, by EDAW (2001b) and HELIX (Figure 10b).

Belding's orange-throated whiptail (*Aspidoscelis hyperythrus beldingi*)
Status: --/SSC, MSCP Covered, MHCP Covered, MSHCP Covered; County Group 2
Distribution: Southern Orange County and southern San Bernardino County, south through Baja California
Habitat: Coastal sage scrub, chaparral, edges of riparian woodlands, and washes. Also found in weedy, disturbed areas adjacent to these habitats. Important habitat requirements include open, sunny areas, shaded areas, and abundant insect prey base, particularly termites (*Reticulitermes* sp.).
Status on site: No individuals observed but all of the sage scrub, grassland and chaparral habitats on site have the potential to support this species.

Coastal whiptail (*Aspidoscelis tigris stejnegeri*)
Status: --/--; County Group 2
Distribution: Ventura County south in cismontane California to south-central Baja California, Mexico.
Habitat: Open coastal sage scrub, chaparral, and woodlands. Frequently found along edges of dirt roads traversing its habitats. Important habitat components include open, sunny areas, shrub cover with accumulated leaf litter and an abundance of invertebrate prey, particularly termites (*Reticulitermes* sp.).
Status on site: Nine individuals were observed in the northeastern corner (within Diegan coastal sage scrub) of Parcel A and west of Parcel A by EDAW (2001b) and HELIX (Figure 10b). One coastal whiptail was observed on the off-site Otay Crossings Commerce Park parcel (HELIX 2010; Figure 10b).

Birds

Coastal California gnatcatcher (*Polioptila californica californica*)
Status: FT/SSC; County Group 1; County MSCP Covered
Distribution: This subspecies is restricted to coastal southern California from Ventura and San Bernardino Counties, south through Orange and San Diego counties to 30º N in northwestern Baja California, Mexico.
Habitat: Coastal sage scrub.
Status on site: Species historically known to occur on the Proposed Project site as recorded by Ogden (1991). Seven individuals were observed by EDAW (2001b; Figures 7 and 10b) during 2001 surveys generally in canyon bottoms supporting Tecate cypress, laurel sumac, and California buckwheat (EDAW 2001b). CAGN were more abundant in Parcels A, B, C, and E during the 1991 Ogden survey than during the EDAW 2001 survey possibly due to the poorer quality post-fire habitat in 2001, as well as increased disturbance from OHVs. Surveys conducted by HELIX in 2000 were negative (HELIX 2000b). Five pairs of CAGN were found by HELIX in 2011: one pair each in the area west of Parcel A, in the northeastern portion of Parcel A, in the southeastern portion of Parcel B, in the eastern portion of Parcel C, and in the eastern portion of Parcel E (Figures 7 and 10b). Multiple CAGN locations have been recorded in the AMA.

Bell's sage sparrow (*Amphispiza belli belli*)
Status: BCC/WL; County Group 1
Distribution: Breeds from Washington south to Baja California, Mexico and throughout the Great Basin. Winters in small flocks in low deserts of southern California, Arizona, New Mexico, western Texas, and south into Mexico.
Habitat: Occurs in sunny, dry stands of coastal sage scrub and chaparral.
Status on site: Nine individuals were observed/detected in Diegan coastal sage scrub in the central portion of Parcel A by EDAW (2001b) and HELIX (Figure 10b).

Golden eagle (*Aquila chrysaetos*)
Status: Nesting and wintering; BCC, Bald and Golden Eagle Protection Act (BGEPA)/WL, Fully Protected; County Group 1; County MSCP Rare, NE
Distribution: Breeds from Alaska east across northern Canada south to Mexico, Canadian prairie provinces, and Labrador. Winters in southern part of breeding range and in much of U.S., except the southeast.
Habitat: Forages in grassy and open, shrubby habitats. Nest most often on cliffs, less often in trees. Tend to require places of solitude and are usually found at a distance from human habitation.
Status on site: Observed in the central portion of Parcel A by Ogden (1991). The entire Proposed Project site lies within an established golden eagle territory and is considered golden eagle foraging habitat. The closest known nest location is in O'Neal Canyon approximately 1.2 miles (greater than one mile) from the Proposed Project's development footprint (Susan Wynn, Pers. Comm. 2014) and is not within line of site due to existing topography. This topographic separation will minimize noise and activity impacts at the nest location. Preliminary telemetry data from USGS indicates that the O'Neal Canyon pair primarily uses areas east of the project site. Only limited data points to date occur within the eastern portion of the open space and no specific data points occur over the project footprint. It should be noted that the data does not represent a complete picture of the areas utilized by the eagle pair, but does appear to indicate that the project footprint is not being used extensively by the eagle (USGS 2016). The golden eagle was not observed or detected by EDAW (2001b) or HELIX.

Burrowing owl (*Athene cunicularia*)
Status: BCC/SSC (burrow sites); County Group 1; County MSCP Rare, NE
Distribution: The burrowing owl ranges from southern Canada into the western half of the U.S. into Baja California and central Mexico. As of 2007, surveys indicated that, at most, 46 breeding pairs were in the County (Lincer and Bloom 2007 *in* County 2010b). Most of these, about 25 pair, were on East Otay Mesa. The highest concentrations occur along the international border and at the north end of East Otay Mesa (County 2010b).
Habitat: Open areas such as grasslands, pastures, coastal dunes, desert scrub, and edges of agriculture fields.
Status on site: One sighted west of Parcel A (EDAW 2001b) within non-native grassland (Figure 10b); no individuals have been sighted during numerous other (non-focused) surveys conducted on the site over the course of 11 years and during 2012 protocol surveys.

Loggerhead shrike (*Lanius ludovicianus*)
Status: BCC/SSC; County Group 1
Distribution: Breeding occurs in Canada, then migrates to southern U.S. and Mexico for winter.
Habitat: Found in open habitats including grasslands, shrublands, and ruderal vegetation with adequate perching locations.
Status on site: Thirteen individuals were observed/detected in several locations within Parcel A and land west of Parcel A by EDAW (2001b) and HELIX (Figure 10b).

Grasshopper sparrow (*Ammodramus savannarum*)
Status: --/SSC; County Group 1
Distribution: Primarily in the coastal lowland. Most of the population is believed to migrate out of California for the winter.
Habitat: Grassland with sparse brush.
Status on site: Four individuals were observed/detected west of Parcel A by HELIX (Figure 10b). Species not observed by EDAW.

Northern harrier (*Circus cyaneus*)
Status: --/SSC; County Group 1; County MSCP Covered
Distribution: Breeds in North America from Alaska east to subarctic Newfoundland and Labrador and south to the northern U.S. There is a resident population across the U.S. from the Pacific Coast to the Great Lakes. It spends winters in the southwest and along Pacific coast through Mexico and the West Indies to Central America. In San Diego County, the northern harrier's distribution is scattered throughout lowlands but can also include foothills, mountains, and desert.
Habitat: Marshes and open grasslands but often seen flying over shrub-covered hillsides.
Status on site: One individual was observed flying overhead within Parcel A by HELIX (Figure 10b). Species not observed by EDAW.

Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)
Status: --/WL; County Group 1; County MSCP Covered
Distribution: Limited to Ventura County southeast through Los Angeles, Orange, Riverside, and San Diego counties to northwestern Baja California, Mexico.
Habitat: Coastal sage scrub where it occurs on rocky hillsides and in canyons but also may be found in open sage scrub/grassy areas of successional growth (i.e., after a fire).
Status on site: Twenty-two individuals were observed/detected in various locations throughout Parcel A, E, and land west of Parcel A by EDAW (2001b) and HELIX (Figure 10b). Multiple Southern California rufous-crowned sparrow locations have been recorded in the AMA.

Cooper's hawk (*Accipiter cooperii*)
Status: --/WL; County Group 1; County MSCP Covered
Distribution: Occurs year-round throughout San Diego County's coastal slope where stands of trees are present.
Habitat: Oak groves, mature riparian woodlands, and eucalyptus stands or other mature forests.
Status on site: This species was observed flying over the project site during the 2012 burrowing owl survey (HELIX 2012a) and although its exact location was not recorded, it is assumed to use both the impact area and proposed open space.

California horned lark (*Eremophila alpestris actia*)
Status: --/WL; County Group 2
Distribution: Coastal slopes and lowlands from Sonoma County to northern Baja California, Mexico.
Habitat: Sandy beaches, agricultural fields, grasslands, and open areas.
Status on site: Six individuals were observed/detected within Parcel A and west of Parcel A by EDAW (2001b) and HELIX (Figure 10b). Multiple California horned lark locations have recorded in the AMA.

Turkey vulture (*Cathartes aura*)
Status: --/--; County Group 1
Distribution: Observed throughout San Diego County with the exception of extreme coastal San Diego where development is heaviest.
Habitat(s): Foraging habitat includes most open habitats with breeding occurring in crevices among boulders.
Status on site: One individual was observed on Parcel A by HELIX (Figure 10b). Species not observed by EDAW.

Common barn owl (*Tyto alba*)
Status: --/--; County Group 2
Distribution: Resident from southern British Columbia, Dakotas, Michigan, and southern New England southward.
Habitat: Open country, forest edges and clearings, cultivated areas, and cities.
Status on site: One owl was observed in Parcel A by HELIX (Figure 10b).

Mammals

San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
Status: --/SSC; County Group 2
Distribution: Southern Santa Barbara County south on the coastal slope to vicinity of San Quintin, Baja California, Mexico. Localities on eastern edge of its range include Jacumba and San Felipe Valley in San Diego County.
Habitat: Occurs primarily in open habitats including open coastal sage scrub, chaparral, grasslands, croplands, and disturbed areas (if there is at least some shrub cover present).
Status on site: Species was observed/detected at 17 locations within Parcel A and west of Parcel A by EDAW (2001b) and HELIX (Figure 10b). This species has also been observed in the AMA.

Southern mule deer (*Odocoileus hemionus fuliginata*)
Status: --/--; County Group 2; County MSCP Covered
Distribution: Riverside County (Tahquitz Valley) south on the coastal slope to the vicinity of San Quintin, Baja California, Mexico.
Habitat: Coastal sage scrub, riparian and montane forests, chaparral, grasslands, croplands, and open areas if there is at least some scrub cover present. Mule deer activity is crepuscular, and movements are along routes that provide the greatest amount of protective cover.
Status on site: Species was observed/detected at one location within Parcel A in a canyon within Diegan coastal sage scrub by HELIX (Figure 10b). Species not observed by EDAW.

Sensitive Animals with Potential to Occur

In addition to Belding's orange-throated whiptail, discussed above, three other County Group 2 sensitive animal species have a high potential to occur on site: coastal rosy boa (*Lichanura trivirgata roseofusca*), coast patch-nosed snake (*Salvadora hexalepis virgultea*), and mountain lion (*Puma concolor*). Listed or sensitive animal species with potential to occur on the Proposed Project site are listed in Appendix J. The species are grouped into invertebrates and vertebrates

(amphibians, reptiles, birds, and mammals) and alphabetized (by scientific name). Refer to Appendix G for a listing and explanation of status codes.

1.4.7 Wetlands/Jurisdictional Waters

The USACE and CDFW jurisdictional areas and County RPO wetlands on the Proposed Project site occur in portions of cismontane alkali marsh, mule fat scrub, disturbed wetland, tamarisk scrub, non-native grassland, and Diegan coastal sage scrub.

The USACE jurisdictional areas on the site total 0.82 acre, including 0.33 acre of wetlands and 0.49 acre of non-wetland Waters of the U.S. (Figure 11a; Table 2).

RWQCB jurisdiction areas consist of CWA Section 401 and Porter-Cologne Act. The reason there are two types of jurisdiction is that are connected to downstream WUS and areas that are isolated from downstream WUS. The isolated areas are jurisdictional under the Porter-Cologne Act and areas that are connected to downstream WUS area jurisdictional under Section 401 of the CWA. The RWQCB jurisdictional areas on the site total 0.88 acre, including 0.23 acre of cismontane alkali marsh, 0.01 acre of disturbed wetland, 0.09 acre of tamarisk scrub, 0.02 acre of pond, 0.01 acre of intermittent pond, and 0.52 acre of streambed (Figure 11b; Table 2).

The CDFW jurisdictional areas on the site include all USACE jurisdictional areas in addition to riparian habitat not under USACE jurisdiction. Approximately 0.45 acre of CDFW jurisdictional wetlands and 0.53 acre of CDFW-jurisdictional streambed and pond (Figure 11c; Table 2) occur on site.

Table 2
JURISDICTIONAL AREAS ON THE PROPOSED PROJECT SITE (acre[s])

Habitat	USACE	RWQCB	CDFW	County RPO
Wetlands				
Cismontane alkali marsh	0.23	0.23	0.34	0.34
Disturbed wetland	0.01	0.01	0.01	0.01
Tamarisk scrub	0.09	0.09	0.10	0.10
Non-Wetlands				
Drainage/Streambed	0.47	0.52	0.51	0.00
Pond	0.02	0.02	0.02	0.00
Intermittent pond	0.00	0.01	0.00	0.00
TOTAL	**0.82**	**0.88**	**0.98**	**0.45**

County RPO wetlands include all CDFW jurisdictional areas except streambed and pond. Approximately 0.45 acre of County RPO wetlands occurs on site (Figure 11d; Table 2).

1.4.8 Habitat Connectivity, Wildlife Corridors, and Nursery Sites

The Proposed Project site is part of a larger core area extending east and north into existing conserved lands on Otay Mountain and around Otay Lakes. Additionally, two types of wildlife corridors potentially occur on the Proposed Project site: local and regional. Local corridors

provide animals with access to resources such as food, water, and shelter. Animals can use these corridors (such as the hillsides and tributary drainages to the main drainage on site) to travel from riparian to upland habitats and back. Regional corridors allow for animal movement between large core areas of habitat that are regionally important. They include major creeks and rivers, ridges, valleys, and large swaths of undeveloped land. The Proposed Project site lacks major creeks, rivers and valleys typically associated with corridors, but is part of a larger swath of undeveloped land that as described below does allow for wildlife movement throughout the region.

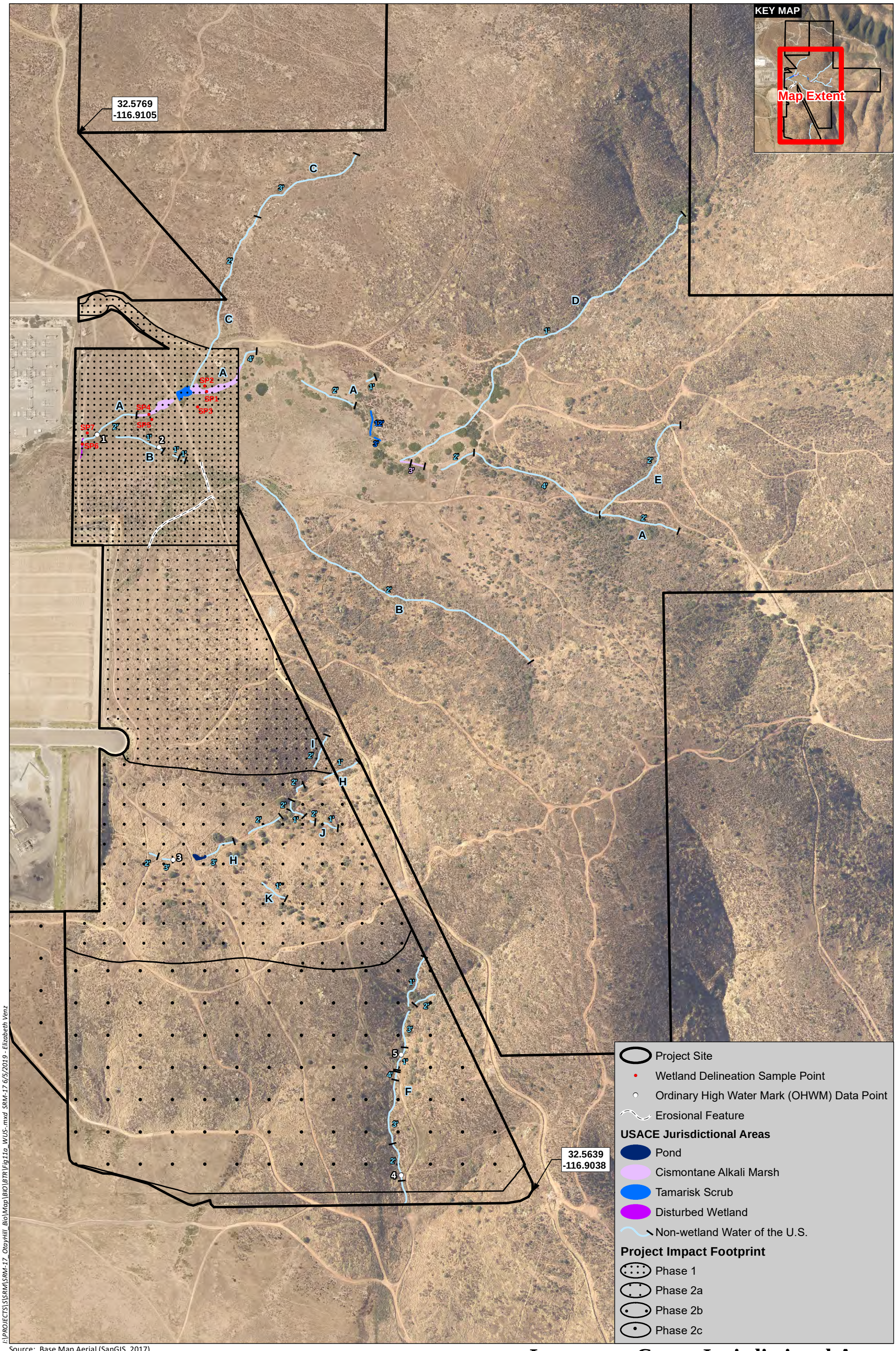
The Proposed Project site serves as a key component enabling gene flow of many sensitive plant and animal species that move between the site and adjacent open space to the north and east. Existing development occurs adjacent to the northwestern portion of the development footprint, and already approved development occurs along the remainder of the western boundary of the development footprint. An existing, private open space parcel associated with the adjacent Otay Crossings Commerce Park to the west does abut the western boundary of the development footprint (Figure 3). The Proposed Project's activities within the development footprint would isolate this open space parcel from the Proposed Project's proposed mitigation open space to the east and other undeveloped land to the southeast and as a result this open space parcel has been added to the project footprint and treated as fully developed.

The presence of several raptor nests on the Proposed Project site demonstrates the importance of the area to raptor species. These species forage in undeveloped lands located both within and outside of the Proposed Project site boundary. Sightings of the federal listed endangered QCB over multiple years on site demonstrate that it contains habitat for this species.

Designated public lands and private open space occur beyond these open space areas to the north and east. Animal species can use most habitats on the Proposed Project site and can access habitats off site without restriction at this time. The site is not part of a regional corridor because existing and approved development along the western boundary limits the movement of animals across the property to the west, but 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 Proposed Project would consist of haul roads and mining-related structures and appurtenances that would create a barrier on the land surface for local wildlife movement but would not restrict regional wildlife movement. Construction activity and extraction operations are expected to impede local wildlife movement slightly given that extraction operations would occur over many years, but the Proposed Project is designed to maintain connectivity of preserved habitats in open space on site with connections to off-site, vacant lands with the exception of the Otay Crossings Commerce Park parcel to the west (Figure 12). Fencing of the extraction operation will direct wildlife away from the quarry and towards open space. The Proposed Project site would continue to provide regional landscape level conservation function.

1.5 APPLICABLE REGULATIONS

Biological resources on the Proposed Project site are subject to regulatory review by the federal government, State of California, and County. The federal government administers non-marine plant- and wildlife-related issues through the USFWS, while the USACE regulates Waters of the U.S. (including wetland and non-wetland). California law relating to wetland, water-related, and



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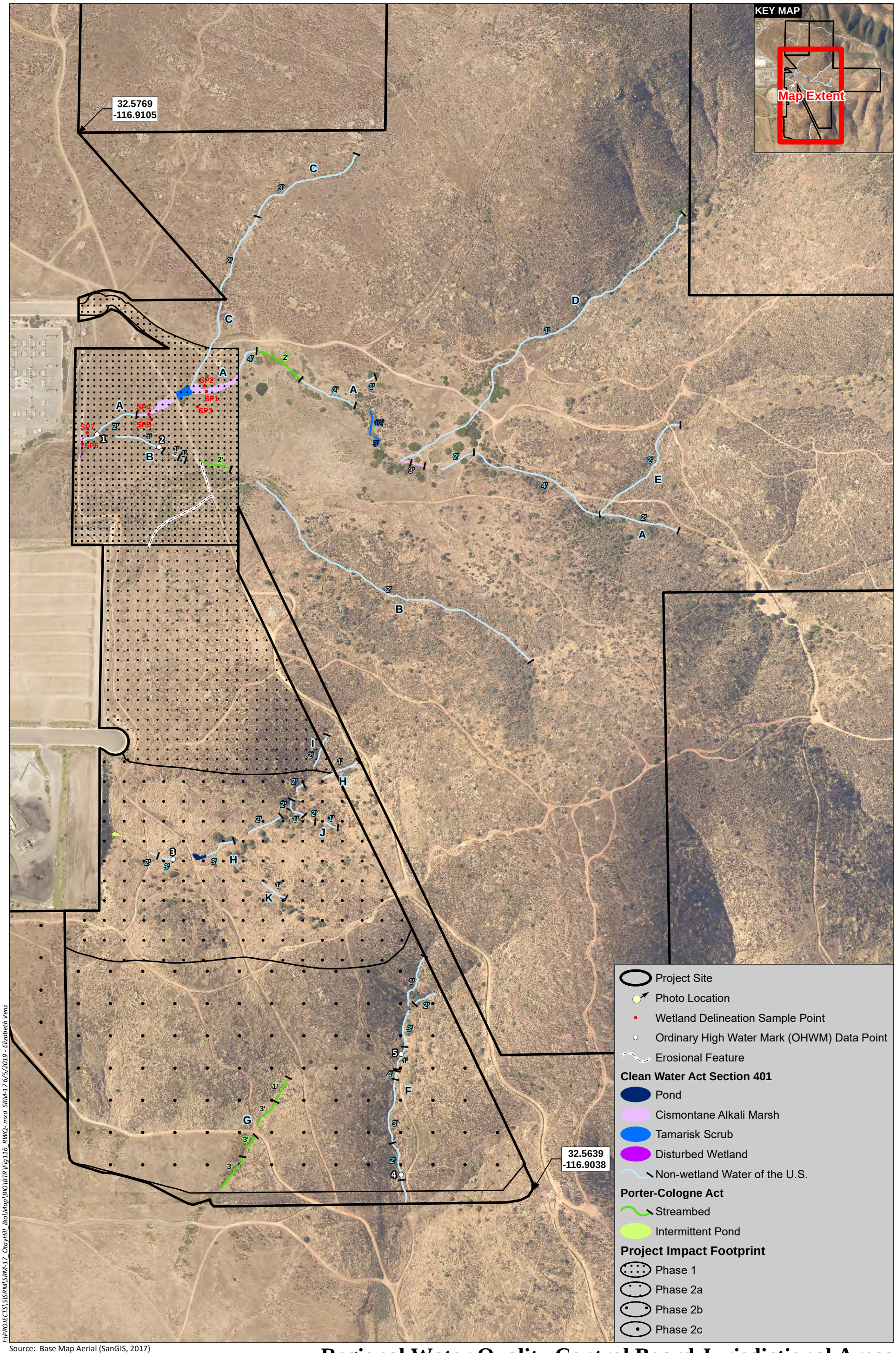
Source: Base Map Aerial (SanGIS, 2017)

Impacts to Corps Jurisdictional Areas

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

Figure 11a



Source: Base Map Aerial (SanGIS, 2017)

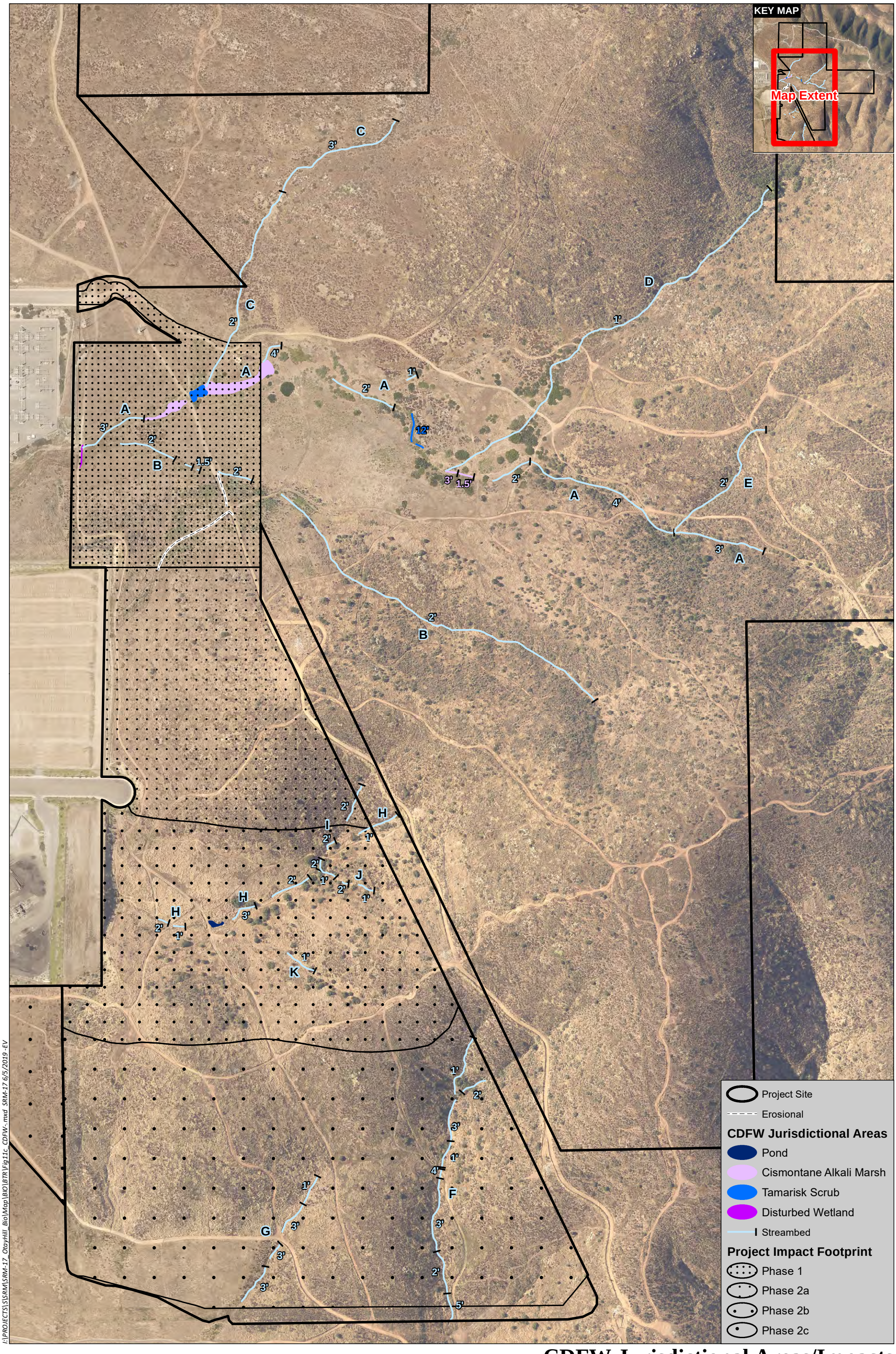
Regional Water Quality Control Board Jurisdictional Areas

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

N 0 400 Feet

Figure 11b

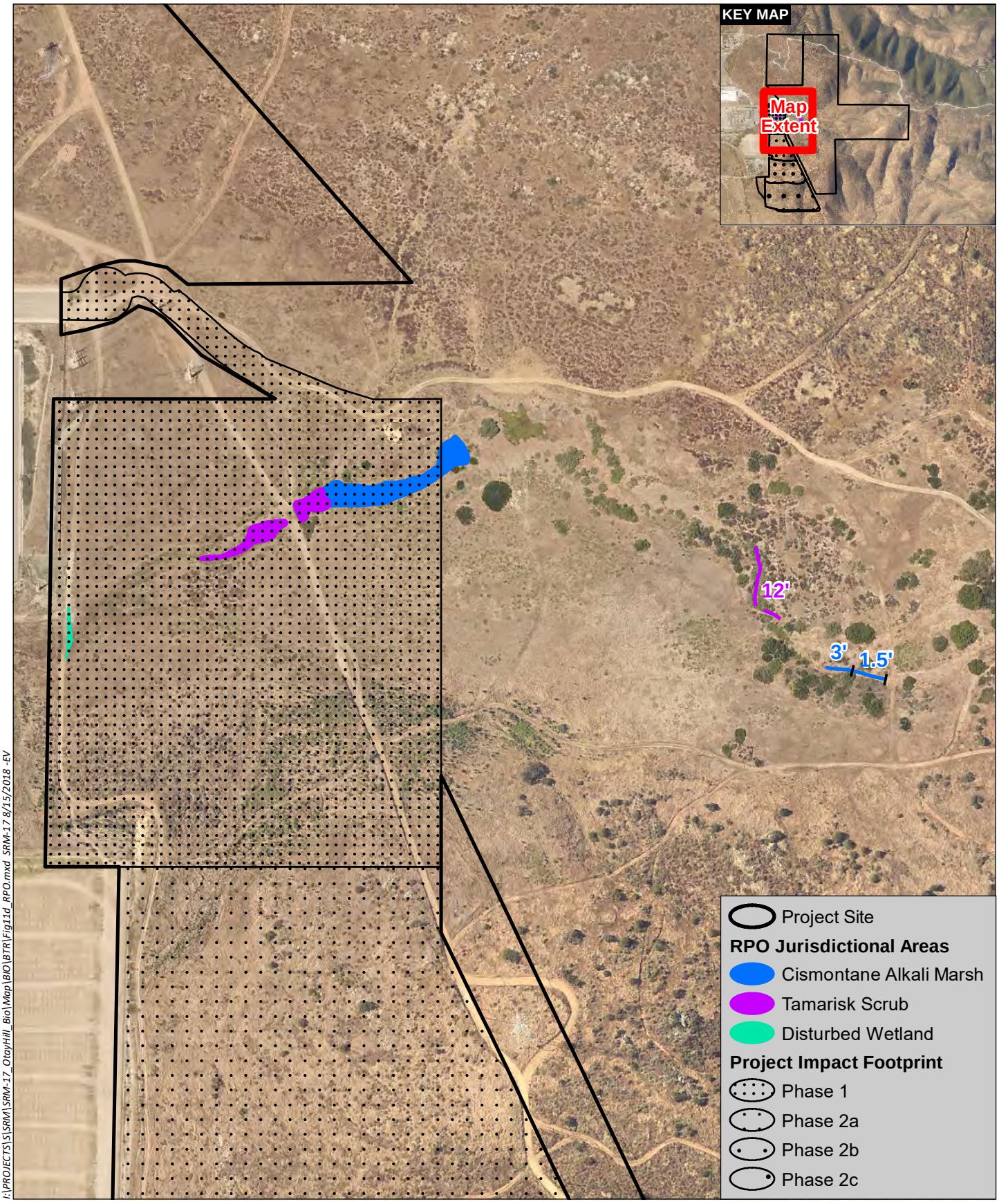


CDFW Jurisdictional Areas/Impacts

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

Figure 11c



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County RPO Wetlands/Impacts

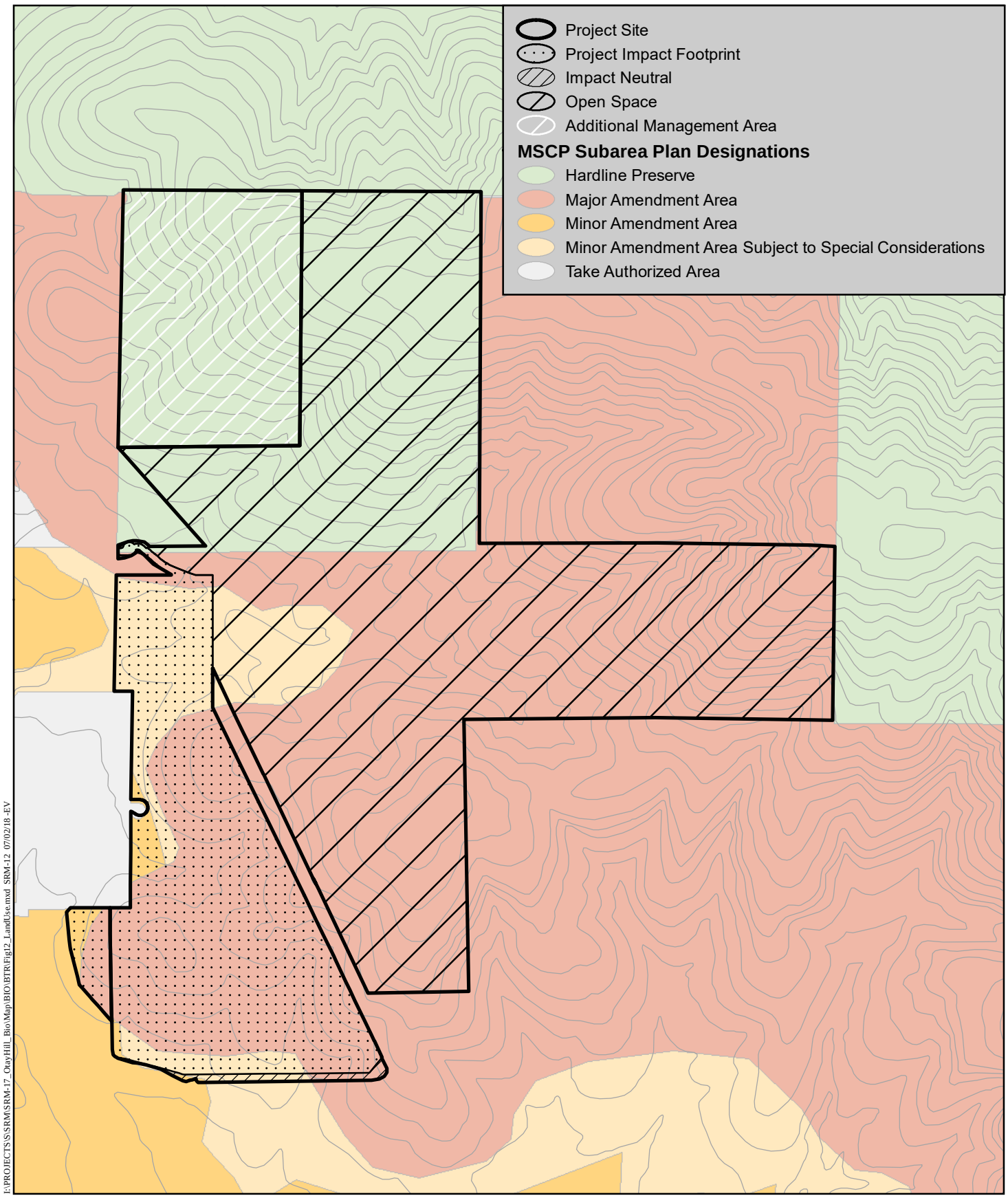
BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

N

0 200 Feet

Figure 11d



MSCP Subarea Plan

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

Figure 12

wildlife issues is administered by CDFW. The County is the lead agency for the CEQA environmental review process in accordance with State law and local ordinances.

Coordination efforts for the Proposed Project have resulted in numerous meetings from 2003 to the present with the USFWS, CDFW, and County.

Laws and regulations that apply include federal Endangered Species Act (ESA), Clean Water Act, CEQA, California Fish and Game Code, County MSCP Subarea Plan, RPO, and BMO. Under CEQA, impacts associated with a Proposed Project or program are assessed with regard to significance criteria determined by the CEQA Lead Agency (in this case, the County) and pursuant to CEQA and State CEQA Guidelines.

1.5.1 Federal Government

Administered by the USFWS, the federal ESA provides the legal framework for the listing and protection of species (and their habitats) that are identified as being endangered or threatened with extinction. Actions that jeopardize endangered or threatened species and the habitats upon which they rely are considered a 'take' under the ESA. Section 9 of the ESA and federal regulation pursuant to Section 4(d) of the ESA prohibit the take of fish and wildlife species listed as endangered and threatened, respectively, without special exemption. Take as defined by the ESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct." Harm is defined as "any act that kills or injures the species, including significant habitat modification." The ESA includes mechanisms that provide exceptions to the Section 9 take prohibitions. These are addressed in the ESA under Section 7 (federal actions) and Section 10 (non-federal actions).

Section 7 describes a process of federal interagency consultation for use when federal actions may adversely affect listed species. A biological assessment is required for any major construction activity if it may affect listed species. In this case, take can be authorized via a letter of biological opinion, issued by the USFWS for non-marine related listed species issues. A Section 7 consultation (formal or informal) is required when there is a nexus between endangered species' (in this case, the CAGN) use of the site and removal of USACE jurisdictional areas. Section 10(a) allows issuance of permits for incidental take of endangered or threatened species with preparation of a habitat conservation plan (HCP). The term "incidental" applies if the taking of a listed species is incidental to, and not the purpose of, an otherwise lawful activity. An HCP demonstrating how the taking would be minimized and how steps taken would ensure the species' survival must be submitted for issuance of Section 10(a) permits. It is likely that a Section 7 permit would be required for the Proposed Project given the nexus between USACE jurisdictional areas and the federal listed QCB, CAGN, and critical habitat for three species as noted below.

The USFWS identifies critical habitat for endangered and threatened species. Critical habitat is defined as areas of land that are considered necessary for endangered or threatened species to recover. The ultimate goal is to restore healthy populations of listed species within their native habitat so they can be removed from the list of threatened or endangered species. Once an area is designated as critical habitat pursuant to the federal ESA, all federal agencies must consult with the USFWS to ensure that any action they authorize, fund, or carry out is not likely to result in

destruction or adverse modification of the critical habitat. Designated critical habitat occurs on the Proposed Project site (including the off-site parcel) as follows: 201.6 acres for Otay tarplant; 403.8 acres for the QCB, and 263.0 acres for the CAGN (Figure 13). As such, a formal Section 7 permit would be required for the Proposed Project for impacts to critical habitat.

The BGEPA (16 USC 668-668c; Eagle Act) prohibits the take of any eagles or any part, nest, or egg thereof. Take is defined to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb." Disturb is further defined in 50 CFR Part 22.3 as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

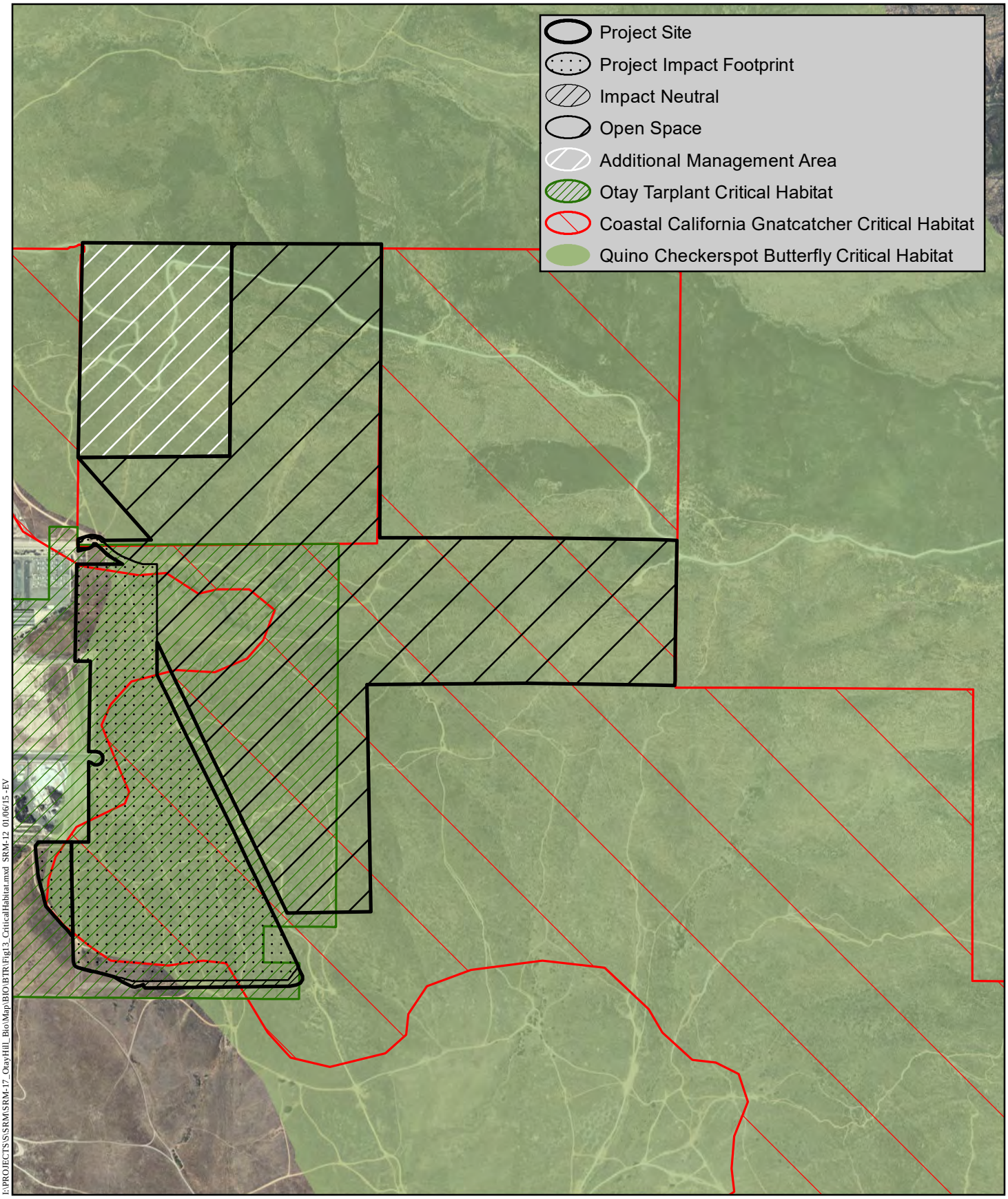
Federal wetland regulation (non-marine issues) is guided by the Rivers and Harbors Act of 1899 and the Clean Water Act (CWA). The Rivers and Harbors Act deals primarily with discharges into navigable waters, while the purpose of the CWA is to restore and maintain the chemical, physical, and biological integrity of all Waters of the U.S. Permitting for projects filling Waters of the U.S. (including wetlands) is overseen by the USACE under Section 404 of the CWA. Projects could be permitted on an individual basis or be covered under one of several approved Nationwide Permits. Individual Permits are assessed individually based on the type of action, amount of fill, etc. and typically require substantial time (often longer than six months) to review and approve, while Nationwide Permits are pre-approved if a project meets appropriate conditions. It is assumed that an Individual Permit would be required for the Proposed Project for removal of USACE jurisdictional areas. The CWA also requires 401 Certification from the RWQCB.

1.5.2 State of California

Primary environmental legislation in California is found in CEQA and its implementing guidelines (State CEQA Guidelines). CEQA is a statute that requires State and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. CEQA applies to certain activities of State and local public agencies. A public agency must comply with CEQA when it undertakes an activity defined by CEQA as a project. A project is an activity undertaken by a public agency or a private activity which must receive some discretionary approval (meaning that the agency has the authority to deny the requested permit or approval) from a government agency which may cause either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment.

Most proposals for physical development in California are subject to the provisions of CEQA, as are many governmental decisions that do not immediately result in physical development (such as adoption of a general or community plan). Every development project that requires a discretionary governmental approval will require at least some environmental review pursuant to CEQA, unless an exemption applies.

The California ESA prohibits take of wildlife and plants listed as threatened or endangered by the California Fish and Game Commission. Take is defined under the California Fish and Game Code as any action or attempt to "hunt, pursue, catch, capture, or kill." Therefore, take under the



Critical Habitat

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

Figure 13

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California ESA does not include "the taking of habitat alone or the impacts of the taking." Rather, the courts have affirmed that under the California ESA, "taking involves mortality."

The CESA allows exceptions to the take prohibition for take that occurs during otherwise lawful activities. The requirements of an application for incidental take under the California ESA are described in Section 2081 of the California Fish and Game Code. Incidental take of State-listed species may be authorized if an applicant submits an approved plan that minimizes and "fully mitigates" the impacts of this take.

The Native Plant Protection Act (NPPA) enacted a process by which plants are listed as rare or endangered. The NPPA regulates collection, transport, and commerce in listed plants. The California ESA follows the NPPA and covers both plants and animals designated as endangered or threatened with extinction. Plants listed as rare under NPPA were also designated rare under the California ESA.

The California Fish and Game Code (Sections 1600 through 1603) requires a CDFW agreement for projects affecting riparian and wetland habitats through issuance of a Streambed Alteration Agreement. It is assumed that the Proposed Project would require a 1602 Agreement from the CDFW for removal of CDFW jurisdictional areas.

1.5.3 County of San Diego

The County regulates natural resources (among other resources) via the MSCP, BMO, and RPO, as discussed below.

Natural Communities Conservation Planning (NCCP) Act and Multiple Species Conservation Program

The Natural Communities Conservation Planning (NCCP) program is a cooperative effort to protect habitats and species. It began under the State's NCCP Act of 1991, legislation broader in its orientation and objectives than the California and federal ESAs. These laws are designed to identify and protect individual species that have already declined in number significantly. The NCCP Act of 1991 and the associated Southern California Coastal Sage Scrub NCCP Process Guidelines (1993), Southern California Coastal Sage Scrub NCCP Conservation Guidelines (1993), and NCCP General Process Guidelines (1998) have been superseded by the NCCP Act of 2003.

The primary objective of the NCCP program is to conserve natural communities at the ecosystem level while accommodating compatible land use. The program seeks to anticipate and prevent the controversies and gridlock caused by species' listings by focusing on the long-term stability of wildlife and plant communities and including key interests in the process.

This voluntary program allows the State to enter into planning agreements with landowners, local governments, and other stakeholders to prepare plans that identify the most important areas for a threatened or endangered species, and the areas that may be less important. These NCCP plans may become the basis for a State permit to take threatened and endangered species in exchange

for conserving their habitat. The resource agencies worked to combine the NCCP program with the federal HCP process to provide take permits for State and federal listed species. Under the NCCP, local governments, such as the County, can take the lead in developing these NCCP plans and become the recipients of State and federal incidental take permits. The County's MSCP Subarea Plan (County et al. 1997) and the Implementing Agreement by and between the resource agencies and County (USFWS et al. 1998) authorize take for 85 specific species (i.e., Covered Species).

County MSCP Subarea Plan

The Proposed Project is located within the South County Segment of the MSCP Subarea Plan. Five Subarea Plan designations occur on the Proposed Project site: Major Amendment Area (263.0 acres), Minor Amendment Area (5.0 acres), Minor Amendment Area Subject to Special Considerations (42.2 acres), Take Authorized Area (0.4 acre), and Hardline Preserve (103.7 acres; Figure 12).

Major Amendment Area (3.1 acres), Minor Amendment Area (1.6 acres), and Take Authorized Area (0.1 acre) occur on the Otay Crossings Commerce Park parcel off site. All of the amendment designations are because the locations of preservation and development areas were not resolved during the MSCP process for all lands within the South County Segment.

The County, as the permittee under the South County Segment of the MSCP, must initiate any request for an amendment to the Subarea Plan, and development of the Proposed Project may only occur after an amendment to the Subarea Plan is completed. All major and minor amendments must conform to the MSCP and Subarea Plan requirements, and requests for amendments must be processed by the USFWS and CDFW in conformity with all applicable laws and regulations (including NEPA, CEQA, and the federal and State ESAs) in effect at the time the request for an amendment is received.

A Habitat Conservation Plan (Appendix K), along with an Environmental Impact Report/Environmental Impact Statement, will provide the information necessary to process the County's request for a Major Amendment.

Major Amendment Areas

Major Amendment Areas include key core habitat areas that are vital to the continued existence of many of the MSCP Covered Species. Take cannot be authorized by the County within this amendment area until the respective amendment process has been completed. Major Amendments must conform to the MSCP and Subarea Plan, as well as the BMO (County 2010a). Major Amendments also must be authorized by the resource agencies and be in conformance with all applicable laws and regulations, including NEPA, CEQA, NCCP Act, and Federal and State ESAs. Major Amendment Areas are shown on Figure 12.

Minor Amendment Areas

Minor Amendment Areas "contain habitat that could be partially or completely eliminated (with appropriate mitigation) without significantly affecting the overall goals of the Subarea Plan." Minor Amendment Areas must meet the criteria and achieve the goals of linkages and corridors described in the Subarea Plan and provide mitigation consistent with the BMO. Development within Minor Amendment Areas requires approval from the USFWS Field Office Supervisor, CDFW NCCP Program Manager, and County Board of Supervisors. Minor Amendment Areas are shown on Figure 12.

Minor Amendment Areas Subject to Special Considerations

Minor Amendment Areas Subject to Special Considerations are limited to the EOMSP (County 1994) area. These are transitional areas located between the Major and Minor Amendment Areas. Minor Amendment Areas Subject to Special Considerations on the Proposed Project site are shown on Figure 12.

Take Authorized Area

Take Authorized Areas are covered under the MSCP, and no additional review process is required for incidental take of MSCP Covered Species. Take Authorized Areas are shown on Figure 12.

Hardline Preserve

Hardline Preserve areas represent precise preserve boundaries established by the Subarea Plan without reference to this Proposed Project. Hardline Preserve on the Proposed Project site is shown on Figure 12 and is identified in section 3.3.3.14 of the Subarea Plan (i.e. O'Neal Canyon and Southerly Foothills Corridor).

MSCP Covered Species

Most federal listed endangered species found locally are covered under the MSCP; however, the QCB is not covered because of "unknown conservation and lack of assurances that the Plan will protect preferred habitat (mesa tops/grassland) and connection to known source populations" (County 1997). Focused surveys for this species on the Proposed Project site between 2000 and 2010 have located many of the existing populations, and the County is working to amend the MSCP to include QCB as a covered species. The Proposed Project would be required to address this species through either the Section 7 or 10(a) process in order to proceed with development.

Biological Mitigation Ordinance

The BMO is the mechanism by which the County implements the Subarea Plan at the project level within the unincorporated area to attain the goals set forth in the Subarea Plan. The BMO contains design criteria and mitigation standards which, when applied to projects requiring discretionary permits, protect habitats and species and ensure that a project does not preclude the viability of the

MSCP Preserve System. In this way, the BMO promotes the preservation of lands that contribute to contiguous habitat core areas or linkages.

Under the BMO, habitat is considered a BRCA if it meets one of the following criteria:

- It is considered a PAMA on the wildlife agencies' PAMA area map;
- It contains biological resources that support or contribute to the long-term survival of sensitive species and is adjacent to the pre-approved mitigation area;
- It is part of a regional linkage/corridor;
- It is mapped as Very High or High shown on the Habitat Evaluation Map and links significant patches of habitat;
- It is part of a patch of habitat greater than 500 acres in area that contributes to the conservation of sensitive species; or
- It supports a high number of sensitive species and is contiguous to undisturbed habitats.

As stated above, 88 percent of the Proposed Project site has been designated as High or Very High value habitat by the County; therefore, it meets the criteria of a BRCA. As such, the Proposed Project site is subject to the BMO's avoidance and mitigation requirements. According to the BMO, where complete avoidance of County List A and B sensitive plants 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 a population on a site.

Resource Protection Ordinance

The County regulates natural resources (among other resources) via the RPO, the regulations of which cover wetlands, sensitive plants and animals, sensitive habitats, and habitats containing sensitive animals or plants as sensitive biological resources. Wetland habitats are defined per the RPO, as described in Section 1.3.4, above. Sensitive habitat lands are identified by the RPO as lands that "support unique vegetation communities, or habitats of rare or endangered species or sub-species of animals or plants as defined by Section 15380 of the CEQA Guidelines." It is the intent of the RPO to increase the preservation and protection of the County's unique topography, natural beauty, biological diversity, and natural and cultural resources. Pursuant to Section 86.605(d) of the RPO, the Proposed Project would be exempt from RPO requirements provided that the following mitigation measures are required as conditions of the Major Use Permit:

a. Any wetland buffer area shall be restored to protect environmental values of adjacent wetlands
b. In a floodplain, any net gain in functional wetlands and riparian habitat shall occur in or adjacent to the area of extraction
c. Native vegetation shall be used on steep slopes lands to revegetate and landscape cut and fill areas in order to restore substantially original habitat value, and slopes shall be graded

to produce contours and soils that reflect natural landform consistent with the surrounding area; and

d. Mature riparian woodland may not be destroyed or reduced in size due to sand, gravel, or mineral extraction.

The development footprint would remove 0.27 acre of cismontane alkali marsh, and the remaining 0.07 acre of the cismontane alkali marsh area is proposed to be preserved in open space. Additionally, the development footprint would remove 0.06 acre of tamarisk scrub and 0.01 acre of disturbed wetland. There is no feasible buffer between the development footprint and the avoided cismontane alkali marsh since it is immediately adjacent; however, a fence to keep people out of the open space would be installed. The other RPO wetlands (tamarisk scrub and another small area of cismontane alkali marsh) are either of low sensitivity (disturbed wetlands and tamarisk scrub) or occur within the proposed open space at approximate distances of 500 to 700 feet from the development footprint. These wetlands occur within larger areas of non-native grassland and Diegan coastal sage scrub where no buffer restoration would be needed to protect their environmental values. Therefore, Measure "a" would not be required, although the proposed open space will benefit from invasive plant removal pursuant to the proposed RMP. The site is not located within a floodplain. As such, Measure "b" would not be required. Given that mature riparian woodland does not occur on site, Measure "d" also would not be required. Measure "c" is required for the Proposed Project and revegetation with native vegetation would be required on slopes between the quarry and proposed open space as outlined in the Otay Hills Project Revegetation Plan prepared by EnviroMINE (Appendix C and Sheet 7 of the Reclamation Plan).

2.0 PROJECT EFFECTS

Direct impacts are immediate impacts resulting from permanent habitat removal. Direct impacts were quantified by overlaying the limits of all Proposed Project grading, blasting, and extraction on the biological resources map of the development footprint. Since the off-site Otay Crossings Commerce Park parcel, would be functionally isolated from other open space upon implementation of the Proposed Project, this parcel has been added to the project footprint and treated as fully developed. Indirect impacts are all actions that are not direct removal of habitat, but affect the surrounding biological resources either as a secondary effect of the direct impacts or as the cause of degradation of a biological resource over time. Projects can have a wide variety of indirect impacts, depending on the nature of the project, such as edge effects, animal behavioral changes, and errant construction. Cumulative impacts are those caused by numerous projects in the region and their additive effect of multiple direct and indirect impacts to biological resources over time.

It should be noted that although impacts are quantified as a single static number, impacts would actually be implemented over time. Indirect impacts also would occur over the life of the Proposed Project until the site is fully reclaimed.

2.1 SENSITIVE PLANT SPECIES

This section analyzes direct removal of the sensitive plant species on the Proposed Project site and on the off-site Otay Crossings Commerce parcel. Locations of County List A and B sensitive plant species and County List D sensitive plant species in relation to the Proposed Project are shown on Figures 9a and 9b. Relevant data collected during field surveys include the approximate number (population size) and location of sensitive plant species. The approximate number of individuals is used for assessing the overall magnitude of an impact rather than for describing the precise population size. Three County MSCP Subarea Plan narrow endemic species (Otay tarplant, Dunn's mariposa lily, and variegated dudleya) and six additional County List A and B sensitive species (San Diego goldenstar, San Diego barrel cactus, San Diego marsh-elder, Tecate cypress, Munz's sage, and Orcutt's bird's beak), were observed on the site (San Diego barrel cactus was also observed on the off-site parcel). Impacts to and preservation of each of these species is discussed below in Table 3. Table 4 breaks out impacts by phase.

Table 3 SENSITIVE PLANT SPECIES ANALYSIS						
Species	**Status**	**Existing On Site**	**Total in Development Footprint**	**Preserved On Site**	**Percent Preserved On Site**	**Comments on Distribution on Site**
Otay tarplant (*Deinandra conjugens*)	FT/SE MSCP NE County List A Designated CH*	540	30	510	94.4	Found in four primary populations on site.
Dunn's mariposa lily (*Calochortus dunnii*)	--/SR MSCP NE County List A	2	0	2	100	Not common on site. Few individuals on Parcel B.
Variegated dudleya (*Dudleya variegata*)	MSCP NE County List A	4,987	120	4,867	97.6	Limited mostly to Parcel A and small spot locations in other areas. Occurs in six primary populations on site.
San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*)	MSCP Covered County List A	12,388	1,214	11,174	90.2	Occurs on north-facing slopes on Parcel A, west of Parcel A, Parcel C and Parcel E. Occurs in six primary populations on site.
Summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)	County List A	8	0	8	100	Occurs in the eastern portion of Parcel A.
Gander's pitcher sage (*Lepechinia ganderi*)	MSCP NE County List A	92	0	92	100	Found on Parcel C during 2011 surveys.
San Diego barrel cactus (*Ferocactus viridescens*)	MSCP Covered County List B	337 (25 more in the off-site parcel)	171 (25 more in the off-site parcel)	166	49.3 (0 in the off-site parcel)	Relatively common on south-facing slopes on site. Also present on the off-site Otay Crossings Commerce Park parcel.
San Diego marsh-elder (*Iva hayesiana*)	County List B	290	142	148	51	Occurs in Parcels A.

Table 3 (cont.)
SENSITIVE PLANT SPECIES ANALYSIS

Species	Status	Existing On Site	Total in Development Footprint	Preserved On Site	Percent Preserved On Site	Comments on Distribution on Site
Tecate cypress (*Hesperocyparis* [*Cupressus*] *forbesii*)	MSCP Covered County List A	78	0	78	100	Found in scattered locations on site.
Munz's sage (*Salvia munzii*)	County List B	3,915	0	3,915	100	Found abundantly on Parcel A, B, and E.
Orcutt's bird's beak (*Cordylanthus orcuttianus*)	MSCP Covered County List B	21	0	21	100	A small population was observed on Parcel B.
San Diego needlegrass (*Achnatherum diegoense*)	County List D	1,596	293	1,303	81.6	Occurs at western edge of Parcel A and in Parcel B.
Western dichondra (*Dichondra occidentalis*)	County List D	10	3	7	70	Sparsely located on Parcels A and B, and west of Parcel A.
Palmer's grapplinghook (*Harpagonella palmeri*)	County List D	100	0	100	100	Occurs in Parcel A.
Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)	County List D	21	11	10	47.6	Occurs in the northwest corner of Parcel A.
Coulter's matilija poppy (*Romneya coulteri*)	County List D	51	0	51	100	Occurs in Parcel C.
San Diego sunflower (*Viguiera laciniata*)	County List D	46,272 (50 more in the off-site parcel)	9,328 (50 more in the off-site parcel)	36,944	79.8 (0 in the off-site parcel)	Occurs on Parcels A, B, land west of Parcel A. and on off-site Otay Crossings Commerce Park parcel.
Ashy spike-moss (*Selaginella cinerascens*)	County List D	268 (2 more in the off-site parcel)	221 (2 more in the off-site parcel)	47	17.5 (0 in the off-site parcel)	Occurs on Parcel A and land west of Parcel A including the off-site Otay Crossings Commerce Park parcel.

*Designated Critical Habitat occurs on site

Table 4
SENSITIVE PLANT SPECIES IMPACT ANALYSIS BY PHASE

Species	Existing On Site	Phase 1	Phase 2a	Phase 2b	Phase 2c	Total in Development Footprint
Otay tarplant (*Deinandra conjugens*)	540	0	30	0	0	30
Dunn's mariposa lily (*Calochortus dunnii*)	2	0	0	0	0	0
Variegated dudleya (*Dudleya variegata*)	4,987	0	0	120	0	120
San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*)	12,388	400	0	813	1	1,214
Summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)	8	0	0	0	0	0
Gander's pitcher sage (*Lepechinia ganderi*)	92	0	0	0	0	0
San Diego barrel cactus (*Ferocactus viridescens*)	337 (25 more in the off-site parcel)	0	44	18	109	171 (25 more in the off-site parcel)
San Diego marsh-elder (*Iva hayesiana*)	290	142	0	0	0	142
Tecate cypress (*Hesperocyparis* [*Cupressus*] *forbesii*)	78	0	0	0	0	0

Table 4 (cont.)
SENSITIVE PLANT SPECIES ANALYSIS BY PHASE

Species	Existing On Site	Phase 1	Phase 2a	Phase 2b	Phase 2c	Total in Development Footprint
Munz's sage (*Salvia munzii*)	3,915	0	0	0	0	0
Orcutt's bird's beak (*Cordylanthus orcuttianus*)	21	0	0	0	0	0
San Diego needlegrass (*Achnatherum diegoense*)	1,596	0	1	214	75	293 including 3 in impact neutral area
Western dichondra (*Dichondra occidentalis*)	10	0	1	1	1	3
Palmer's grapplinghook (*Harpagonella palmeri*)	100	0	0	0	0	0
Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)	21	11	0	0	0	11
Coulter's matilija poppy (*Romneya coulteri*)	51	0	0	0	0	0
San Diego sunflower (*Viguiera laciniata*)	46,272 (50 more in the off-site parcel)	**	**	**	**	9,328 (50 more in the off-site parcel)
Ashy spike-moss (*Selaginella cinerascens*)	268 (2 more in the off-site parcel)	0	26	31	37	94 (2 more in the off-site parcel)

*Designated Critical Habitat occurs on site
** Phased impacts not calculated for this species since it is abundant throughout the site.

2.1.1 Otay Tarplant

Status: Otay tarplant is a federal threatened and State endangered species as well as an MSCP covered species; therefore, no federal or State permits are required for impacts that comply with the MSCP Specific Management Directives, BMO, and MCSP Preserve Area.

MSCP Discussion: This species is MSCP covered because 66 percent of major populations would 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 Resource Management Plan (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.

Existing Populations Discussion: As previously discussed, approximately 10 individuals occur within Parcel A according to surveys conducted by HELIX.

According to the Botanical Technical Report for the EOMSP Amendment Area (EDAW 2001a), 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 Proposed Project site and include 530 individuals mapped by EDAW (2001a). A total of four primary populations occur on site. The site supports 23.27 acres of potential habitat for Otay tarplant.

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 Proposed 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 site according to the CNDDB (2006) and a second population of approximately 800 individuals occurs in six locations within grasslands southeast of the site (EDAW 2001a; Figure 14).

Additionally, Otay tarplant was seeded over a gas pipeline that runs just inside the southern and southwestern borders of the Proposed Project site subsequent to the 2011 surveys.

Impacts: Approximately 30 of the 540 individuals (5.5 percent) of Otay tarplant observed on site within one of the four primary populations would be removed by the Proposed Project (Figure 9a; Table 3). It is assumed that the seeded Otay tarplant would be removed, as well. Potential habitat totaling 16.69 acres would be removed. In addition, removal of 100.7 acres of Otay tarplant designated critical habitat would occur on site (2.3 acres would be impact neutral), and 4.7 acres of removal of this critical habitat would occur on the off-site Otay Crossings Commerce Park

parcel, for a total of 105.5 acres; however, Otay tarplant was not observed in the off-site parcel and is not expected to occur because of inappropriate soils (HELIX 2010).

MSCP Consistency: 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. Removal of 30 of 540 individuals (5.6 percent) of Otay tarplant do not exceed the 20 percent encroachment limit. The BMO requires mitigation for impacts to this species. 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 prior to Phase 2a and spread within suitable habitat in the proposed on-site open space. The applicant does not propose mitigation for the Otay tarplant seeded over the gas pipeline since the occurrence of the species is not natural.

No further mitigation is required because the populations on site do not meet the MSCP threshold for major populations (1,000 individuals) for this species, 94.4 percent of the population is conserved on site in viable open space, and the on-site populations were not discussed in the MSCP 1995 and 1996 Species Evaluations (USFWS and CDFW 1996).

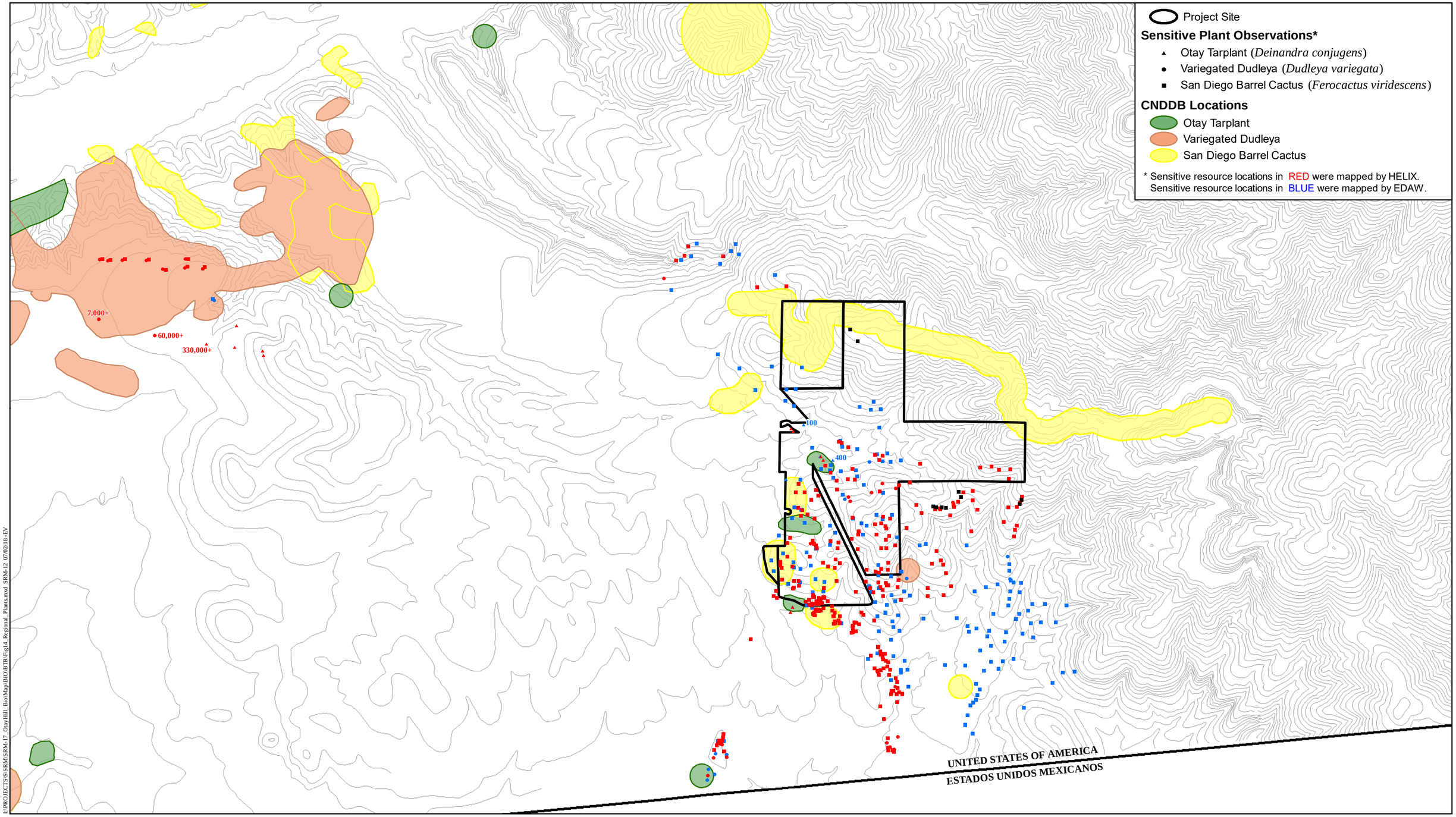
As stated above in the MSCP discussion, this species is MSCP covered because 66 percent of major populations would be conserved. As stated above, the site does not support any major populations. Also, area-specific management directives must include specific measures for monitoring of populations, adaptive management of preserved populations, and specific measures to protect against detrimental edge effects to this species. These directives would be followed through implementation of an RMP (Appendix L) that the applicant proposes to fund that includes measures to protect and enhance the preserved populations in the proposed on-site open space.

For these reasons, the Proposed Project's mitigation is considered appropriate to meet the goals of the MSCP for this species.

2.1.2 Variegated Dudleya

Status: Variegated dudleya is a County MSCP Subarea Plan narrow endemic species; therefore, no federal or State permits are required for impacts that comply with the MSCP Specific Management Directives, BMO, and MCSP Preserve Area.

MSCP Discussion: This species is covered under the MSCP because 56 percent of major populations and 75 percent of known localities would be conserved. 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.



Regional Otay Tarplant, Variegated Dudleya, and San Diego Barrel Cactus Locations

Existing Populations Discussion: As previously discussed, approximately 1,887 individual variegated dudleya were observed on Parcel A and west of Parcel A by HELIX in 2000.

According to the Botanical Technical Report (EDAW 2001a), approximately 6,100 individuals of variegated dudleya in six locations within grasslands in the EOMSP southeastern portion and sage scrub in the eastern EOMSP portion were mapped during surveys conducted by EDAW (2001a; Figure 14). Of these 6,100 individuals of variegated dudleya, approximately 3,100 individuals occur on site and are included in the total observed as this location is not duplicative with HELIX data. As such, 4,987 individuals are discussed in this report. A total of six primary populations and 62.17 acres of potential habitat occur on site.

Approximately 68,650 individuals of variegated dudleya occur within the Lonestar Ridge project site located approximately two miles west of Proposed Project site, which represents one of the largest known populations of this species (Figure 14; HELIX 2006).

Impacts: The Proposed Project would remove approximately 120 individuals of the 4,987 individuals and one of the six primary populations of variegated dudleya (2.4 percent) on site (Figure 9a). The Proposed Project would remove 13.06 acres of potential habitat.

MSCP Consistency: 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. Removal of 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 applicant proposes to preserve 4,867 individuals of variegated dudleya (97.6 percent of the population on site), 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. Translocation is detailed in Appendix C of the Habitat Conservation Plan. The applicant proposes to fund implementation of an RMP (Appendix L) that includes measures to protect and enhance the preserved populations. Therefore, the Proposed Project's mitigation would be considered consistent with the goals of the MSCP for this species.

2.1.3 San Diego Goldenstar

Status: San Diego goldenstar is a County MSCP Subarea Plan covered species; therefore, no federal or State permits are required for impacts that comply with the MSCP Specific Management Directives, BMO, and MCSP Preserve Area.

MSCP Discussion: This species is MSCP covered because eight of 11 major populations, 125 of 144 occurrences, and 38 percent of the grassland vegetation community would be conserved. Area-specific management directives would include monitoring of the transplanted populations(s) and specific measures to protect against detrimental edge effects to this species.

Existing Populations Discussion: As stated above, this species was observed on the Proposed Project site by Ogden (1991), EDAW (2001a), and HELIX in 2000/2001 and 2004 with a total population estimate of 12,388 individuals. According to the Botanical Technical Report (EDAW 2001a), San Diego goldenstar was observed in high densities within grassland and sage scrub habitats in the eastern portion of the EOMSP area during 2001 surveys conducted by EDAW. It is assumed that at least 200,000 individuals occur within the EOMSP area (EDAW 2001a), some of which occur on site. A total of six primary populations occur on site. The site includes 82.53 acres of potential habitat.

Impacts: The Proposed Project would remove approximately 1,214 individuals of San Diego goldenstar 9.8 percent) of the approximately 12,388 individuals and one primary population on site (Figure 9a). Potential habitat totaling 13.06 acres would be removed.

MSCP Consistency: 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. Removal of 1,214 of 12,388 individuals (9.8 percent) of San Diego goldenstar do not exceed the 20 percent encroachment limit. The applicant proposes to preserve 11,174 individuals of San Diego goldenstar (90.2 percent of the population on site and five of the six primary populations). 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 prior to implementation of mining activities within that phase.

  Phase 1 – at least 400
  Phase 2a – at least 813
  Phase 2b – at least 1

Translocation is detailed in Appendix C of the Habitat Conservation Plan. The applicant proposes to fund implementation of an RMP (Appendix L) that includes measures to protect and enhance the preserved and/or translocated populations. Therefore, the Proposed Project's mitigation would be considered consistent with the goals of the MSCP for this species.

2.1.4 San Diego Barrel Cactus

Status: San Diego barrel cactus is a County MSCP Subarea Plan covered species; therefore, no federal or State permits are required for impacts that comply with the MSCP Specific Management Directives, BMO, and MCSP Preserve Area.

MSCP Discussion: This species is covered under the MSCP because 81 percent of major populations would 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.

Existing Populations Discussion: As previously discussed, this species was observed on site by Ogden (1991). Approximately 700 San Diego barrel cacti occur throughout the sage scrub and chaparral communities in the eastern portions of the EOMSP area according to the Botanical Technical Report (EDAW 2001a), which includes the site. Approximately 635 individuals were observed on Parcels A, B, C, E, and land west of Parcel A by HELIX during the 2000 and 2004 sensitive plant surveys. Approximately 109 individuals were observed on land west of Parcel A during 2006 plant surveys. Approximately 337 individuals were observed on Parcels A, B, C, E, and land west of Parcel A 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 along with the 25 individuals that occur on the off-site Otay Crossings Commerce Park parcel.

Impacts: Approximately 171 individual San Diego barrel cacti (50.7 percent) on site would be removed by the Proposed Project and 25 individuals (100 percent) would be removed off site (Figure 9a). Combining the removal of 196 individuals out of a total of 362 individuals the total percent of the population removed is 54.1 percent.

MSCP Consistency: The Proposed Project would result in removal of 196 individuals of San Diego barrel cactus, which is not consistent with the 80 percent avoidance criterion of the BMO. Avoidance and proposed preservation of San Diego barrel cactus on site would total 166 individuals.

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. Since the encroachment does exceed 20 percent, the Proposed Project needs an exception to the BMO for this species under section 86.509(b):

> Exception to The Requirements of This Ordinance. In certain cases, during CEQA review and/or design of a project, site specific physical conditions, including but not limited to geology, slope, or location of infrastructure, may be identified which make it infeasible for the project to meet all the goals and criteria or other requirements in the Subarea Plan, but the project could be constructed without compromising the conservation of species and habitats pursuant to the Subarea Plan. The exception shall be the minimum necessary to afford relief and accommodate development. In such instances, the County may grant an exception to this Chapter in conjunction with granting an exception to the Subarea Plan. An exception to the Subarea Plan requires the concurrence of the Wildlife Agencies.

The Proposed Project qualifies for an exception because the applicant has spent several years working with County staff and the Wildlife Agencies on an adequate biological mitigation strategy to address sensitive biological habitat on the Proposed Project site. Numerous meetings have been held with County staff, the Wildlife Agencies, and the applicant between 2005 and 2018 to address these concerns. Initially, the Proposed 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 potential biological impacts from that footprint. The applicant worked with staff to reduce the Proposed Project site to 414.4 acres and development footprint to 102.7 acres (with an additional 4.7 acres off-site considered directly impacted because the development footprint would isolate the off-site open space area from other open space). The resulting development footprint, which allows for adequate preservation of many other species in the proposed open space, still unavoidably removes more than 20 percent of the total number of San Diego barrel cacti on (and off) site.

Where such impacts are allowed, the BMO requires mitigation at a 1:1 to 3:1 ratio. Because the Project encroaches on 54.1 percent (or just over half) of the population, a mitigation ratio of 2:1 is considered appropriate (2:1 is midway between 1:1 and 3:1, and San Diego barrel cactus is a County List B species).

Mitigation is proposed to consist of salvage of the 196 San Diego barrel cacti removed on and off site and relocation of these individuals to areas of appropriate habitat on the Proposed Project site, as well as planting an additional 196 barrel cacti on site for a total of 392 individual cacti planted. The cacti translocation would be subject to a County-approved Barrel Cactus Translocation Plan, Appendix C of the Habitat Conservation Plan. The applicant proposes to fund implementation of an RMP (Appendix L) that includes measures to protect and enhance the preserved and relocated populations of San Diego barrel cactus. Therefore, the Proposed Project's mitigation would be considered consistent with the goals of the BMO and MSCP for this species.

2.1.5 San Diego Marsh-elder

Status: San Diego marsh-elder is a County List B species and is considered sensitive by the CNPS.

MSCP Discussion: This species is not covered under the MSCP; therefore, no management directives have been established.

Existing Populations Discussion: 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 2011.

Impacts: Approximately 142 individuals of San Diego marsh-elder (49 percent) on site would be removed upon implementation of the Proposed Project (Figure 9a).

MSCP Consistency: The applicant proposes to preserve 148 individuals (51 percent) of the population, which does not meet the BMO avoidance criterion of 80 percent. The Proposed Project qualifies for an exception for this species for the same reasons as the San Diego barrel cactus (see Section 2.1.4) That is, summarily, that the reduced development footprint, which allows for

adequate preservation of many other species in the proposed open space, still unavoidably removes more than 20 percent of the total number of San Diego marsh-elder.

The BMO requires mitigation for impacts to this species; a mitigation ratio of 2:1 is considered appropriate (284 individuals). Proposed mitigation includes planting 284 individuals within the proposed biological open space. The applicant proposes to fund implementation of an RMP (Appendix L) that includes measures to protect and enhance the preserved or created populations. Therefore, the Proposed Project's mitigation would be considered consistent with the goals of the MSCP and BMO.

2.1.6 Dunn's Mariposa Lily

No impacts to Dunn's mariposa lily would occur upon implementation of the Proposed Project.

2.1.7 Tecate Cypress

No impacts to Tecate cypress would occur upon implementation of the Proposed Project.

2.1.8 Gander's Pitcher Sage

No impacts to Gander's pitcher sage would occur upon implementation of the Proposed Project.

2.1.9 Munz's Sage

No impacts to Munz's sage would occur upon implementation of the Proposed Project.

2.1.10 Orcutt's Bird's Beak

No impacts to Orcutt's bird's beak would occur upon implementation of the Proposed Project.

2.1.11 Summer Holly

No impacts to summer holly would occur upon implementation of the Proposed Project.

2.1.12 Remaining Sensitive Plant Species

Removal of the following County List C and D species would occur upon implementation of the Proposed Project: San Diego needlegrass, western dichondra, southwestern spiny rush, San Diego sunflower, and ashy spike-moss. The latter two species occur on the off-site Otay Crossings Commerce Park parcel. No removal of Coulter's matilija poppy or Palmer's grapplinghook would occur.

2.2 SENSITIVE ANIMAL SPECIES

This section analyzes direct impacts to the two federal listed species (endangered QCB and threatened CAGN) as well as two other sensitive animal species (burrowing owl and golden eagle)

known to occur on site or with known foraging habitat on site. Removal of QCB and its associated larval host plants are shown on Figure 10a, and removal of locations of all other sensitive animal species are shown on Figure 10b. An analysis is provided in Table 5. Removal of habitat for coastal rosy boa, coast patch-nosed snake, and mountain lion, Group 2 species with a high potential to occur on site, are expected to be similar to Belding's orange-throated whiptail.

Table 5
SENSITIVE ANIMAL SPECIES ANALYSIS

Species	Status	Observed On Site[+]	Total in Development Footprint[+]	Preserved On Site[+]	Percent Preserved On Site[+]	Comments on Distribution On Site
Quino checkerspot butterfly (*Euphydryas editha quino*)	FE/-- County Group 1 Designated CH[1]	57 (409.5)	5 (104.9)	52 (304.6)	91 (74)	Observed throughout much of the site in 2001 and 2008; sightings of species occurred less often in other years.
Red-diamond rattlesnake (*Crotalus ruber ruber*)	--/SSC County Group 2	1 (392)	0 (96.3)	1 (295.4)	100 (75)	Observed in the Parcel A.
Coast horned lizard (*Phrynosoma blainvillii*)	--/SSC County Group 2	11 (392)	4 (96.3)	7 (295.4)	63.6 (75)	Observed in Parcels A, E, and west of Parcel A.
Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*)	--/SSC County Group 2	Assumed present throughout site (392)	Undetermined (96.3)	Undetermined (295.4)	75 percent based on preservation of 75 percent of suitable habitat (75)	Not observed but expected to occur over the entire site
Coastal whiptail (*Aspidoscelis tigris stejnegeri*)	--/-- County Group 2	9 (1 more in the off-site parcel) (392)	2 (1 more in the off-site parcel) (96.3)	7 (295.4)	77.8 (0 in the off-site parcel) (75)	Observed in Parcel A and west of Parcel A and on the off-site Otay Crossings Commerce Park parcel.
Coastal California gnatcatcher (*Polioptila californica californica*)	FT/SSC County Group 1 Designated CH[1]	5 pair (292)	1 pair (66.7)	4 pair (224.3)	80 (77)	Acreage reported is for Diegan coastal sage scrub and coastal sage-chaparral scrub. One pair observed in development footprint in 2011; four pairs observed in northeastern portion of the site.
Burrowing owl (*Athene cunicularia*)	BCC/SSC County Group 1	1[2] (48.6)	1[2] (31.6)	0 (16.8)	0 (35)	One sighting west of SDG&E easement by EDAW (2001a).

Table 5 (cont.)
SENSITIVE ANIMAL SPECIES ANALYSIS

Species	Status	Observed On Site	Total in Development Footprint	Preserved On Site	Percent Preserved On Site	Comments on Distribution On Site
Golden eagle (*Aquila chrysaetos*)	BCC, BGEPA/ WL, Fully Protected County Group 1	1 (340.6)	0[3] (98.3)	1 (242.3)	100 (75)	A nesting pair reported in O'Neal Canyon east of the site. Site lies within the pair's territory, and the entire site and off-site Otay Crossings Commerce Park parcel is eagle foraging habitat. No direct impacts to the nesting site would occur.
Bell's sage sparrow (*Amphispiza belli belli*)	BCC/WL County Group 1	9 (392)	0 (96.3)	9 (295.4)	100 (75)	Observed/detected within central portion of Parcel A.
Loggerhead shrike (*Lanius ludovicianus*)	BCC/SSC County Group 1	13 (340.6)	3 (98.3)	10 (242.3)	76.9 (71)	Observed/detected in several locations within Parcel A and land west of Parcel A.
Grasshopper sparrow (*Ammodramus savannarum*)	--/SSC County Group 1	4 (48.6)	4 (31.6)	0 (16.8)	0 (35)	Observed/detected on land west of Parcel A.
Northern harrier (*Circus cyaneus*)	--/SSC County Group 1	1 (48.6)	0 (31.6)	1 (16.8)	100 (35)	Observed flying overhead within Parcel A.
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	County Group 1	22 (392)	5 (96.3)	17 (295.4)	77.3 (75)	Observed/detected within Parcel A, E, and west of Parcel A.
California horned lark (*Eremophila alpestris actia*)	County Group 2	6 (48.6)	1 (31.6)	5 (16.8)	83.3 (35)	Observed/detected within Parcels A and B, and west of Parcel A.
Cooper's hawk (*Accipiter Cooperii*)	County Group 1	1 (395.1)	0 (98.7)	1[4] (296.4)	100 (75)	Observed flying over the Project site during the 2012 Burrowing Owl Survey and Assumed present throughout site

Table 5 (cont.)
SENSITIVE ANIMAL SPECIES ANALYSIS

Species	Status	Observed On Site	Total in Development Footprint	Preserved On Site	Percent Preserved On Site	Comments on Distribution On Site
Turkey vulture (*Cathartes aura*)	County Group 1	1 (340.6)	0 (98.3)	1 (242.3)	100 (75)	Observed on Parcel A.
Common barn owl (*Tyto alba*)	County Group 2	1 (340.6)	(98.3)	1 (242.3)	100 (75)	Observed in Parcel A.
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	--/SSC County Group 2	17 (392)	4 (96.3)	13 (295.4)	76.5 (75)	Observed/detected within Parcel A and west of Parcel A.
Southern mule deer (*Odocoileus hemionus fuliginata*)	County Group 2	1 (392)	0 (96.3)	1 (295.4)	100 (75)	Observed/detected within Parcel A.

[1] Designated Critical Habitat occurs on site.
[2] No burrowing owls were observed during 2012 protocol surveys.
[3] No direct impacts to golden eagle would occur; however, removal of foraging habitat would occur.
[4] The precise location of Cooper's hawk was not recorded, but it is assumed impacted as it is assumed present throughout the site.
[+] Numbers in () are in acres

2.2.1 Quino Checkerspot Butterfly

Status: QCB is a federal listed endangered species.

MSCP Discussion: This species is currently not covered under the MSCP; however, an amendment to the County MSCP Subarea Plan has been initiated by the County for QCB.

Existing Populations Discussion: As previously stated, one QCB was sighted during the HELIX 2000 surveys on Parcel A. During HELIX 2001 surveys, 12 QCBs were observed within Parcels B, C, E, and other areas in the immediate vicinity of the Proposed Project site on two hilltops and along two major ridgelines. Approximately 46 QCB observations occurred within Parcels A, B, C, E, and other areas in the immediate vicinity of the site during 2001 EDAW focused surveys. During the HELIX 2008 surveys, a total of 19 adult QCB observations were made on site and an additional 61 in surrounding areas, of which it is estimated 45 were unique individuals. 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).

A significant QCB concentration was sighted within the original development footprint in 2001 and revised development footprint in 2008; subsequently, the applicant engaged in a series of meetings with the resource agencies to revise the development footprint to preserve QCB habitat. Specifically, this involved shifting proposed aggregate extraction activities to the west.

The County defines "Occupied QCB Habitat" in its draft 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 (6.6 feet) meters 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).

Based on this definition of occupied QCB habitat, 410.7 acres (99 percent) of the Proposed Project are occupied by the QCB, and 3.7 acres are not occupied (Figure 10a).

Impacts: The revised configuration (the Proposed Project) would result in removal of five of 57 locations where QCB (8.8 percent) were observed. In addition, implementation of the Proposed Project would remove a total of 104.9 acres of occupied QCB habitat on and off site. Additionally, the Proposed Project would remove a total of 97.8 acres of QCB critical habitat on and off site. The Proposed Project would remove three moderate host plant locations totaling approximately 13,752 dwarf plantain individuals which represent one percent of the dwarf plantain on the project site.

MSCP Consistency: This species is currently not covered under the MCSP. The on and off-site Proposed Project configuration would preserve the most prominent hilltop and southerly ridge on site and provide long-term management/preservation of 303.5 acres of QCB occupied habitat (of the 410.7 acres of occupied habitat on and off site; 73.5 percent) within the proposed 304.6-acre biological open space mitigation that supports 52 QCB sightings and 304.4 acres of QCB critical habitat. The biological open space supports at least six high host plant locations and several moderate host plant locations totaling approximately 1,192,307 individuals of dwarf plantain and 47 individuals of purple owl's clover. This results in a mitigation ratio of 2.89:1 for occupied QCB habitat and a 3.1:1 ratio for critical habitat and the conservation of 91.3 percent of the QCB sightings and 99 percent of QCB host plants. The proposed habitat mitigation ratio meets that in the Amendment's proposed policies (i.e., 3:1). The combination of conservation of known locations and appropriate habitat is considered appropriate for the species. The applicant also proposed to fund implementation of an RMP (Appendix L) that includes stewardship measures, such as, but not limited to, trespass restrictions and invasive plant species removal. The RMP also includes management of the 61-acre AMA that also supports QCB host plants, QCB locations and occupied QCB habitat.

2.2.2 Coastal California Gnatcatcher

Status: CAGN is federal threatened, a State Species of Special Concern, and a County MSCP-covered species; therefore, no federal or State permits are required for impacts that comply with the MSCP Specific Management Directives, BMO, and MCSP Preserve Area.

MSCP Discussion: This species is covered under the MSCP because over 73,300 acres of existing and potential CAGN habitat would 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) would be conserved; and 65 percent (1,819 of 2,814) of the known locations would be conserved. Approximately 68 percent (57,874 acres) of habitat supporting core CAGN populations, 70 percent (30,273 acres) of very high value and 62 percent (4,609 acres) high value CAGN coastal sage scrub habitat would be conserved. Critical habitat linkages between core areas would be conserved in a functional manner, with a minimum of 75 percent of the habitat within identified linkages conserved. Populations of this species also occur on military lands, which are not part of the MSCP.

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. No clearing of occupied habitat may occur between March 1 and August 15.

Existing Populations Discussion: As stated above, this species was observed on site by Ogden (1991). Seven individuals were observed on site by EDAW (2001b). The CAGN was also observed during 2001 surveys generally at a canyon bottom that supported Tecate cypress, laurel sumac, and California buckwheat (EDAW 2001b). CAGNs were more abundant on site (Parcels A, B, C, and E) during the 1991 Ogden survey than during the EDAW 2001 survey possibly due to the poorer quality post-fire habitat in 2001, as well as increased disturbance from OHVs. Surveys conducted by HELIX in 2000 were negative (HELIX 2000b). Five pairs of CAGN were found by HELIX in 2011: one pair each in the area west of Parcel A, northeastern portion of Parcel A, southeastern portion of Parcel B, eastern portion of Parcel C, and eastern portion of Parcel E (HELIX 2011).

Impacts: The Proposed Project would directly remove one location where one pair of CAGNs was observed on site, along with 66.7 acres of CAGN habitat (Diegan coastal sage scrub [including disturbed]; an additional 1.0 acre would be impact neutral). The Proposed Project would also remove 2.5 acres of CAGN habitat off site where the CAGN was not observed (HELIX 2010). Implementation of the Proposed Project also would remove 77.1 acres of CAGN critical habitat on and off site (an additional 0.9 acre would be impact neutral).

MSCP Consistency: The applicant proposes to preserve 218.9 acres (76.4 percent) of Diegan coastal sage scrub on the site and four of the five current (2011) sightings (80 percent) of this species within the proposed biological open space. This includes 185.0 acres of CAGN critical habitat. The proposed biological open space also includes 5.4 acres of coastal sage-chaparral scrub. Therefore, the Proposed Project's mitigation would be considered consistent with the goals of the MSCP for this species.

2.2.3 Burrowing Owl

Status: Burrowing owl is a Bird of Conservation Concern, State Species of Special Concern, and County MSCP Subarea Plan Rare, Narrow Endemic species; therefore, no federal or state permits

are required for impacts that comply with the MSCP Specific Management Directives, BMO, and MCSP Preserve Area.

MSCP Discussion: This species is MSCP-covered because approximately 5,770 acres of known suitable habitat (grasslands) would 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 ("Burrowing Owl Strategy"; County 2010b), the County and resource agencies require that, to the extent practicable, mitigation for removal of 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.

One of the objectives for burrowing owl preservation in EOM is to preserve grasslands—first through avoidance, then through in-kind mitigation with grasslands or suitable disturbed or agricultural lands in EOM (County 2010b). The applicant proposes to mitigate for removal of 0.5 acre of native grassland at a 2:1 ratio through on-site preservation of 0.7 acre, as well as on- or off-site restoration or off-site acquisition and preservation of 0.3 acre. Removal of 29.1 acres of non-native grassland on site (an additional 0.2 acre would be impact neutral) and 2.0 acres of non-native grassland off site (on the adjacent Otay Crossings Commerce Park parcel) are proposed to be mitigated at a 1:1 ratio by preservation of 16.1 acres of non-native grassland on site and 15.0 acres of grassland at an off-site location or through purchase of credits in an approved conservation bank consistent with the Burrowing Owl Strategy (County 2010b).

Existing Populations Discussion: One burrowing owl was sighted west of Parcel A (EDAW 2001b). Burrowing owls have not been observed on the site since 2001, even though the site has been the subject of numerous focused surveys since 2001 for other species. The burrowing owl was also not observed during a focused protocol survey for the burrowing owl in 2012. The burrowing owl was not observed on the off-site Otay Crossings Commerce Park parcel but was observed on other portions of that project site (HELIX 2010).

Impacts: One area where burrowing owl was sighted in 2001 (west of Parcel A) would be removed by Proposed Project implementation.

MSCP Consistency: Preservation of 1.0 acre of native grassland and 31.1 acres of non-native grassland would mitigate for impacts to this species given that it was only observed on the Proposed Project site in 2001 and was not observed on the off-site parcel. The area and habitat types proposed as open space on site for mitigation are considered adequate to retain one pair. In

addition, if preconstruction surveys determine that the burrowing owl is occupying the development footprint, passive translocation would be proposed to occur, as follows.

In accordance with the Burrowing Owl Strategy (County 2010b), impacts would be proposed to be mitigated by the active or passive translocation of the owl to preserved habitat on the Proposed Project site with creation of suitable nesting/burrowing features (Figure 15). A Burrowing Owl Translocation Plan would be proposed and would include installation of two artificial burrows. The plan would be submitted to the resource agencies and County for review and approval in accordance with the California Department of Fish and Game (CDFG; currently the CDFW) Staff Report on Burrowing Owl Mitigation (2012). Approval and implementation of the Burrowing Owl Translocation Plan would be required prior to habitat clearing and commencement of construction of extraction operation support facilities or extraction operations. Translocation would occur outside of the breeding season as no impacts to the species may occur during the breeding season.

Mitigation for burrowing owl grassland habitat is proposed to be provided on site and off site at a ratio of 1:1 to 2:1 (2:1 for native grassland). Along with the translocation of the burrowing owl, as necessary, the Project would be consistent with the goals of the MSCP for this MSCP covered species.

2.2.4 Golden Eagle

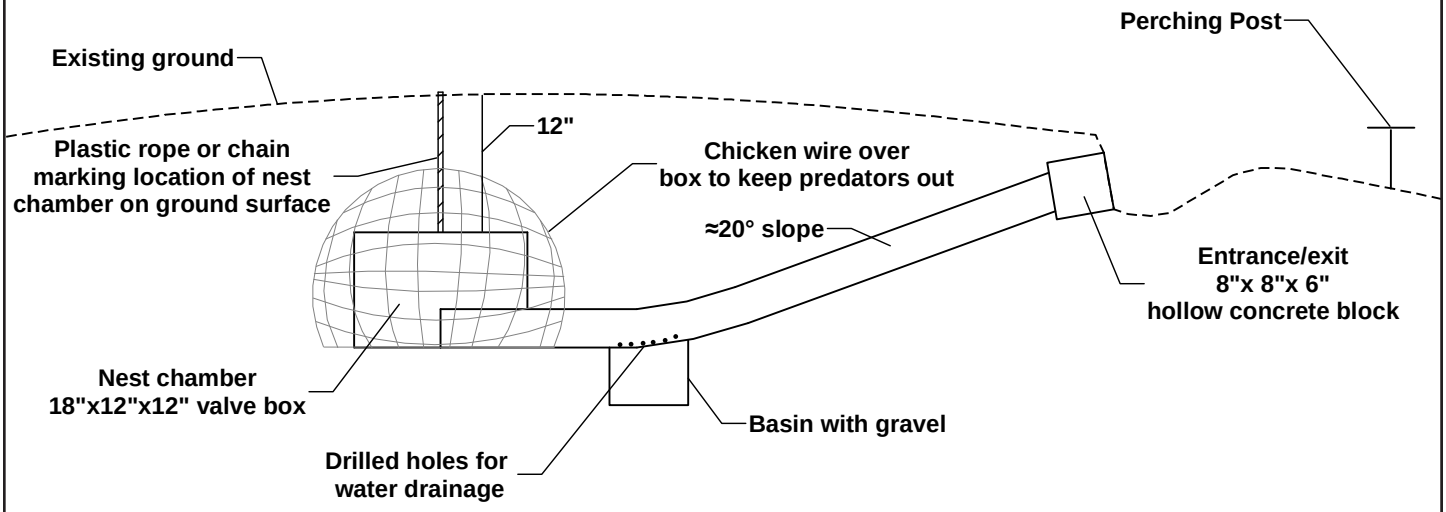
Status: The Golden eagle is a federal Bird of Conservation Concern; State Watch List and State Fully Protected species; County MSCP Subarea Plan Rare, Narrow Endemic species and County Group 1 species; and is covered under the federal BGEPA.

MSCP Discussion: This species is covered under the MSCP because approximately 139,000 acres (53 percent) of potential foraging/nesting habitat (coastal sage scrub, chaparral, grassland, and oak woodland) would be preserved, and a one mile disturbance avoidance area will be included around the nest site while the nest is active. Additionally, it was assumed that the O'Neal Canyon nesting pair would remain a viable pair through conservation of sufficient foraging habitat.

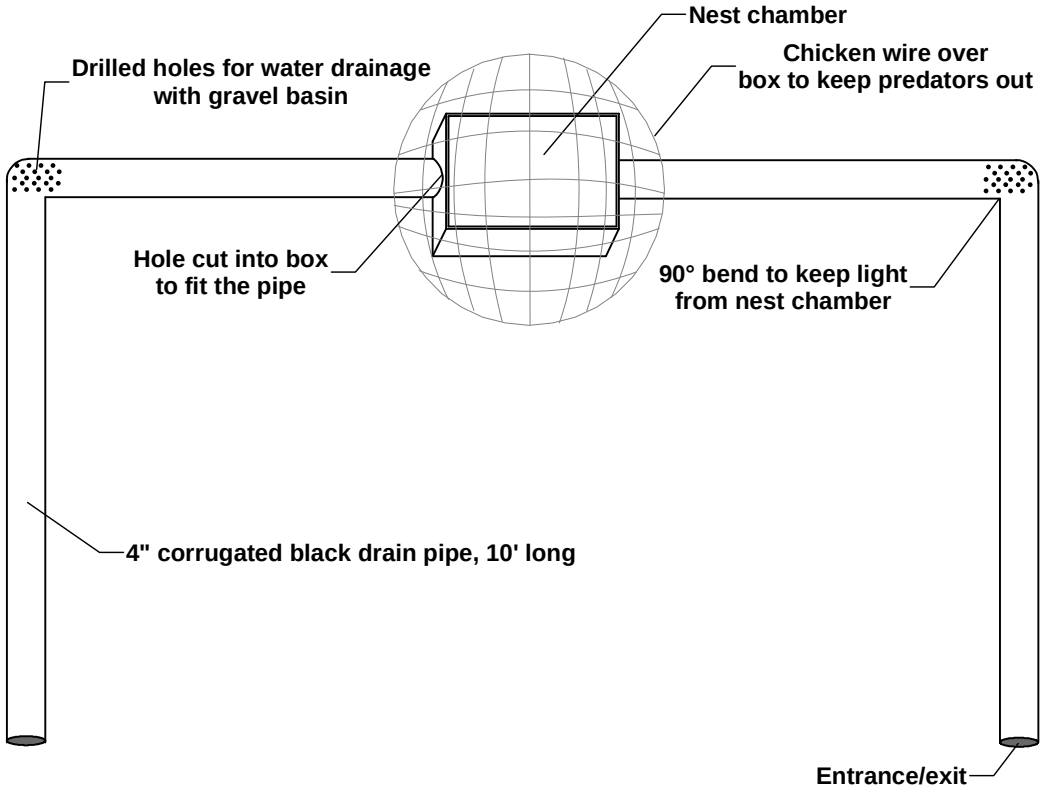
Area-specific management directives for areas with nest sites must include measures to avoid human disturbance while the nest is active, including establishing a one mile disturbance avoidance area within preserved lands. Area-specific management directives must also include monitoring of nest sites to determine use/success. Golden eagle nests do not occur on the Proposed Project site or within one mile of the development footprint.

Existing Populations Discussion: As previously discussed, this species was observed flying over the central portion of Parcel A (Ogden 1991). The site lies within an established golden eagle territory and is considered golden eagle foraging habitat. The closest known nest location is in O'Neal Canyon approximately 1.2 miles from the Proposed Project's development footprint (Susan Wynn, Pers. Comm. 2014). The USGS is currently studying golden eagles in southern California through the use of radio telemetry, and telemetry data to date suggests that the O'Neal Canyon pair primarily uses areas east of the project site. Only limited data points to date occur within the eastern portion of the open space and no specific data points occur over the project

Side View



Top View



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Artificial Burrowing Owl Burrow Design

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

footprint. It should be noted that the data does not represent a complete picture of the areas utilized by the eagle pair, but does appear to indicate that the project footprint is not being used extensively by the eagle.

Impacts: No direct impacts to this species would occur; however, removal of foraging habitat for this species would occur upon implementation of the Proposed Project both on site (93.6 acres; an additional 2.4 acres would be impact neutral) and off site (4.7 acres).

MSCP Consistency: No direct impacts to golden eagle would occur. The Proposed Project would, however, remove 98.3 acres of foraging habitat out of a total of 414.4 acres on the Proposed Project site, including 4.5 acres of foraging habitat on the off-site Otay Crossings Commerce Park parcel. This is less than 0.1 percent of the 139,000 acres expected to be preserved for this species. These impacts would be mitigated by preservation of 304.6 acres of foraging habitat on site as discussed in Section 4.0. Telemetry data show that the O'Neal Canyon pair uses the eastern portion of the proposed open space. As stated above, the closest known nest location is approximately 1.2 miles from the development footprint (Susan Wynn, Pers. Comm. 2014), which is greater than one mile, and is not within line of site due to existing topography. This topographic separation will minimize noise and activity impacts at the nest location. Therefore, the Proposed Project would be considered consistent with the goals of the MSCP for this species.

2.2.5 Remaining Sensitive Animal Species

The Proposed Project also would remove locations or potential habitat of the following 12 sensitive animal species: coast horned lizard, Belding's orange-throated whiptail, coastal rosy boa, coast patch-nosed snake, coastal whiptail (including on the off-site Otay Crossings Commerce Park parcel), southern California rufous-crowned sparrow, loggerhead shrike, grasshopper sparrow, California horned lark, Cooper's hawk, mountain lion, and San Diego black-tailed jackrabbit.

No removal of habitat at locations where the following six sensitive animal species were observed or detected would occur: red-diamond rattlesnake, Bell's sage sparrow, turkey vulture, northern harrier, barn owl, and southern mule deer, although there is the potential for these species to utilize the habitat removal footprint. Indirect impacts to these species could also occur.

MSCP Consistency: The applicant proposes preservation of 304.6 acres of biological open space on site prior to habitat clearing and extraction activities. The biological open space would be managed by a conservation entity responsible for implementing an RMP (Appendix L). An RMP includes stewardship measures, including but not limited to fencing and signs upkeep, trespass restriction, and invasive plant species removal. Therefore, the Proposed Project is consistent with MSCP conditions for MSCP covered species on site (coast horned lizard, southern California rufous-crowned sparrow, Cooper's hawk, and southern mule deer).

2.3 RIPARIAN HABITAT OR SENSITIVE NATURAL COMMUNITY

The Proposed Project would result in removal of approximately 98.7 acres of sensitive (Tier I through III) vegetation on and off site (Figure 8; Table 6). An additional 2.4 acres on site are

considered impact neutral; they are not part of the development footprint but are not proposed to be dedicated to open space.

Table 6
DIRECT IMPACTS TO VEGETATION COMMUNITIES

Vegetation Community/Habitat[1]	Tier[2]	On Site (acre)[3]	Off Site (acre)[3]	Total (acre)[3]	Impact Neutral (acre)[3]
Mule fat scrub (63310)	I	0.00	0.00	0.00	0.00
Cismontane alkali marsh (52310)	I	0.27	0.00	0.27	0.00
Southern interior cypress forest (83330)	I	0.00	0.00	0.00	0.00
Disturbed wetland (11200)	I	0.01	0.00	0.01	0.00
Tamarisk scrub (63810)	I	0.06	0.00	0.06	0.00
Native grassland (42100)	I	0.5	0.0	0.5	0.0
Diegan coastal sage scrub (including disturbed; 32500)	II	64.2	2.5	66.7	1.0
Coastal sage-chaparral scrub (37G00)	II	0.0	0.0	0.0	0.0
Chamise chaparral (37200)	III	0.0	0.0	0.0	0.0
Southern mixed chaparral (37120)	III	0.0	0.0	0.0	0.0
Non-native grassland (42220)	III	29.1	2.0	31.1	0.2
Disturbed habitat (11300)	IV	8.5	0.2	8.7	1.2
Developed land (12000)	IV	<0.1	0.0	<0.1	0.0
TOTAL		**102.7**	**4.7**	**107.4**	**2.4**

[1] Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008).
[2] Tiers refer to County MSCP Subarea Plan habitat classification system.
[3] Upland habitats are rounded to the nearest 0.1 acre, while wetland habitats are rounded to the nearest 0.01; thus, totals reflect rounding.

Table 7 summarizes impact by Phase.

Table 7
DIRECT IMPACTS TO VEGETATION COMMUNITIES BY PHASE

Vegetation Community/Habitat[1]	Phase 1 (acre)[2]	Phase 2a (acre)[2]	Phase 2b (acre)[2]	Phase 2c[3] (acre)[2]	Total (acre)[3]
Mule fat scrub (63310)	0.0	0.0	0.0	0.0	0.0
Cismontane alkali marsh (52310)	0.27	0.0	0.0	0.0	0.27
Southern interior cypress forest (83330)	0.0	0.0	0.0	0.0	0.0
Disturbed wetland (11200)	0.01	0.0	0.0	0.0	0.01
Tamarisk scrub (63810)	0.06	0.0	0.0	0.0	0.06
Native grassland (42100)	0.0	0.0	0.5	0.0	0.5
Diegan coastal sage scrub (including disturbed; 32500)	1.8	13.5	16.4	35.0	66.7
Coastal sage-chaparral scrub (37G00)	0.0	0.0	0.0	0.0	0.0
Chamise chaparral (37200)	0.0	0.0	0.0	0.0	0.0
Southern mixed chaparral (37120)	0.0	0.0	0.0	0.0	0.0
Non-native grassland (42220)	12.0	3.2	6.1	9.8	31.1
Disturbed habitat (11300)	1.6	1.5	2.5	3.2	8.7
Developed land (12000)	0.0	0.0	0.0	0.0	0.0
TOTAL	**15.7**	**18.2**	**25.5**	**48.0**	**107.4**

[1] Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008).
[2] Upland habitats are rounded to the nearest 0.1 acre, while wetland habitats are rounded to the nearest 0.01; thus, totals reflect rounding. The phase acreages in the project description (Section 1.2.2) reflect the excavation footprint used to calculate aggregate yield. The acreages in this table are more inclusive, and conservatively assume impacts all the way to the project boundary.
[3] Phase 2c includes off-site impacts to the Otay Crossings Commerce Park open space parcel.
[4] Additional 0.1 acre based on rounding of each phase.

2.4 JURISDICTIONAL WETLANDS AND WATERWAYS

Any fill of USACE jurisdictional Waters of the U.S. that would result from the development of the Proposed Project would require authorization by the USACE under a Clean Water Act Section 404 permit and by the RWQCB under a Section 401 Water Quality Certification. Impacts to isolated Waters of the State under RWQCB jurisdiction require authorization by the RWQCB under the Porter-Cologne Act. Any removal of CDFW jurisdictional habitat would require a Section 1602 Streambed Alteration Agreement. Removal of County-defined wetlands are regulated by the RPO; however, the Proposed Project is exempt from RPO requirements as discussed in Section 1.5.3. There are no USACE, CDFW, or County jurisdictional areas on the off-site Otay Crossings Commerce Park parcel.

Fill of USACE jurisdictional areas resulting from Proposed Project implementation include 0.28 acre of wetlands and 0.16 acre of non-wetland Waters of the U.S. (Figure 11a; Table 8). Fill of RWQCB jurisdictional areas resulting from Proposed Project implementation include 0.28 acre of wetlands and 0.21 acre of non-wetland Waters of the State (Figure 11b; Table 8).Removal of CDFW jurisdictional areas resulting from Proposed Project implementation include 0.34 acre of wetlands and 0.19 acre of streambed and pond (Figure 11c; Table 8). Implementation of the Proposed Project would remove 0.34 acre of County RPO wetlands (Figure 11d; Table 8). The Proposed Project, however, is exempt from RPO requirements as discussed in Section 1.5.3.

Table 8 IMPACTS TO JURISDICTIONAL AREAS (acre[s])				
Habitat	**USACE**	**RWQCB**	**CDFW**	**County**
Wetlands				
Cismontane alkali marsh	0.21	0.21	0.27	0.27
Disturbed wetland	0.01	0.01	0.01	0.01
Tamarisk scrub	0.06	0.06	0.06	0.06
Subtotal	**0.28**	**0.28**	**0.34**	**0.34**
Non-wetlands				
Drainage/Streambed	0.14	0.18	0.17	0.00
Pond	0.02	0.02	0.02	
Intermittent pond	0.00	0.01	0.00	
Subtotal	**0.16**	**0.21**	**0.19**	
TOTAL	**0.44**	**0.49**	**0.53**	**0.34**

2.5 WILDLIFE MOVEMENT AND NURSERY SITES

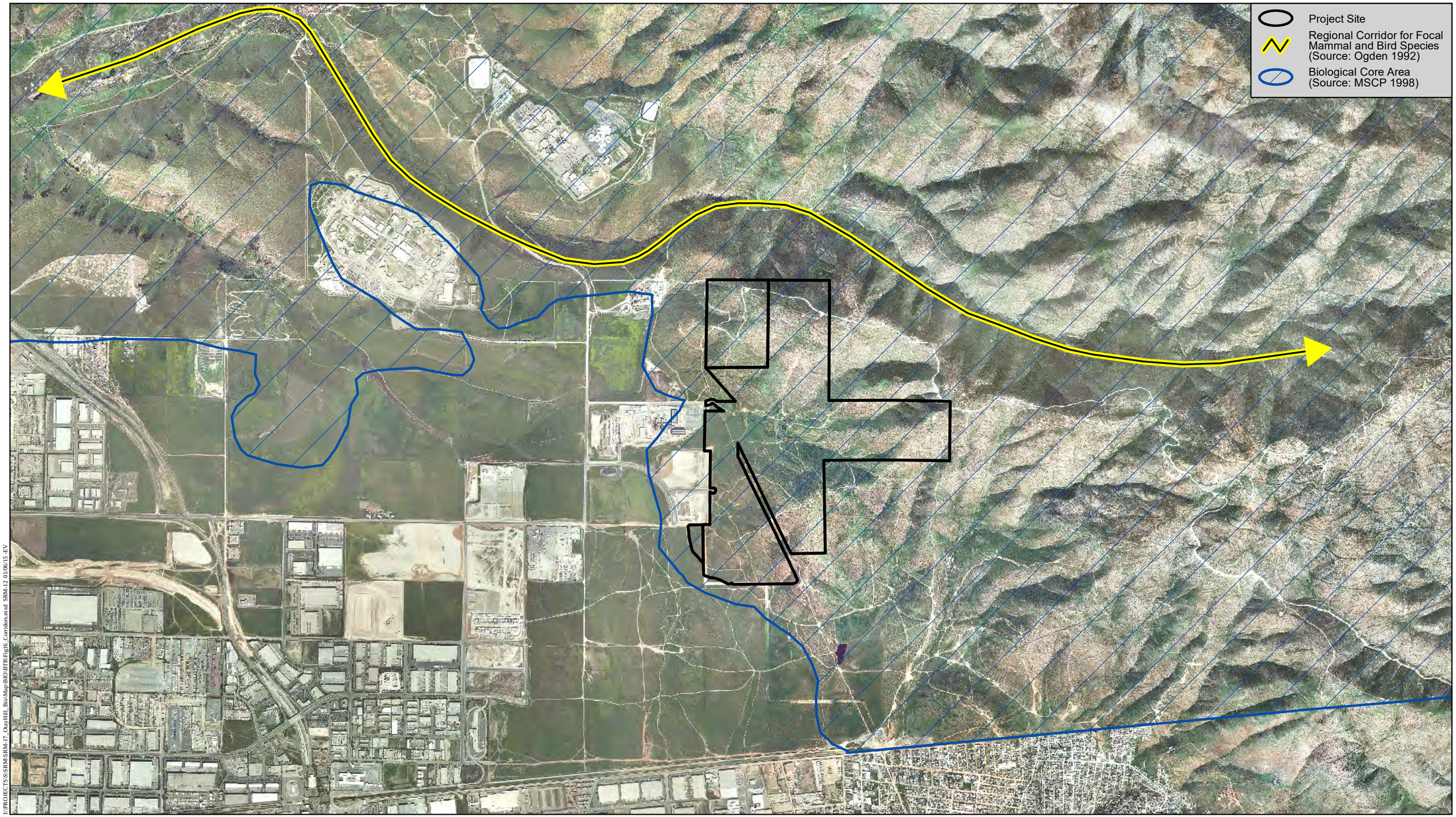
The site is not part of a regional corridor but is part of a large contiguous block of open space that can support wide-ranging species and may act as a core wildlife area. The Proposed Project would consist of haul roads and mining-related structures and appurtenances that would create a barrier on the land surface for local wildlife movement but would not restrict regional wildlife movement. Construction activity and extraction operations are expected to impede local wildlife movement slightly given that extraction operations would occur over many years, but the Proposed Project is designed to maintain connectivity of preserved habitats in open space on site with connections to off-site, vacant lands with the exception of the Otay Crossings Commerce Park parcel (Figure 16). Fencing of the extraction operation will direct wildlife away from the quarry and towards open space. The Proposed Project's activities within the development footprint would isolate this open space parcel from the Proposed Project's proposed open space to the east and other undeveloped land to the southeast. The applicant proposes to mitigate for the isolation of this parcel as if it were a direct impact of the Proposed Project. Even with the isolation of this one parcel, the Proposed Project site would continue to provide regional landscape level conservation function. See Section 6.0 for more information.

2.6 INDIRECT IMPACTS

Indirect impacts resulting from lighting, noise, domestic animals/colonization of invasive species, fugitive dust, and animal pit falls are potentially significant.

2.6.1 Lighting

Night lighting on native habitats can prevent nocturnal wildlife from using an area. There is potential for night lighting at staging areas during construction or during operations for security purposes for the Proposed Project. It is anticipated by the applicant that some operational activities would occur at night. Additionally, artifact light from nearby existing industrial or commercial activities may affect the site. Night lighting could cause an increased loss in native wildlife as it



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Wildlife Corridors

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HELIX Environmental Planning

Figure 16

could provide nocturnal predators with an unnatural advantage over their prey. One entry light would be located at the site perimeter, adjacent to the street providing access to the Project (within a light industrial/commercial district). Other lights would be located interior to the site, with lights focused on areas of activity, and not onto off-site locales. Lights would primarily be attached to stationary plant equipment. All Proposed Project-related lighting would adhere to the San Diego County Light Pollution Code. Lighting within the development footprint adjacent to preserved habitat would be of the lowest illumination allowed for human safety, selectively placed, shielded, and directed away from preserved habitat to ensure that no light would spill beyond the boundary of the Project impact footprint.

2.6.2 Noise

Noise from such sources as grubbing, vehicular traffic, and extraction and processing activities (includes blasting) would be an impact to local wildlife. Construction of the facility, aggregate extraction, and processing operations would require the daily use of heavy equipment that would elevate existing noise levels on site. Noise-related impacts would be considered significant if sensitive species (such as CAGNs) failed to successfully breed due to excessive noise.

A noise analysis, prepared by HELIX (2016b), determined that the 60 dB L_{eq} noise level resulting from the processing plant operations and extraction activities (phase 2a through 2c) would extend out past the ultimate development footprint at distances of between 12 and 1,200 feet. This determination was derived from existing and proposed topography and modeling using the known noise level of various extraction equipment. Excavation activities would be located in only one location at any given time rather than around the entire development footprint perimeter. The distance between operations and the 60 dB L_{eq} limit assumes that extractive equipment is operating immediately adjacent to the development footprint line and no mitigating circumstances occur. Thus, the noise impacts would be localized and not spread across the entire area at one time. Also, excavation of the material would utilize a bench construction technique. This technique results in a shear working face after initial construction. These approximately 20- to 60-foot high slopes would act as a noise barrier when equipment is near the working face. The grade separation between the quarry floor and OHCA will substantially limit noise impacts by the completion of Phase 2 at year 23, according to a noise analysis prepared by HELIX (2016b).

In order to determine potential indirect impact acreage from excavation activities, noise impacts were calculated based on taking three sample points at the edge of the development footprint, extending out to the 60 dB L_{eq} noise contour and calculating Diegan coastal sage scrub (including disturbed) acreage outside the development footprint but within the 60 dB L_{eq} noise contour. This indirect noise impact is estimated to be approximately 10.4 to 20.6 acres of Diegan coastal sage scrub (including disturbed) for the processing plant and excavation. For the processing plant and excavation north, impacts would total approximately 17.7 acres (Figure 17a). For the processing plant and excavation east, impacts would total approximately 20.6 acres (Figure 17b). For the processing plant and excavation south, impacts would total approximately 10.4 acres (Figure 17c). Once excavation was completed, the processing plant alone would have noise impacts of approximately 2.8 acres (Figure 17d). The impacts would occur sequentially, meaning that some of the gnatcatcher habitat impacted by northern excavation would become available for gnatcatcher use during eastern and southern excavation, and vice versa. Therefore, the worst-case scenario of 20.6 acres analyzed in this report (Figure 17b). The noise impact is expected to be the

same (20.6 acres) for other species that use coastal sage scrub on site, including Bell's sage sparrow, loggerhead shrike, Southern California rufous-crowned sparrow, and California horned lark since 60 dB L_{eq} is used as a guideline for all passerine species. A significant noise impact is not expected to burrowing owl, northern harrier, turkey vulture, or barn owl since their usage of the site is quite limited (each of these species was observed only one time in all of the surveys of the site), nor is a significant noise impact to golden eagle expected since the site is not within one mile of a golden eagle nest and is not within line of site due to existing topography. This topographic separation will minimize noise and activity impacts at the nest location. The site is not within a heavy foraging area for the O'Neal Canyon eagle pair.

While not usually considered an effect on butterflies, HELIX consulted with QCB expert Dennis Murphy, Ph.D. (pers. comm. 2009) regarding the potential for 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.

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.

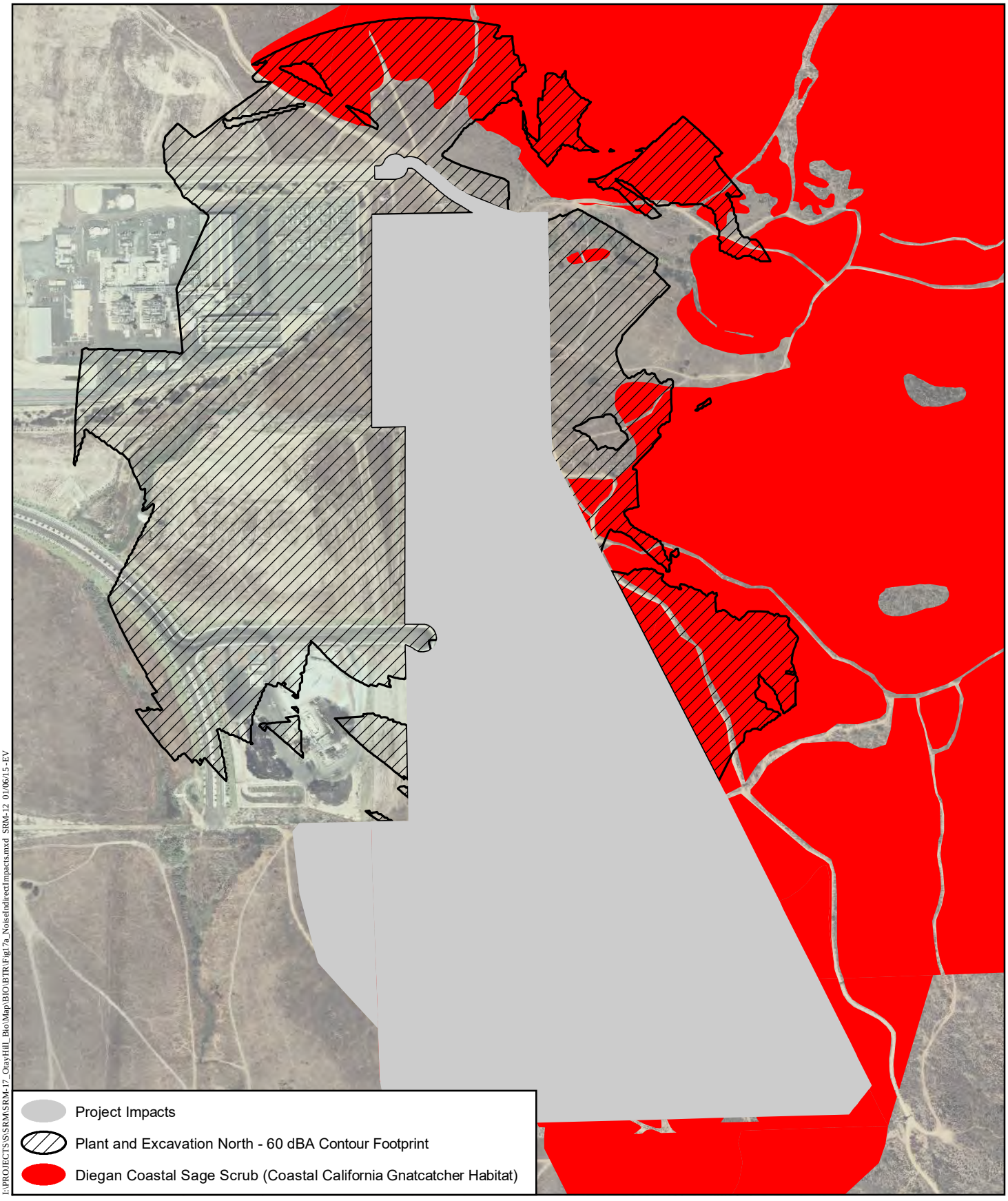
No specific research is available to document exact distances, but it is unlikely that the displacement and acceleration of air through branches in shrubs would exceed that created by a strong gust of wind at ranges greater than two to three times the size of the actual blast area.

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.

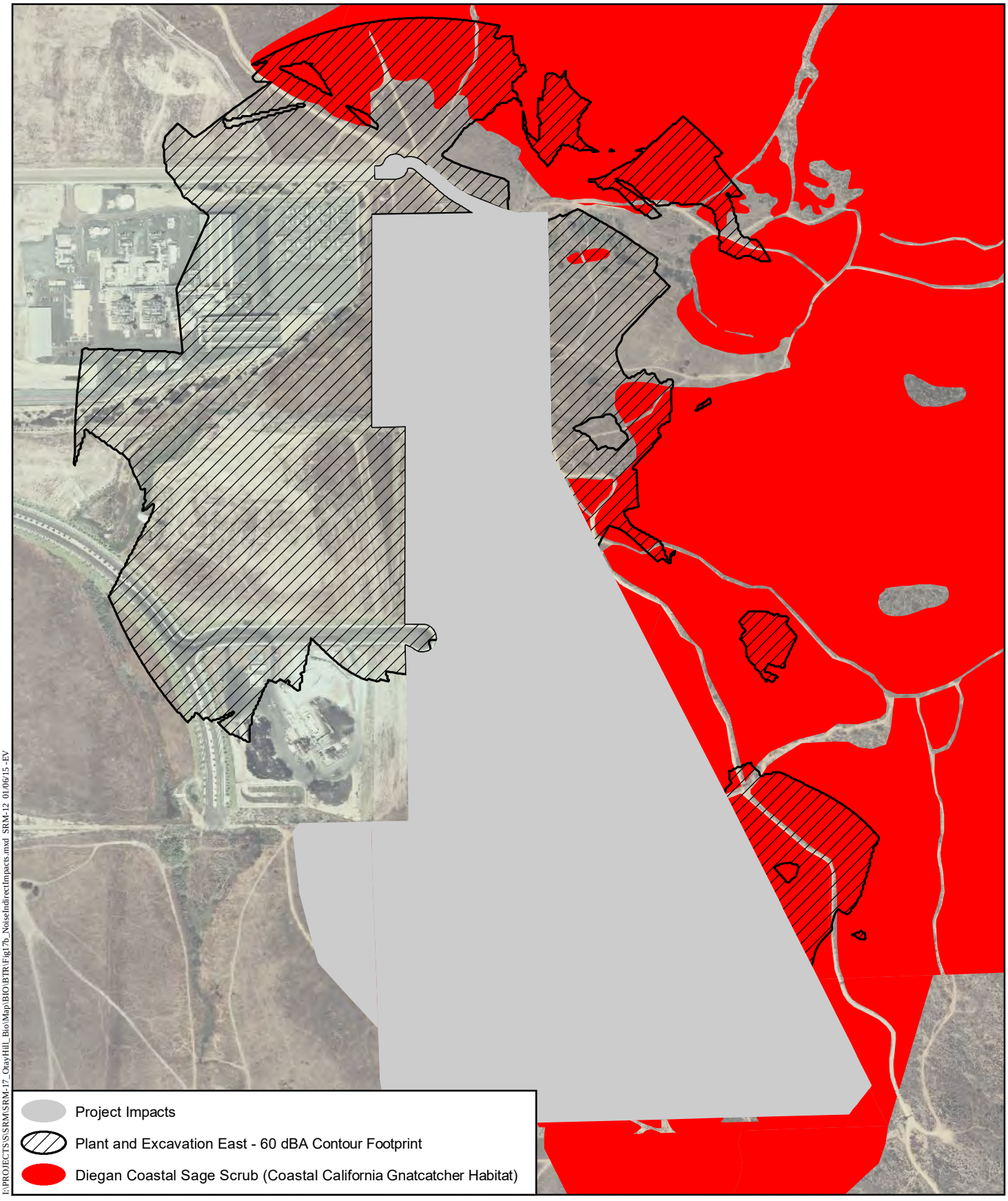
While the ground-borne vibration impacts area may be limited, the airborne shockwave, typically measured as an overpressure pulse, may have impacts at greater distances. Specific information does not exist to predict the exact value of overpressure pulse that would impact butterflies (or larvae). However, it is reasonable to assume that the overpressure pulse is not likely to cause damage at any level which 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.

2.6.3 Public Access/Domestic Animals/Colonization of Invasive Plant Species

Currently the Proposed Project site has relatively unrestricted access via a series of dirt roads that cross the property. Development of the site as a quarry would limit access to the proposed on-site open space from the west, and no increases in human activity in the proposed open space are anticipated due to the Proposed Project. Additionally, an increase in domestic pets is not anticipated given that the Proposed Project consists of mineral extraction activities and not a residential subdivision. Still, as part of the Proposed Project description, a fence will be placed along the outside edge of extraction areas that would help keep people out of the adjacent open



Plant and Excavation North Indirect Impacts to Coastal California Gnatcatcher Habitat



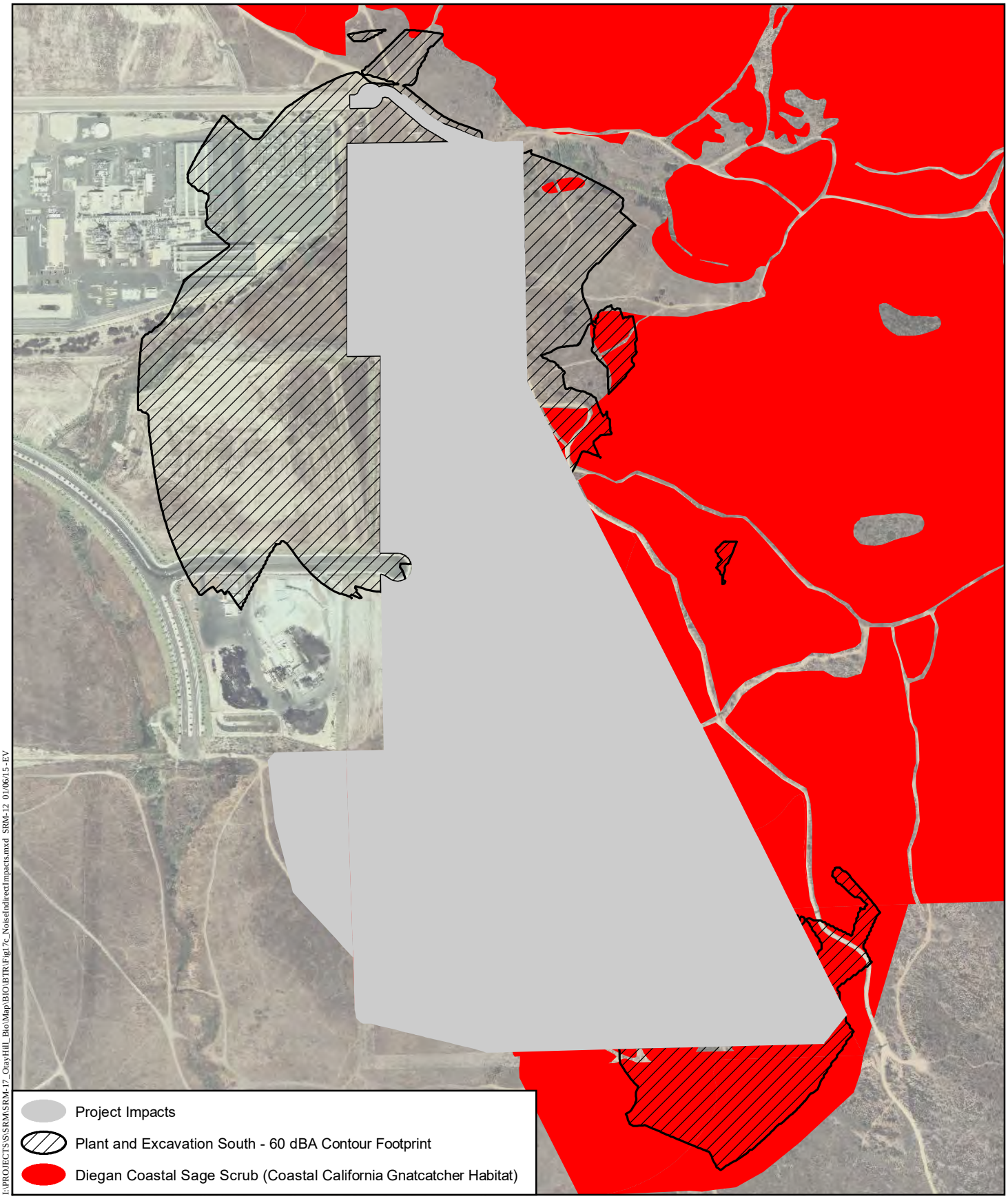
Plant and Excavation East Indirect Impacts to Coastal California Gnatcatcher Habitat

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

N 0 550 Feet

Figure 17b



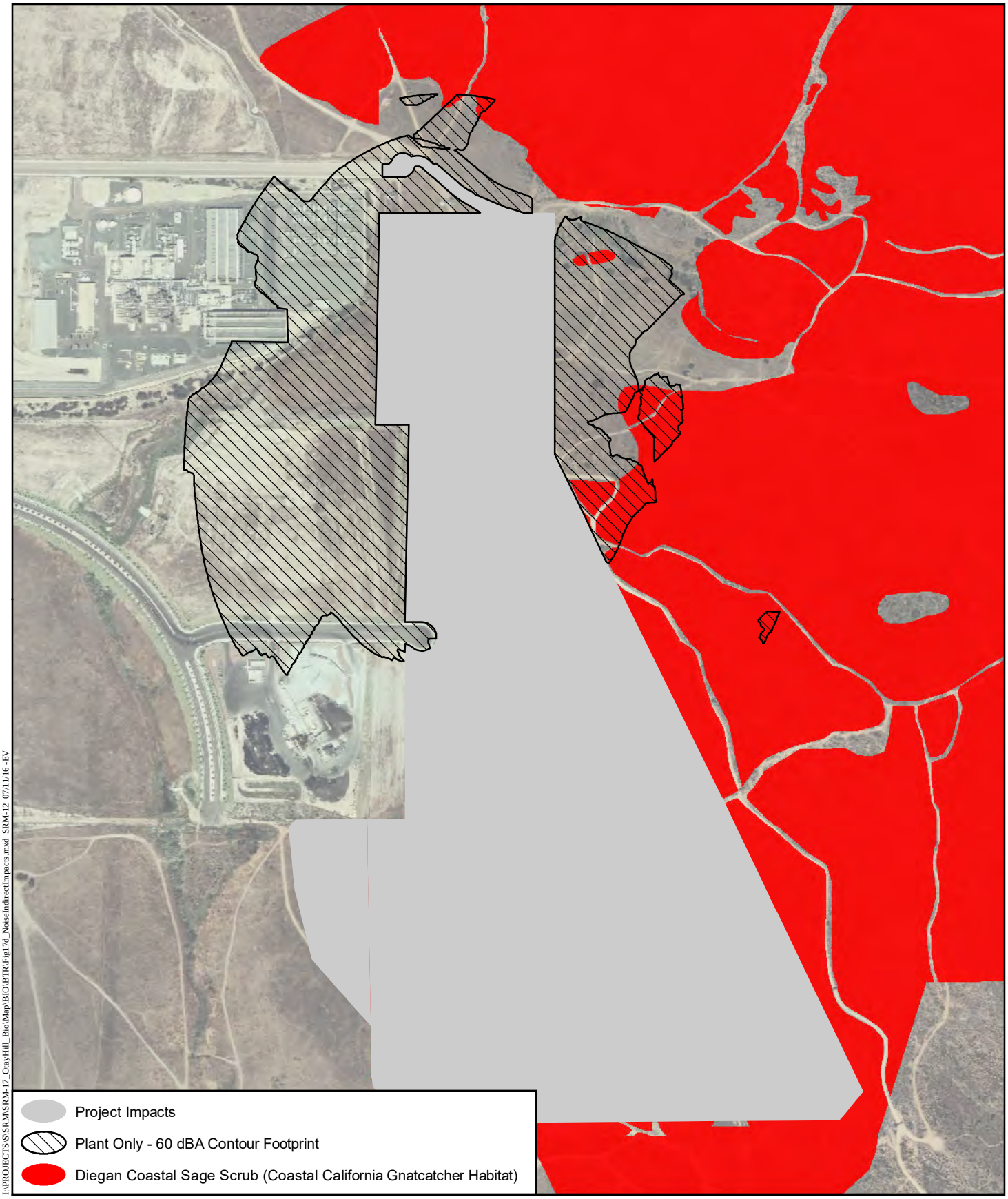
Plant and Excavation South Indirect Impacts to Coastal California Gnatcatcher Habitat

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

N 0 550 Feet

Figure 17c



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Plant Only Indirect Impacts to Coastal California Gnatcatcher Habitat

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

Figure 17d

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space. The fencing will be six feet tall chain link. Also, access restriction/trespass signs will be placed along the western and southern boundaries of the open space (Figure 18), and proposed RMP implementation would include upkeep of the fencing and signs.
Non-native plant species can colonize areas disturbed by construction and can potentially spread into adjacent native habitats, especially following a disturbance such as fire. Many of these non-native plants are highly invasive and can displace native vegetation reducing native species diversity, potentially increase flammability and fire frequency, changing ground and surface water levels, and potentially adversely affect native wildlife that is dependent on the native plant species. The Proposed Project description includes restoration of slopes in the development footprint adjacent to the proposed open space with a native plant biological buffer to minimize this potential effect. Also upon completion of the Proposed Project in areas not adjacent to open space, pad areas would be revegetated with native or non-invasive, non-native species that would also minimize the chance for colonization and spread of invasive species into the open space.

2.6.4 Fugitive Dust

Fugitive dust produced by construction and extraction operations has the potential to disperse onto preserved vegetation, which may reduce the overall vigor of individual plants by reducing their photosynthetic capabilities and increasing their susceptibility to pests or disease. This in turn could affect animals dependent on these plants (e.g., QCB or seed-eating rodents). Fugitive dust also may make plants unsuitable as habitat for insects and birds. Breeding birds and mammals may temporarily or permanently leave their territories to avoid construction and/or extraction operations, which could lead to reduced reproductive success and increased mortality. As part of the Proposed Project description, active construction and extraction areas as well as unpaved surfaces would be watered every three hours pursuant to APCD Rule 55 to minimize dust generation and loaded trucks would be top-watered to prevent roadway dust. The Proposed Project would comply with APCD permits and use of BACT to ensure a relatively emission- and dust-free operation.

2.6.5 Animal Pit Falls

The Proposed Project would result in a pit approximately 530 to 650 feet deep with 1.5:1 side slopes during extraction activities and prior to fill. During the intermediary time, animals such as butterflies, reptiles, birds, and mammals could potentially fly or fall into the pit. Butterflies and birds would be able to fly out of the pit. Reptiles such as lizards and some mammals would be able to climb out of the pit. Other animals such as snakes or mammals unable to climb the side slopes may be able to work their way out of the pit via access roads or other paths, although some impacts to these species may still occur.

Also, some animals, including burrowing owls, are known to use open pipes, culverts, excavated holes, or other burrow-like structures and could be attracted to the active development footprint where they could be injured or killed.

As part of the Proposed Project description, a six-foot chain link fence would be placed along the outside edge of extraction areas during construction for safety and security reasons. The fence

also would help keep animals out of the extraction areas, but additional measures would be necessary to minimize these potential impacts.

3.0 SENSITIVE SPECIES

3.1 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the USFWS or CDFW?

Any of the following conditions would be considered significant if:

a. The project would impact one or more individuals of a species listed as federal or state endangered or threatened.

b. The project would impact an on-site population of a County List A or B plant species, or a County Group 1 animal species, or a species listed as a State Species of Special Concern.

c. The project would impact the local long-term survival of a County List C or D plant species or a County Group 2 animal species.

d. The project may impact arroyo toad aestivation, foraging, or breeding habitat.

e. The project would impact golden eagle habitat.

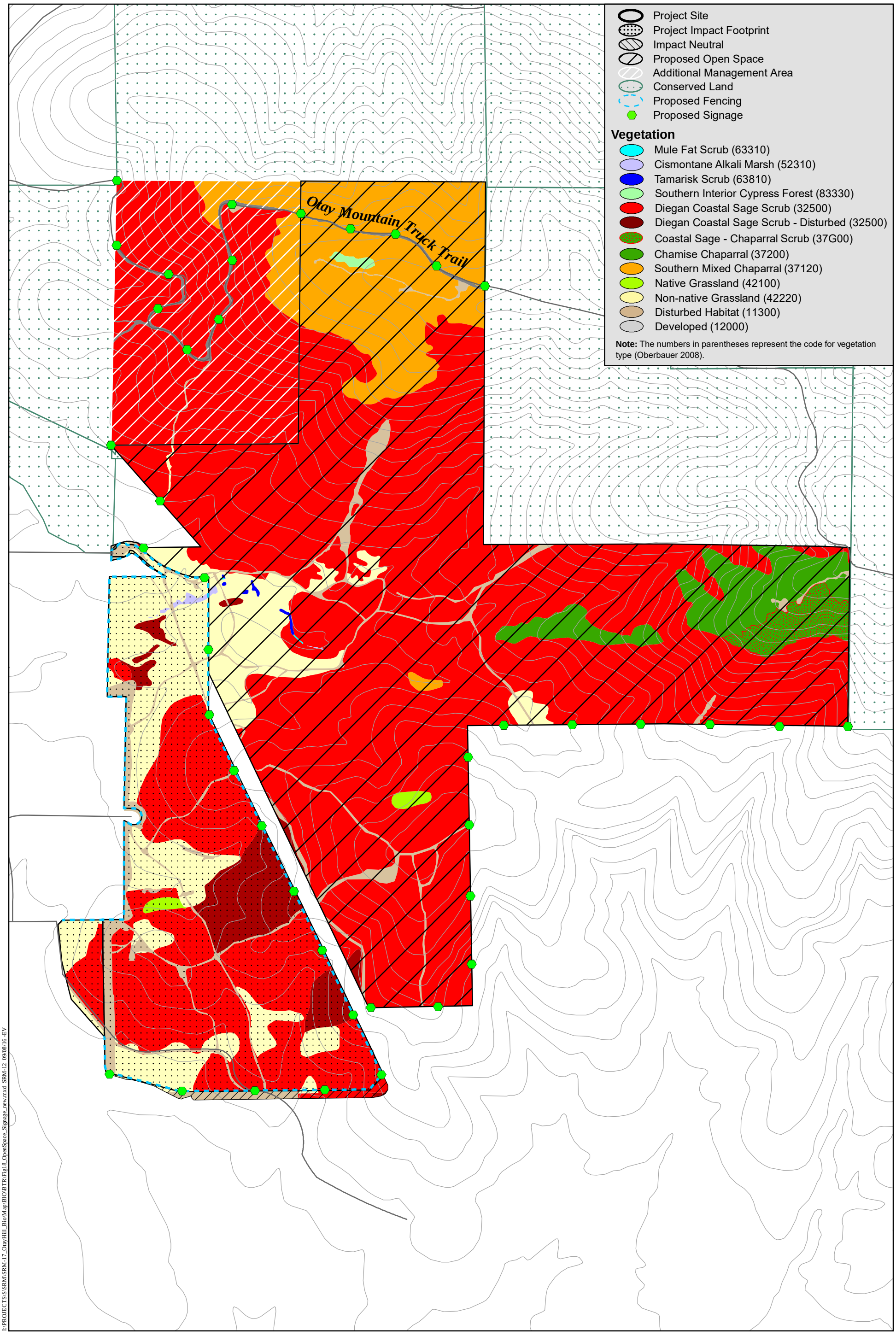
f. The project would result in a loss of functional foraging habitat for raptors.

g. The project would impact the viability of a core wildlife area, defined as a large block of habitat (typically 500 acres or more not limited to project boundaries, though smaller areas with particularly valuable resources may also be considered a core wildlife area) that supports a viable population of a sensitive wildlife species or supports multiple wildlife species.

h. The project would cause indirect impacts, particularly at the edge of proposed development adjacent to proposed or existing open space or other natural habitat areas, to levels that would likely harm sensitive species over the long term. Issues to be addressed include: increasing human access or predation or competition from domestic animals, pests, or exotic species; altering natural drainage; and increasing noise and/or nighttime lighting to a level above ambient that has been shown to adversely affect sensitive species.

i. The project would impact occupied burrowing owl habitat.

j. The project would impact occupied cactus wren habitat, or formerly occupied coastal cactus wren habitat that has been burned by wildfire.



Open Space/Signage

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

N

0 650 Feet

Figure 18

k. The project would impact occupied Hermes copper habitat.

l. The project would impact nesting success of the following sensitive bird species through grading, clearing, fire fuel modification, and/or other noise generating activities such as construction.
   - Coastal cactus wren
   - Coastal California gnatcatcher
   - Least Bell's vireo
   - Southwestern willow flycatcher
   - Tree-nesting raptors
   - Ground-nesting raptors
   - Golden eagle
   - Light-footed clapper rail

3.2 ANALYSIS OF PROJECT EFFECTS

The Proposed Project would result in significant impacts under the above guidelines as follows:

3.1.A Implementation of the Proposed Project would remove:

- approximately 30 individuals of Otay tarplant (a federal threatened and state endangered species; Figure 9a; Table 3) and 105.5 acres of Otay tarplant critical habitat

- Five individuals of QCB (a federal endangered species; Figure 10a; Table 5) and 97.8 acres of QCB critical habitat

- One pair of CAGN (a federal threatened species; Figure 7; Table 4) and 77.1 acres of CAGN critical habitat

3.1.B Implementation of the Proposed Project would remove:

- 120 individuals of variegated dudleya (a County List A species)

- 1,214 individuals of San Diego goldenstar (a County List A species)

- 196 individuals of San Diego barrel cactus (a County List B species)

- 142 individuals of San Diego marsh-elder (a County List B species)
  - See Figure 9a and Table 3.

- One burrowing owl location (a County Group 1 species and State Species of Special Concern [SSC]) location (Figure 10b; Table 5).

In addition, implementation of the Proposed Project would remove locations where the following species were observed or detected (Figure 10a; Table 5):

- Four locations of coast horned lizard (an SSC)
- Three locations of coastal whiptail (a County Group 2 species)
- Three locations of loggerhead shrike (a County Group 1 species and SSC)
- Four locations of grasshopper sparrow (a County Group 1 species and SSC)
- Five locations of southern California rufous-crowned sparrow (a County Group 1 species)
- One location of Cooper's hawk (a County Group 1 species)
- One location of California horned lark (a County Group 2 species)
- Four locations of San Diego black-tailed jackrabbit (a County Group 2 species and SSC)

All of the above-listed impacts would be significant under County Guidelines 3.1.A and 3.1.B.

Some animals like snakes and mammals may get into the excavated quarry pit, and due to its steep sides, not be able to get out. Also some animals, including burrowing owls, are known to use open pipes, culverts, excavated holes, or other burrow-like structures and may be attracted to the development footprint where they could be injured or killed. For sensitive species addressed under County Guidelines 3.1.A and 3.1.B, this impact would be significant.

3.1.E and 3.1.F

The Proposed Project site lies within established golden eagle territory, and the entire site and off-site Otay Crossings Commerce Park parcel are foraging habitat for the golden eagle pair known to nest in O'Neal Canyon. Removal of 98.7 acres of golden eagle foraging habitat as well as potential foraging habitat for other raptors would occur. Removal of golden eagle and other raptor foraging habitat would be significant under County Guidelines 3.1.E and 3.1.F.

3.1.H As discussed above, noise from such sources as grubbing, vehicular traffic, and extraction and processing activities (includes blasting) would be an impact to local sensitive species, particularly the CAGN (and excluding QCB). Indirect noise impacts to approximately 20.6 acres of Diegan coastal sage scrub with potential to be occupied by CAGN was assumed. This impact would be significant.

Invasive, non-native plants could colonize areas disturbed by construction and could potentially spread into open space. The Proposed Project description includes restoration of slopes in the development footprint adjacent to the proposed open space with a native

plant biological buffer to minimize this potential effect. Also upon completion of the Proposed Project in areas not adjacent to open space, pad areas would be revegetated with native or non-invasive, non-native species that would also minimize the chance for colonization and spread of invasive species into the open space.

3.1.I The Proposed Project would remove 31.1 acres of non-native grassland and 0.5 acre of native grassland, which are burrowing owl habitats. Any removal of burrowing owl habitat is significant under County Guideline 3.1.I.

3.1.L Project construction could impact the nesting success of coastal California gnatcatcher, tree-nesting raptors, and ground-nesting raptors, all of which have the potential to nest on and/or in the immediate vicinity of impact areas. Noise from such sources as clearing, grading, and blasting could result in an impact to wildlife. Noise-related impacts would be considered significant if sensitive species (such as coastal California gnatcatcher and raptors) were displaced from their nests and failed to breed. Raptors or other sensitive bird species nesting within any area impacted by noise exceeding 60 dB L_{eq} or ambient could be significantly impacted. If coastal California gnatcatchers, burrowing owls, or tree-nesting raptors are nesting within 500 feet of the impact area, or northern harriers are nesting within 900 feet of the impact area, effects resulting from construction noise could be significant.

The Proposed Project would result in less than significant impacts under the above guidelines as follows:

3.1.B No direct removal would occur to locations where the following County List A or B plant species, County Group 1 animal species, and/or State Species of Special Concern were observed/detected: Dunn's mariposa lily, Gander's pitcher sage, summer holly, Tecate cypress, Munz's sage, Orcutt's bird's beak, golden eagle, Bell's sage sparrow, northern harrier, or turkey vulture. As such, under County Guideline 3.1.B, no significant impact to these species would occur. Removal of habitats of these species are discussed in Section 4.0, below.

3.1.C Implementation of the Proposed Project would remove the following County List C or D plant species: San Diego needlegrass (293 individuals), western dichondra (3 locations), southwestern spiny rush (11 individuals), San Diego sunflower (9,378 individuals), and ashy spike-moss (223 locations; Figure 9b). In addition, implementation of the Proposed Project would remove locations where the following County Group 2 animal species were observed/detected: coastal whiptail (3 locations), California horned lark (1 location), and San Diego black-tailed jackrabbit (4 locations; Figure 10b). Due to the lower level of sensitivity of these species and/or the level of impact to preservation proposed, the Proposed Project-related impacts would not affect the local long-term survival of these species. San Diego needlegrass, western dichondra, southwestern spiny rush, San Diego sunflower, and ashy spike-moss are all known from numerous locations in the area, including within the proposed open space and in preserved habitat to the north and east of the site, ensuring their local long-term survival regardless of the impacts of the Proposed Project. No removal of locations where the following County List C or D plant species or

County Group 2 animal species were observed/detected would occur: Coulter's matilija poppy, Palmer's grapplinghook, red-diamond rattlesnake, barn owl, and southern mule deer. Under County Guidelines 3.1.C, no significant impact to these species would occur. Removal of habitats of these species are discussed in Section 4.0, below.

3.1.D The Proposed Project site does not support arroyo toad aestivation or breeding habitat. As such, under County Guideline 3.1.D, no significant impact would occur.

3.1.G The Proposed Project site is part of a large contiguous block of open space that can support wide-ranging species and is part of a core wildlife area. The site is not considered a regional wildlife corridor. The Proposed Project's development footprint is adjacent to existing development to the northwest, and already-approved development (Otay Crossings Commerce Park and partially constructed Paseo de la Fuente) occurs along the remainder of the western boundary of the development footprint. Construction activity and extraction operations on 102.7 acres of the development footprint are expected to impede local wildlife movement slightly given that extraction operations would occur over many years, but the Proposed Project is designed to maintain connectivity of preserved habitats in the 304.6-acre proposed open space east of the development footprint with off-site vacant lands to the north and east. Fencing of the extraction operation will direct wildlife away from the quarry and towards open space. Therefore, the proposed open space on the site would continue to provide regional landscape level conservation function. Therefore, the effects on the viability of a core wildlife area would be less than significant under County Guideline 3.1.G.

3.1.H All Proposed Project-related lighting would be of the lowest illumination allowed for human safety, selectively placed, and shielded and directed away from preserved habitat to ensure that no light would spill beyond the boundary of the Project impact footprint (see Section 2.6.1), and impacts to QCB are not anticipated from blasting (see Section 2.6.2).

Impacts from domestic animals due to the Proposed Project are not anticipated given that the Proposed Project consists of mineral extraction activities and not a residential subdivision.

The Proposed Project would include a fence along the outside edge of extraction areas that would help keep people out of the adjacent open space, and access restriction/trespass signs would be placed along the western and southern boundaries of the open space. The fencing will be six-foot galvanized chain link. Still, additional protection measures are needed to reduce the potential impact to less than significant.

No significant impact from fugitive dust would occur because the Proposed Project would include watering every three hours pursuant to APCD Rule 55 and would comply with APCD permits and use BACT.

3.1.J The Proposed Project site does not support occupied coastal cactus wren habitat. As such, under County Guideline 3.1.J, no significant impact would occur.

3.1.K The Proposed Project site has only scattered individual host plants (spiny redberry [*Rhamnus crocea*]) and does not support occupied Hermes copper butterfly habitat, according to the focused Hermes copper butterfly survey conducted in 2014 (HELIX 2019b, Appendix M). As such, under County Guideline 3.1.K, no significant impact would occur.

3.3 CUMULATIVE IMPACT ANALYSIS

Although individual environmental effects of a project may be determined to be less than significant when analyzed separately, the additive effect when viewed in connection with impacts of past, present, and future projects may cause the significant loss or degradation of a resource.

The area of consideration for cumulative biological projects impacts was restricted to projects occurring within the County, generally east of SR-125 and west of the Proposed Project site, given that Bureau of Land Management land occurs to the north and east of the site.

A total of 44 projects (including the Proposed Project) were reviewed for this cumulative analysis (Figure 19; Table 9). Of these 44 cumulative projects, 30 would result in significant or potentially significant cumulative impacts to sensitive species (this includes the Proposed Project). The remaining 14 projects either would not result in impacts to sensitive species, or information on impacts is not available.

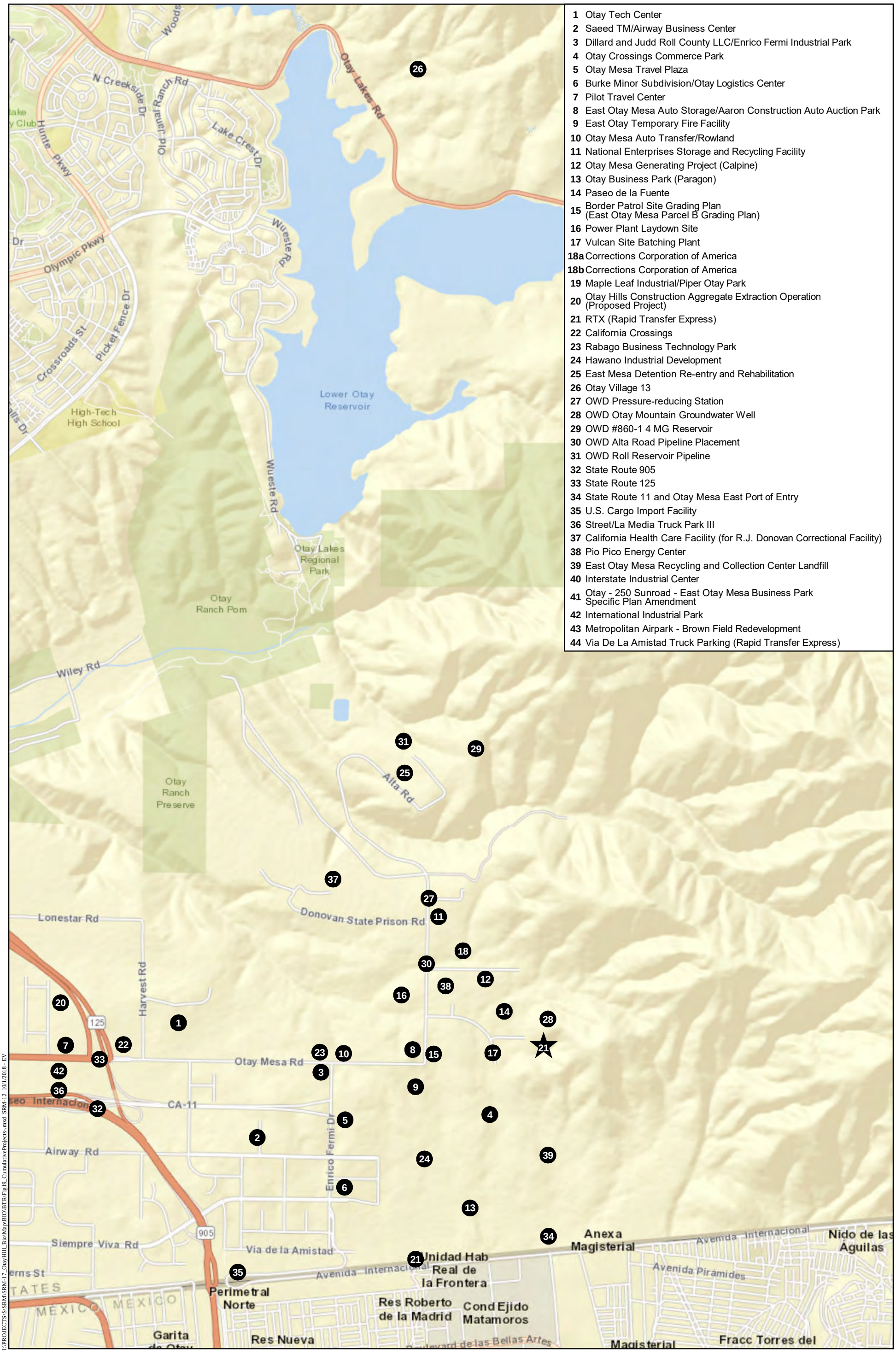
The projects with available data (excluding the Proposed Project) would result in removal of 7,000 Otay tarplant, 4,390 variegated dudleya, 1,497 San Diego goldenstar, 317 San Diego barrel cacti, and 190 San Diego marsh-elder. Cumulative impacts to County List D species San Diego needlegrass, western dichondra, southwestern spiny rush, San Diego sunflower, and ashy spike-moss were not counted because these species are all known from numerous locations in the area, including in preserved habitat to the north and east of the site, which allow their local long-term survival regardless of the impacts to these species from the cumulative projects. In addition, these projects would remove 27 locations where QCB were observed, 38 locations where CAGN were observed, and 21 locations where burrowing owls were observed/detected. Also, these projects would remove 2,694.78 acres of raptor foraging habitat (grasslands and Diegan coastal sage scrub [including disturbed]). Cumulative impacts to County Group 2 animal species coastal whiptail, California horned lark, and San Diego black-tailed jackrabbit were not counted because adequate habitat for these species occurs in the region such that the cumulative projects would not impact their regional long-term survival.

The Proposed Project would result in removal of 30 Otay tarplant, 120 variegated dudleya, 1,214 San Diego goldenstar, 196 San Diego barrel cacti, 142 San Diego marsh-elder, five locations where QCB were observed, one location where CAGN was observed, one location where burrowing owl was observed/detected, and 118.9 acres of raptor foraging habitat (for this analysis, grasslands and Diegan coastal sage scrub [including disturbed]); however, 20.6 acres of that impact would be from indirect noise.

Mitigation for removal of sensitive plant species from the Proposed Project would occur at ratios of 1:1 to 7.3:1 in accordance with Section 86.507 of the BMO, which requires that "in-kind

preservation shall be required at a 1:1 to 3:1 ratio [of listed or County List A or B plant species]." Mitigation for sensitive animal species would include preservation of habitat. While impacts are significant at the project level, they would be fully mitigated with preservation of habitat on site, with off-site acquisition of habitat (as appropriate), and relocation of species (as appropriate).

The Proposed Project and the 29 other projects with available data would preserve at least 510 Otay tarplant, 13,240 variegated dudleya, 12,223 San Diego goldenstar, 717 San Diego barrel cacti, 571 San Diego marsh-elder, 166 locations where QCB were observed, 52 locations where CAGN were observed/detected, five burrowing owl burrows/locations (in addition to burrowing owl habitat) and 1,791.52 acres of raptor foraging habitat (grasslands and Diegan coastal sage scrub [including disturbed]). The Burrowing Owl Strategy [County 2010b] considered the impacts and mitigation approved for past cumulative projects in order to establish the present mitigation ratio; therefore, the proposed burrowing owl mitigation addresses the Proposed Project's contribution to the cumulative impact. Therefore, the Proposed Project's impacts to these species, while significant at the project level, are fully mitigated with preservation of species and appropriate habitat on site; acquisition of appropriate habitat off site; and restoration and/or translocation of individuals. As the Proposed Project would ultimately be in conformance with the MSCP, cumulative impacts would be considered fully mitigated.



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Cumulative Projects

BIOLOGICAL TECHNICAL REPORT FOR OTAY HILLS

HELIX Environmental Planning

N 0 2,500 Feet

Figure 19

Table 9
CUMULATIVE BIOLOGICAL RESOURCES IMPACTS

Figure Reference No.	Project Number	Project Name	Riparian/ Wetland Habitats		Native Grassland		Diegan Coastal Sage Scrub		Chamise Chaparral		Non-native Grassland		Otay Tarplant		Variegated Dudleya		San Diego Goldenstar		San Diego Barrel Cactus		San Diego Marsh-elder		Quino Checkerspot Butterfly		Coastal California Gnatcatcher		Burrowing Owl	
			Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation
1	TM 5139 MUP 98-020 STP 02-05139-1	Otay Tech Center	0.52	0.64	4.2	8.5	3.1	3.3	0	0	171	54	0	0	Yes*	20% T	0	0	Yes *	47 T	0	0	0	0	0	0	0	0
2	TM 5304	Saeed TM/Airway Business Center	0	0	0	0	0	0	0	0	38.5	19.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	TM 5394	Dillard and Judd Roll County LLC/Enrico Fermi Industrial Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	TM 5405 SPA 04-006 MUP 00-024	Otay Crossings Commerce Park	0.73	0.73	0.1	0.2	1.9	2.9	0	0	263.1	263.1	0	0	0	0	0	0	72	144	138	276	2	7	0	0	4	5
5	TPM 20414 MUP 98-024 MUP Modification 98-024-01 L14632 AD 04-025	Otay Mesa Travel Plaza	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	73.5	73.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	TPM 20701RPL1 ZAP 99-029 STP 05-018 SPA 05-005	Burke Minor Subdivision/Otay Logistics Center	0	0	0	0	0	0	0	0	40.0	20.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	TPM 20894 STP 05-021	Pilot Travel Center	0	0	0	0	0	0	0	0	12.9	6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	MUP 00-012 Minor Deviation 00-012-02	East Otay Mesa Auto Storage/Aaron Construction Auto Auction Park	0	0	0	0	0	0	0	0	33.4	16.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	STP 00-070	East Otay Temporary Fire Facility	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	MUP 03-001	Otay Mesa Auto Transfer/Rowland	0	0	0	0	0	0	0	0	8.0	4.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	MUP 98-001 RPL1	National Enterprises Storage and Recycling Facility	0	0	0	0	0.8	67.9	0	0	103.6	24.3	0	0	0	0	0	0	Yes *	N/A	0	0	N/A	N/A	0	0	N/A	N/A
12	TPM 20570	Otay Mesa Generating Project (Calpine)	0	0	0	0	0	0	0	0	63.5	35.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	TM 5505	Otay Business Park	0.25	0.97	0.19	0.39	0	0	0	0	163.34	163.34	0	0	3,465	3,465	0	0	31	31	11	11	1	Yes	0	0	7	Yes
14	CG 4530	Paseo de la Fuente	0.34	0.68	0	0	0.08	0.12	0	0	12.0	6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	L 14456	Border Patrol Site Grading Plan	0	0	0	0	0.7	0.7	0	0	17.7	8.86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	L 14208	Power Plant Laydown Site	0	0	0	0	0	0	0	0	13.5	6.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 9 (cont.)
CUMULATIVE BIOLOGICAL RESOURCES IMPACTS

Figure Reference No.	Project Number	Project Name	Riparian/ Wetland Habitats		Native Grassland		Diegan Coastal Sage Scrub		Chamise Chaparral		Non-native Grassland		Otay Tarplant		Variegated Dudleya		San Diego Goldenstar		San Diego Barrel Cactus		San Diego Marsh-elder		Quino Checkerspot Butterfly		Coastal California Gnatcatcher		Burrowing Owl	
			Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation
17	L 14625 S07-038	Vulcan Batching Plant	0	0	0	0	2.06	3.09	0	0	10.9	5.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18a	P06-074 (MUP 06-074) SPA 05-005	Corrections Corporation of America	0	0	0	0	0	0	0	0	36.7	36.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18b	MUP06-074W1	Corrections Corporation of America	0	0	0	0	0	0	0	0	72	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	TM 5527	Maple Leaf Industrial/Piper Otay Park	0	0	0	0	0	0	0	0	23.4	23.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 (Proposed Project)	MUP 04-004 RP 04-001	Otay Hills Construction Aggregate Extraction Operation *(see bottom of table)*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21	S08-0/22	Rapid Transfer Express (RTX)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14.6	15.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	0
22	TPM 21046 MUP06-102 93-19-006AA	California Crossings	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	22.2	15.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	Yes
23	TM 5568	Rabago Business Technology Park	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24	TM 5566 MPA 3992-10-006	Hawano Industrial Development	0.08	0.08	0	0	0	0	0	0	83.1	83.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	MUP 88-018W3	East Mesa Detention Re-entry and Rehabilitation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26	GPA 04-003; SP 04-002; REZ 04-009; TM 5361; ER LOG 04-19-0005	Otay Village 13	0	0	77	N/A	510	N/A	114	N/A	61	N/A	0	0	925	4,908	1,497	1,049	115	102	2.9 acres	2.5 acres	20	107	14 locations	18 locations	1	Yes
27	N/A	OWD Pressure-reducing Station	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes *	Yes
28	N/A	OWD Otay Mountain Groundwater Well	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
29	N/A	OWD #860-1 4MG Reservoir	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
30	N/A	OWD Alta Road Pipe Replacement	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
31	N/A	OWD Roll Reservoir Pipeline	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
32	N/A	SR-905	8.6	14.2	0	0	12.3	12.3	0	0	134.1	67.1	0	0	0	0	N/A	N/A	98	T*	N/A	N/A	0	0	0	0	0	0
33	N/A	SR-125	5.26	15.78	0	0	60.5	121	0	0	0	0	7,000	Yes	0	0	0	0	0	0	0	0	1	Yes	24 locations	20+ pairs and 10 individuals	0	0

Table 9 (cont.)
CUMULATIVE BIOLOGICAL RESOURCES IMPACTS

Figure Reference No.	Project Number	Project Name	Riparian/ Wetland Habitats		Native Grassland		Diegan Coastal Sage Scrub		Chamise Chaparral		Non-native Grassland		Otay Tarplant		Variegated Dudleya		San Diego Goldenstar		San Diego Barrel Cactus		San Diego Marsh-elder		Quino Checkerspot Butterfly		Coastal California Gnatcatcher		Burrowing Owl	
			Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation	Impacts	Mitigation
34	PM 0.0/2.7 EA 056300	SR-11 and Otay Mesa East Port of Entry	0.5	0.84	0.2	0.4	0	0	0	0	171.9	171.9	0	0	0	0	0	N/A	1	1 T	41	Yes	3	Yes	0	0	9	Yes
35	N/A	U.S. Cargo Import Facility	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
36	77518	Street/La Media Truck Park III	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
37	SCH 2008061086	California Health Care Facility (for R.J. Donovan Correctional Facility)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
38	N/A	Pio Pico Energy Center	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
39	N/A	East Otay Mesa Recycling Collection Center and Landfill	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
40	N/A	Interstate Industrial Center	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
41	SPA 15 001 GPA 15 008 TM 5607 REZ 15 007 ER 15 98 190 13G	Otay-250 Sunroad - East Otay Mesa Business Park Specific Plan Amendment	0.11	0.22	0	0	0	0	0	0	195.99	98.00	0	0	Yes*	1:1	0	0	0	0	0	0	0	0	0	0	No	No
42	TM 5549	International Industrial Park	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	129.00	64.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
43	Project No. 208889	Metropolitan Airpark – Brown Field Redevelopment	3.44	2.76	0	0	0.42	0.42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Yes *	Yes
44	STP 14-004	Via De La Amistad Truck Parking (Rapid Transfer Express)	0	0	15.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	Yes
Subtotal			**19.83**	**36.9**	**97.59**	**9.49**	**591.86**	**211.73**	**114**	**N/A**	**2,005.33**	**1,319.30**	**7,000**	**0**	**4,390**	**8,373**	**1,497**	**1,049**	**317**	**325**	**190**	**287**	**27**	**114**	**38 locations**	**48 locations**	**21**	**5**
20 (Proposed Project)	MUP 04-004 RP 04-001	Otay Hills Construction Aggregate Extraction Operation	0.34	0.88	0.5	1.0	87.3**	218.9 ***	0	0	31.1	31.1	30	510	120	4,867	1,21 4	11,174	196	392	142	284	5	52	1 pair	4 pair	1	Yes
TOTAL			**20.17**	**37.78**	**98.09**	**10.49**	**679.16**	**430.63**	**114**	**N/A**	**2,036.43**	**1,350.4**	**7,030**	**510**	**4,510**	**13,240**	**2,711**	**12,223**	**513**	**717**	**332**	**571**	**32**	**166**	**39 locations**	**52 locations**	**22**	**5**

Key: * = Impacts would occur but were not quantified in available County documents; MUP = Major Use Permit; N/A = Information Not Available or Not Applicable; P = Habitat Preservation (acreage unknown); RP = Reclamation Plan; RPL = Replacement; SPA = Specific Plan Amendment; STP = Site Plan; T = Translocation;
TBD = To be determined; TM = Tentative Map; TPM = Tentative Parcel Map; ZAP = Minor Use Permit
**Includes 20.6 acres of indirect noise impacts.
*** Includes 120.7 acres of required mitigation and 98.2 acres of proposed dedication to open space in excess of required mitigation. The 98.2 acres to be preserved in excess of the required mitigation for direct and indirect impacts to Diegan coastal sage scrub was calculated by adding the 77.6 acres of excess preserved Diegan coastal sage scrub (284.1 acres of existing habitat on site – 84.8 acres of impacts on site – 120.7 acres of required mitigation on site – 1.0 acre of on-site impact neutral area = 77.6 acres) plus the 20.6-acre area of Diegan coastal sage scrub that would be indirectly impacted but subsequently protected in perpetuity.
†Does not include the Otay tarplant mitigation completed by Caltrans for SR-125.

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3.4 MITIGATION MEASURES AND DESIGN CONSIDERATIONS

The following mitigation measures are recommended to reduce the significant impacts to sensitive species to less than significant levels.

3.4.1 Plant Species

Impact 3.4.1a Implementation of the Proposed Project would remove approximately 30 individuals of Otay tarplant and 105.5 acres of Otay tarplant critical habitat.

Mitigation Measure (MM) 3.4.1a

Removal of 105.5 acres of Otay tarplant critical habitat shall be mitigated with preservation of 93.8 acres of Otay tarplant critical habitat within the on-site biological open space. Removal of 16.69 acres of suitable habitat and 30 individual plants are being mitigated through preservation of 6.58 acres of suitable habitat which includes preservation of 510 (94 percent) of the Otay tarplant individuals. 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.

Impact 3.4.1b-e

Implementation of the Proposed Project would remove 120 individuals of variegated dudleya, 1,214 individuals of San Diego goldenstar, 196 individuals of San Diego barrel cactus, and 142 individuals of San Diego marsh-elder.

MM 3.4.1b Removal of 120 of 4,987 individuals of variegated dudleya shall be mitigated by preservation of 4,867 individuals in accordance with Section 86.507 of the BMO. Removal of 13.06 acres of suitable habitat are being mitigated through preservation of 48.65 acres of suitable 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. These mitigation measures reduce impacts to less than significant.

MM 3.4.1c Impacts to 1,214 individuals of San Diego goldenstar shall be mitigated as follows. 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 applicant proposes implementation of a restoration plan (on site) for the translocation of the removed 1,214 individuals of San Diego goldenstar. 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 applicant proposes to fund implementation of an RMP (Appendix L) that includes measures to protect and enhance the preserved and/or translocated

populations. A San Diego Goldenstar Restoration Plan shall be prepared and submitted to the County for review and approval. Approval of the San Diego Goldenstar Restoration Plan and proof of recordation of an open space easement on site and off site (if appropriate) shall be required prior to commencement of habitat clearing and construction of extraction operation support facilities or extraction operations. The San Diego Goldenstar Restoration Plan shall be implemented within one year of habitat clearing and commencement of construction of extraction operation support facilities or extraction operations. Removal of 13.06 acres of suitable habitat are being mitigated through preservation of 69.46 acres of suitable habitat. This will reduce impacts to less than significant.

MM 3.4.1d Removal of 196 of 362 individuals of San Diego barrel cacti shall be mitigated at a 2:1 ratio in accordance with Section 86.507 of the BMO. Mitigation shall consist of salvage of the 196 San Diego barrel cacti removed on and off site and relocation of these individuals to areas of appropriate habitat on the Proposed Project site, as well as: planting an additional 196 barrel cacti on site for a total of 392 individual cacti planted. The cacti translocation would be subject to a Barrel Cactus Translocation Plan. The Barrel Cactus Translocation Plan shall be prepared and submitted to the County for review and approval.

It should be noted that HELIX has had success with barrel cactus translocation. One example includes the Rolling Hills Ranch Barrel Cactus Translocation Plan (HELIX 2000c). A total of 120 barrel cacti were required to be salvaged; however, 210 barrel cacti were actually salvaged. During the Year 5 annual assessment (HELIX 2005), 150 of the transplanted barrel cacti (71.4 percent success rate) were found alive and healthy, and seven were found to be alive but in poor health. The remaining 53 barrel cacti were found to be dead or missing.

Mitigation for San Diego barrel cactus shall be mitigated 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.

MM 3.4.1e Impacts to 142 of 290 individuals of San Diego marsh-elder shall be mitigated at a 2:1 ratio in accordance with Section 86.507 of the BMO. Mitigation shall include planting 284 individuals within the proposed biological open space. The applicant shall fund implementation of an RMP (Appendix L) that includes measures to protect and enhance the preserved or created populations. This will reduce impacts to less than significant. All of the mitigation for San Diego marsh-elder shall occur as part of Phase 1 mitigation.

Impact 3.4.1f-j

Implementation of the Proposed Project could result in increased colonization or spread of non-native plant species in the proposed open space that could adversely affect sensitive plant species in the open space by competition if not properly monitored, maintained, and managed.

MM 3.4.1f The biological open space shall be actively monitored, maintained, and managed in accordance with an RMP (Appendix L). The RMP (discussed in MM 4.4.1e, below) shall ensure, for example, that access is restricted and invasive plant species are monitored and controlled.

MM 3.4.1g Upon completion of the Proposed Project, final grading to establish the final landform, application of topsoil resources, and revegetation with native species (Seed Mix A) will occur for slope areas according to the Otay Hills Project Revegetation Plan prepared by EnviroMINE (Appendix C and Sheet 7 of the Reclamation Plan). The Proposed Project description already includes restoration of slopes adjacent to proposed open space with a native plant biological buffer (Seed Mix B) to help prevent the spread of any invasive plant species into open space (see MM 3.4.1i).

MM 3.4.1h Temporary construction staking or fencing shall be erected under the supervision of a qualified biologist at or outside the edge of the impact areas where they interface with natural areas. This fencing shall be erected prior to commencement of brushing or grading activities or extraction activities and shall demarcate areas where human and equipment access and disturbance from grading are prohibited. Upon placement of the permanent boundary fence, monitoring adjacent to project open space may cease. Staging areas shall be restricted to approved impact areas only.

MM 3.4.1i A hydroseed mix incorporating only native species (Seed Mix B) shall be used following extraction activities for all slope areas that are a biological buffer adjacent to open space. Weed control shall be provided for these areas according to the Otay Hills Project Revegetation Plan prepared by EnviroMINE (Appendix C and Sheet 7 of the Reclamation Plan).

MM 3.4.1j Pets/domestic animals and unauthorized Proposed Project personnel shall not be allowed within the biological open space. As part of the RMP, permanent signage shall be posted every 500 feet along western and southern boundaries and on alternating sides along the portion of Otay Truck Trail that traverses the open space, and at locations of any unauthorized trails entering the open space. All signs shall 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 shall state the following:

Sensitive Environmental Resources
Area 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 the County of San Diego,
Planning & Development Services
Ref. PDS2004-3300-04-004
Phone Number: (858) 694-2960

Impact 3.4.1k

The Proposed Project would remove 31.1 acres of non-native grassland and 0.5 acre of native grassland, which are burrowing owl habitats.

MM 3.4.1k Removal of 0.5 acre of native grassland shall be mitigated at a 2:1 ratio through on-site preservation of 0.7 acre of native grassland, as well as on- or off-site restoration or off-site acquisition and preservation of 0.3 acre of native grassland. Removal of 29.1 acres of non-native grassland on site and 2.0 acres of non-native grassland off site shall be mitigated at a 1:1 ratio by preservation of 16.1 acres of non-native grassland on site and 15.0 acres of grassland at an off-site location or through purchase of credits at an approved conservation bank consistent with the Burrowing Owl Strategy [County 2010b].

Off-site mitigation requirements shall be met prior to commencement of habitat clearing or construction of extraction operation support facilities or extraction operations, as follows. The applicant shall: 1) purchase off-site credits from an approved conservation bank or 2) acquire appropriate habitat within the County (consistent with the Burrowing Owl Strategy [County 2010b] for grassland habitat), dedicate the land as open space, and prepare an RMP (Appendix L) to be approved by the County and resource agencies. An endowment for mitigation land off-site also shall be provided for management in perpetuity.

3.4.2 Animal Species

Impact 3.4.2a

Implementation of the Proposed Project would remove five locations where QCB were observed, 104.9 acres of QCB occupied habitat, and 97.8 acres of QCB critical habitat.

MM 3.4.2a Removal of QCB shall be mitigated by preservation of 52 locations where QCB were observed and through preservation of 304.6 acres of biological open space on site, of which 303.5 acres is considered occupied by the QCB, and that contains 304.4 acres of QCB critical habitat. Funding for supplemental management of the AMA for QCB shall also be provided as part of the RMP. If the QCB is not covered under the MSCP at the time of Proposed Project approval, effects on the species

shall be subject to review and approval by the USFWS as part of the Section 7 or 10(a) consultation process.

Impact 3.4.2b-c

Implementation of the Proposed Project would directly remove one pair of CAGN, 66.7 acres of CAGN habitat (Diegan coastal sage scrub [including disturbed], and 77.1 acres of CAGN critical habitat. The Proposed Project would also indirectly impact 20.6 acres of CAGN habitat through noise.

MM 3.4.2b Impacts to the CAGN shall be mitigated through preservation of four pairs and 224.3 acres of CAGN habitat on site (includes long-term conservation of 20.6 acres impacted by noise during the life of the Project), which contains 185.0 acres of CAGN critical habitat. Prior to Proposed Project implementation, a preconstruction survey to demonstrate CAGN absence from the development footprint shall be required pursuant to USFWS protocol if habitat clearing is to occur during the breeding season (March 15 to August 15).

MM 3.4.2c Indirect impacts to 20.6 acres of CAGN habitat (Diegan coastal sage scrub [including disturbed]) from noise shall be mitigated through the preservation of 20.6 acres of Diegan coastal sage scrub (including disturbed) on site (included within the 224.3 acres conserved as noted above). Additionally, the following measures shall be required to minimize potential adverse noise effects on the habitat and CAGN.

- 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 controls: 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 1-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 1-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 above in the fourth bulleted item.

- 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.

Impact 3.4.2d-f

Implementation of the Proposed Project would remove raptor foraging habitat and one location where burrowing owl was observed in 2001. Impacts could also occur if animals become trapped in the development footprint or are attracted to it (for example, the burrowing owl) and end up injured or killed.

MM 3.4.2d Implementation of MM 3.4.1k shall mitigate removal of raptor foraging habitat.

MM 3.4.2e A survey for burrowing owl shall be conducted before habitat clearing in each Proposed Project phase consistent with the Strategy for Mitigating Impacts to Burrowing Owls in the Unincorporated County (County 2010b). If a burrowing owl(s) is sighted within the development footprint, the resource 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 active or passive translocation of the owl, outside of the breeding season or once the young have fledged, to a suitable area on the Proposed 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 resource agencies and County for review and approval in accordance with the CDFG Staff Report on Burrowing Owl Mitigation (2012).

MM 3.4.2f Impacts from potential entrapment in the development footprint and injury or death to sensitive animal species shall be mitigated as follows. This is in addition to the fence that the applicant would place along the outside edge of extraction areas during construction for safety and security reasons as part of the Proposed Project description.

- 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.

- 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.

Impact 3.4.2g

The Proposed Project would remove four coast horned lizard locations, an undetermined number of Belding's orange-throated whiptail locations, three loggerhead shrike locations, four grasshopper sparrow locations, five rufous-crowned sparrow locations, one Cooper's hawk location, and four locations of San Diego black-tailed jackrabbit.

MM 3.4.2g Implementation of MM 3.4.1k, 4.4.1c, and 4.4.1e shall mitigate the impacts to these species.

Impact 3.4.2h Project construction could impact the nesting success of coastal California gnatcatcher, tree-nesting raptors, and ground-nesting raptors, all of which have the potential to nest on and/or in the immediate vicinity of impact areas. Noise from such sources as clearing, grading, and blasting could result in an impact to wildlife. Noise-related impacts would be considered significant if sensitive species (such as coastal California gnatcatcher and raptors) were displaced from their nests and

failed to breed. Raptors or other sensitive bird species nesting within any area impacted by noise exceeding 60 dB L_{eq} or ambient could be significantly impacted. If coastal California gnatcatchers, burrowing owls, or tree-nesting raptors are nesting within 500 feet of the impact area, or northern harriers are nesting within 900 feet of the impact area, effects resulting from construction noise could be significant.

MM 3.4.2h Noise impacts to the California gnatcatcher from ongoing operations are addressed in MM 3.4.2c. A preconstruction survey to demonstrate burrowing owl and tree-nesting raptor absence from the 500-foot buffer shall be required if habitat clearing is to occur during the tree-nesting raptor breeding season (January 15 to July 15). A preconstruction survey of the 900-foot buffer shall be required if habitat clearing is to occur during the ground-nesting raptor breeding season (February 1 to July 15).

3.5 ALTERNATIVES

3.5.1 Extraction to Varying Depth

This alternative would result in disturbance of the same area as described above for the Proposed Project; therefore, removal of sensitive species and their habitats would be the same as described. Impacts related to invasive species also would be expected to be similar. Noise impacts would be of the same or similar magnitude as described for the Proposed Project, but would be of a shorter duration due to the reduced quarry depth.

3.5.2 Extraction to Natural Grade

This alternative would result in disturbance of the same area as described above for the Proposed Project; therefore, removal of sensitive species and their habitats would be the same as described. Impacts related to invasive species also would be expected to be similar. Noise impacts would be of the same or similar magnitude as described for the Proposed Project, but would be of a shorter duration due to the reduced quarry depth.

3.5.3 No Project/Existing Plan Alternative

Up to approximately 122 acres of vegetation would be directly affected upon implementation of the No Project/Existing Plan Alternative, based on full development of the 62-acre Mixed Industrial area and partial development of the 254-acre Rural Residential area; however, no specific development plan exists for this alternative. Therefore, specific impacts to individual vegetation communities and associated sensitive plant and animal species are not available for this alternative. Noise impacts likely would be reduced under this alternative relative to the Proposed Project, as material processing equipment would not be proposed. Other indirect impacts would be similar.

3.5.4 No Project/No Action Alternative

The No Project/No Action Alternative assumes that the site would not be used for aggregate extraction or mixed industrial and rural residential uses but rather would remain undeveloped for the foreseeable future. Under this alternative, no project- or action-related impacts to biological resources would occur.

3.6 CONCLUSION

Implementation of the Proposed Project and alternatives other than the No Project/No Action Alternative would remove 10 sensitive plant species and 10 sensitive animal species. In addition, indirect impacts as a result of loss of habitat and/or noise could occur to the 10 sensitive animal species. The proposed mitigation measures are consistent with the regulations and requirements of the resource agencies and the County. If implemented, the recommended mitigation measures would reduce these impacts to below a level of significance (Table 10).

Table 10
IMPACTS AND MITIGATION FOR SENSITIVE VEGETATION COMMUNITIES (acre[s])[1]

Vegetation Community/Habitat[2]	Tier[3]	Acreage		Mitigation					
		Existing On Site (and off site)	Impacts	Ratio[4]	Required	Preserved On Site in Open Space as Mitigation	Preserved in Excess of Required Mitigation	Required Restoration (on or off site) or Off-site Acquisition	Impact Neutral Areas
Mule fat scrub (63310)	I	0.03	0.00	3:1[5]	0.00	0.00	0.03	0.00	0.00
Cismontane alkali marsh (52310)	I	0.34	0.27	3:1[5]	0.81	0.00	0.07	0.81	0.00
Southern interior cypress forest (83330)	I	0.5	0.00	3:1[5]	0.0	0.0	0.5	0.0	0.0
Disturbed wetland (11200)	I	0.01	0.01	1:1	0.01	0.0	0.0	0.01	0.0
Tamarisk scrub (63810)	I	0.10	0.06	1:1	0.06	0.00	0.04	0.06	0.00
Native grassland (42100)	I	1.2	0.5	2:1	1.0	0.7[6]	0.0	0.3[6]	0.0
Diegan coastal sage scrub (including disturbed; 32500) – direct impact	II	284.1 (plus 2.5 off site)	64.2 (plus 2.5 off site)	1.5:1	100.1	120.7	98.2[9]	0.0	1.0
Diegan coastal sage scrub (including disturbed; 32500) – indirect impact			20.6[7]	1:1	20.6				
Coastal sage-chaparral scrub (37G00)	II	5.4	0.0	1:1	0.0	0.0	5.4	0.0	0.0
Chamise chaparral (37200)	III	14.8	0.0	1:1	0.0	0.0	14.8	0.0	0.0
Southern mixed chaparral (37120)	III	38.6	0.0	1:1	0.0	0.0	38.6	0.0	0.0
Non-native grassland (42220)	III	45.4 (plus 2.0 off site)	29.1 (plus 2.0 off site)	1:1	31.1	16.1[8]	0.0	15.0[8]	0.2
Disturbed habitat (11300)	IV	18.4 (plus 0.2 off site)	8.5 (plus 0.2 off site)	--	0.0	0.0	8.7	0.0	1.2

Table 10 (cont.)
IMPACTS AND MITIGATION FOR SENSITIVE VEGETATION COMMUNITIES (acre[s])[1]

Vegetation Community/Habitat[2]	Tier[3]	Acreage		Mitigation					
		Existing On Site (and off site)	Impacts	Ratio[4]	Required	Preserved On Site in Open Space as Mitigation	Preserved in Excess of Required Mitigation	Required Restoration (on or off site) or Off-site Acquisition	Impact Neutral Areas
Developed land (12000)	IV	0.7	<0.1	--	0.0	0.0	0.7	0.0	0.0
TOTAL		**409.7 (plus 4.7 off site)**	**123.24 (plus 4.7 off site)**	**--**	**153.68**	**137.6**	**166.93**	**16.18**	**2.4**
GRAND TOTAL		**414.4**	**127.94**	**--**	**153.68**	**137.6**	**167.04**	**16.18**	**2.4**

[1]Upland habitats are rounded to the nearest 0.1 acre, while wetland habitats are rounded to the nearest 0.01; thus, totals reflect rounding.
[2]Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008).
[3]Tiers refer to County MSCP Subarea Plan habitat classification system.
[4]Mitigation ratios assume that impacts and mitigation occur in BRCAs except for USACE and CDFW jurisdictional areas.
[5]While the MSCP requires a mitigation ratio of less than 3:1 for impacts and mitigation sites assumed to be within BRCAs, wetland permitting through the USACE and CDFW is expected to result in 3:1 mitigation ratios.
[6]Mitigation for removal of native grassland to be met with preservation of 0.7 acre of native grassland and on- or off-site restoration or off-site acquisition of 0.3 acre of native grassland.
[7]Mitigation for indirect noise impacts to habitat to be preserved in open space.
[8]Removal of non-native grassland to be mitigated at a 1:1 mitigation ratio according to the Burrowing Owl Strategy (County 2010b) with preservation of 16.1 acres of non-native grassland on site and 15.0 acres of non-native grassland at an off-site location or through purchase at an approved conservation bank.
[9]The 98.2 acres to be preserved in excess of the required mitigation for direct and indirect impacts to Diegan coastal sage scrub was calculated by adding the excess preserved Diegan coastal sage scrub (286.6 acres of existing habitat on site – 87.3 acres of impacts on site – 120.7 acres of required mitigation on site – 1.0 acre of on-site impact neutral area = 77.6 acres) plus the 20.6-acre area of Diegan coastal sage scrub that would be indirectly impacted.

4.0 RIPARIAN HABITAT OR SENSITIVE NATURAL COMMUNITY

4.1 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the USFWS or CDFW?

Any of the following conditions would be considered significant if:

A. Project-related grading, clearing, construction or other activities would temporarily or permanently remove sensitive native or naturalized habitat (as listed in Table 5 in the County Biological Guidelines, excluding those without a mitigation ratio) on or off the project site.

B. Any of the following will occur to or within jurisdictional wetlands and/or riparian habitats as defined by the USACE, CDFW, and County: vegetation removal; grading; obstruction or diversion of water flow; adverse change in velocity, siltation, volume of flow, or runoff rate; placement of fill; placement of structures; road crossing construction; placement of culverts or other underground piping; any disturbance of the substratum; and/or any activity that may cause an adverse change in native species composition, diversity and abundance.

C. The project would draw down the groundwater table to the detriment of groundwater-dependent habitat, typically a drop of three feet or more from historical low groundwater levels.

D. The project would cause indirect impacts, particularly at the edge of proposed development adjacent to proposed or existing open space or other natural habitat areas, to levels that would likely harm sensitive habitat over the long term. Issues to be addressed include: increasing human access or predation or competition from domestic animals, pests, or exotic species; altering natural drainage; and increasing noise and/or nighttime lighting to a level above ambient that has been shown to adversely affect sensitive habitats.

E. The project does not include a wetland buffer adequate to protect the functions and values of existing wetlands.

4.2 ANALYSIS OF PROJECT EFFECTS

The Proposed Project would result in significant impacts under the above guidelines as follows:

4.1.A The Proposed Project would result in removal of approximately 98.7 acres of sensitive (Tier I through III) vegetation on and off site: 0.27 acre of cismontane alkali marsh, 0.01 acre of disturbed wetland, 0.06 acre of tamarisk scrub, 0.5 acre of native grassland, 66.7 acres of Diegan coastal sage scrub (including disturbed), and 31.1 acres of non-native

grassland (Figure 8; Table 10). Indirect noise impacts to 20.6 acres of Diegan coastal sage scrub also would occur.

4.1.B Implementation of the Proposed Project would result in removal of 0.44 acre of USACE jurisdictional areas (Figure 11a; Table 11), 0.49 acre of RWQCB jurisdictional areas (Figure 11b; Table 11), and 0.53 acre of CDFW jurisdictional areas (Figure 11c; Table 11).

Table 11
IMPACTS AND MITIGATION FOR JURISDICTIONAL AREAS (acre[s])

Habitat	Impacts			Mitigation Ratio	Mitigation Required		
	USACE	RWQCB	CDFW		USACE	RWQCB	CDFW
Wetlands							
Cismontane alkali marsh	0.21	0.21	0.27	3:1[1]	0.63	0.63	0.81
Disturbed wetland	0.01	0.01	0.01	1:1[1]	0.01	0.01	0.01
Tamarisk scrub	0.06	0.06	0.06	1:1[1]	0.06	0.06	0.06
Non-wetlands							
Drainage/Streambed	0.14	0.18	0.17	1:1	0.14	0.18	0.17
Pond	0.02	0.02	0.02	1:1	0.02	0.02	0.02
Intermittent pond	0.00	0.01	0.00	1:1	0.00	0.01	0.00
TOTAL	**0.44**	**0.49**	**0.53**	**--**	**0.86**	**0.91**	**1.07**

[1]1:1 shall be creation to achieve no net loss of wetland habitat.

4.1.D Impacts from domestic animals due to the Proposed Project are not anticipated given that the Proposed Project consists of mineral extraction activities and not a residential subdivision. Invasive, non-native plants could, however, colonize areas disturbed by construction and could potentially spread into open space.

The Proposed Project would include a permanent fence along the outside edge of extraction areas that would help keep people out of the adjacent open space, and access restriction/trespass signs would be placed along the western and southern boundaries of the open space. The fencing will be six-foot galvanized chain link. Still, additional protection measures are needed to reduce the potential for human access into the open space to less than significant level.

Therefore, the impacts from invasive plant species and human access would be significant according to County Guideline 4.1.D.

The Proposed Project would result in less than significant impacts under the above guidelines as follows:

4.1.B As previously discussed, implementation of the Proposed Project would remove 0.34 acre of County RPO wetlands (Figure 11c; Table 10). The Proposed Project, however, is exempt from RPO requirements as discussed in Section 1.5.3, above.

4.1.C No groundwater withdrawals or activities that could result in lowering of the groundwater table are proposed. As discussed in the EIR section 4.2, the static water level is approximately 300 feet below the ground surface at the well site near the northern impact footprint boundary, which is above the proposed maximum excavation depth, but below the rooting depth of plants observed on site. In addition, excavation would be terminated at (or slightly below) the level where significant inflow of groundwater occurs, so no impact would occur.

4.1.E A wetland buffer is not proposed. The County requires a wetland buffer through the RPO. However, the Proposed Project is exempt from the RPO, so no wetland buffer is required.

4.3 CUMULATIVE IMPACT ANALYSIS

The 30 cumulative projects with available data (including the Proposed Project) would result in removal of 20.17 acres of riparian/wetland habitats, 98.09 acres of native grassland, 679.16 acres of Diegan coastal sage scrub, 114 acres of chamise chaparral, and 2,036.43 acres of non-native grassland. The Proposed Project's removal of 0.34 acre of riparian/wetland habitat, while significant at the project level, are fully mitigated by on- or off-site creation, restoration, and/or enhancement in accordance with the County, USACE and CDFW. Given that mitigation would occur at ratio of 3:1 for cismontane alkali marsh and 1:1 for tamarisk scrub and disturbed wetland (1:1 would be creation), there would be no net loss of riparian/wetland habitat; therefore, no cumulatively significant impact would occur. The Proposed Project's removal of native grassland (0.5 acre), while significant at the project level, are mitigated with preservation on site or through off-site acquisition of suitable habitat and are small enough to be not cumulatively considerable or significant. The Proposed Project's direct and indirect impacts to 87.3 acres of Diegan coastal sage scrub and 31.1 acres of non-native grassland, while significant at the project level, are fully mitigated by preservation of appropriate habitat on site and/or off site.

The 30 cumulative projects with available data (including the Proposed Project) would preserve a total of 1,829.30 acres of sensitive vegetation communities (37.78 acres of riparian/wetland habitats, 10.49 acres of native grassland, 430.63 acres of Diegan coastal sage scrub, chamise chaparral of unknown acreage, and 1,350.4 acres of non-native grassland). As the Proposed Project would ultimately be in conformance with the MSCP, cumulative impacts would be considered fully mitigated.

The Proposed Project would comply with the MSCP through preservation of approximately 218.9 acres of Diegan coastal sage scrub (including disturbed) in permanent open space on site. Similar to the Proposed Project, the cumulative projects with available data listed in Table 9 would be required to mitigate for impacts to Diegan coastal sage scrub in accordance with the requirements of the MSCP. As a result, the Proposed Project's impacts to Diegan coastal sage scrub (including disturbed) would not have a cumulatively significant impact on the future viability of these vegetation communities or future regional preserve design.

4.4 MITIGATION MEASURES AND DESIGN CONSIDERATIONS

Impact 4.4.1a-f

Implementation of the Proposed Project would result in removal of approximately 98.7 acres of sensitive (Tier I through III) vegetation on and off site: 0.27 acre of cismontane alkali marsh, 0.01 acre of disturbed wetland, 0.06 acre of tamarisk scrub, 0.5 acre of native grassland, 66.7 acres of Diegan coastal sage scrub (including disturbed), and 31.1 acres of non-native grassland (Figure 8; Table 10). Indirect noise impacts to 20.6 acres of Diegan coastal sage scrub also would occur. Invasive, non-native plants could colonize areas disturbed by construction and could potentially spread into open space.

MM 4.4.1a Mitigation for removal of 0.27 acre of cismontane alkali marsh shall occur at a 3:1 ratio (1:1 of the 3:1 shall be creation) through on- or off-site creation, restoration, and/or enhancement of 0.81 acre of cismontane alkali marsh, through purchase of 0.81 credits from an approved wetland mitigation bank, or alternative mitigation acceptable to the County, USACE, RWQCB, and CDFW prior to clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations. Mitigation for removal of 0.01 acre of disturbed wetland and 0.06 acre of tamarisk scrub shall occur at a 1:1 ratio through on- or off-site creation of 0.07 acre of riparian or other wetland habitat, through purchase of 0.07 credits from an approved wetland mitigation bank, or alternative mitigation acceptable to the County, USACE, RWQCB, and CDFW prior to clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations. Mitigation for cismontane alkali marsh, disturbed wetland and tamarisk scrub shall occur as follows:

Prior to the clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations for the Proposed Project, the applicant shall either: (1) purchase wetland habitat credits, (2) identify (and acquire, if necessary) appropriate habitat within the County and prepare a wetland restoration plan, or (3) identify and provide alternative mitigation acceptable to the County, USACE, RWQCB, and CDFW. Such alternative mitigation could include financial or in-kind contributions to a larger restoration or enhancement project. The wetland restoration plan would require written approval from the USACE, CDFW, RWQCB, and County. In addition, a bond shall be provided to the County prior to habitat clearing and commencement of construction of extraction operation support facilities or extraction operations to cover 120 percent of any restoration plan implementation costs. A biological open space easement shall be placed over all areas used for wetland mitigation and an endowment provided for management in perpetuity. This shall be in addition to the biological open space proposed for areas preserved on site and its associated endowment.

MM 4.4.1b Mitigation for removal of native grassland shall occur in accordance with MM 3.4.1k.

MM 4.4.1c Mitigation for removal of 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) on site. The indirect noise impacts to 20.6 acres of Diegan coastal sage scrub (including disturbed) as a result of Proposed 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) on site. Required preservation of Diegan coastal sage scrub (including disturbed) shall total 120.7 acres on site.

MM 4.4.1d Implementation of MM 3.4.1k would mitigate for removal of non-native grassland.

MM 4.4.1e The applicant shall dedicate 304.6 acres of biological open space on site for impacts resulting from the Proposed Project prior to the clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations. The biological open space shall be managed by a conservation entity (to be approved by the County and resource agencies prior to commencement of habitat clearing and construction of extraction operation support facilities or extraction operations) that would be responsible for implementing the RMP (Appendix L). An RMP has been prepared that clearly describes biological open space management. The RMP includes stewardship measures, including but not limited to, fencing and signs upkeep, trespass restriction (see MM 3.4.1j), and debris removal. The applicant shall offer evidence to the County and resource agencies that an endowment has been provided to the conservation entity to manage the land in perpetuity. This endowment amount shall be determined through the use of Property Analysis Record (PAR) or similar method. Funding of the RMP and endowment shall occur through the applicant funding annual RMP costs plus an additional amount that will be placed into the endowment account per phase until the endowment is fully funded. Endowment funding will be phased as follows:

- Prior to initiating any work on Phase 1, 14 percent of the total endowment shall be funded.
- Prior to Phase 2a, an additional 17 percent of the total endowment shall be funded (31 percent total).
- Prior to Phase 2b, an additional 24 percent of the total endowment shall be funded (55 percent total).
- Prior to 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 applicant may also elect to fund the entire endowment upfront prior to initiating grading on the site consistent with the RMP (Appendix L).

MM 4.4.1f The Proposed Project description includes revegetation of slopes following project completion (MM 3.4.1g) and restoration of slopes adjacent to proposed open space with a native plant biological buffer to help prevent the spread of any invasive plant species into open space (MM 3.4.1i). Implementation of MM 3.4.1f through 3.4.1j would also mitigate for impacts from invasive plant species.

Impact 4.4.2a-c

Fill of 0.44 acre of USACE jurisdictional areas and 0.53 acre of CDFW jurisdictional areas would occur upon Proposed Project implementation (Table 11).

MM 4.4.2a Fill of USACE jurisdictional cismontane alkali marsh, tamarisk scrub, and disturbed wetland shall be mitigated as described in MM 4.4.1a. Fill of 0.16 acre of USACE jurisdictional non-vegetated Waters of the U.S. shall be mitigated at a 1:1 ratio or alternative mitigation acceptable to the County and USACE prior to the clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations (Table 11).

MM 4.4.2b Removal of CDFW jurisdictional cismontane alkali marsh, tamarisk scrub, and disturbed wetland shall be mitigated as described in MM 4.4.1a. Removal of 0.19 acre of CDFW jurisdictional streambed and pond shall be mitigated at a 1:1 ratio or alternative mitigation acceptable to the County and CDFW prior to the clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations (Table 11).

MM 4.4.2c Removal of RWQCB jurisdictional cismontane alkali marsh, tamarisk scrub, and disturbed wetland shall be mitigated as described in MM 4.4.1a. Removal of RWQCB jurisdictional streambed, pond, and intermittent pond shall be mitigated at a 1:1 ratio or alternative mitigation acceptable to the County and RWQCB prior to the clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations (Table 11).

4.5 ALTERNATIVES

4.5.1 Extraction to Varying Depth

This alternative would result in disturbance of the same area as described above for the Proposed Project; therefore, removal of sensitive natural communities would be the same as described.

4.5.2 Extraction to Natural Grade

This alternative would result in disturbance of the same area as described above for the Proposed Project; therefore, removal of sensitive natural communities would be the same as described.

4.5.3 No Project/Existing Plan Alternative

Up to approximately 122 acres of vegetation would be directly affected upon implementation of the No Project/Existing Plan Alternative. This is based on full development of the 62 acres designated for Mixed Industrial. There are 254 acres designated for Rural Residential, which at one dwelling unit per 20 acres would yield up to 12 dwelling units. Assuming a five-acre impact for each of the 12 single-family homes in the Rural Residential area, approximately 60 more acres would be removed; however, no specific development plan exists for this alternative. The vegetation impacted could potentially include any of the vegetation types within the Proposed Project site: mule fat scrub, cismontane alkali marsh, southern interior cypress forest, disturbed wetland, 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. The locations of the 12 homes are not known, as they would be determined in consultation between the landowner(s) and the County. Therefore, the total removal acreage of individual vegetation communities are not available for this alternative.

4.5.4 No Project/No Action Alternative

The No Project/No Action Alternative assumes that the site would not be used for aggregate extraction or mixed industrial and rural residential uses, but rather would remain undeveloped for the foreseeable future. Under this alternative, no impacts to sensitive natural communities would occur.

4.6 CONCLUSION

Implementation of the Proposed Project and alternatives other than the No Project/No Action Alternative would result in significant removal of sensitive natural communities, including jurisdictional areas; however, a combination of avoidance through Proposed Project design and mitigation measures for loss of habitat would reduce impacts to below a level of significance. Mitigation is proposed to include preservation of habitat on site and off site at ratios consistent with those required by the County, resource agencies, and USACE.

5.0 JURISDICTIONAL WETLANDS AND WATERWAYS

5.1 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption or other means?

Any of the following conditions would be considered significant if:

A. Any of the following will occur to or within jurisdictional wetlands and/or riparian habitats as defined by the USACE, CDFW, and County: vegetation removal; grading; obstruction or diversion of water flow; adverse change in velocity, siltation, volume of flow, or runoff rate; placement of fill; placement of structures; road crossing construction; placement of culverts or other underground piping; any disturbance of the substratum; and/or any activity that may cause an adverse change in native species composition, diversity and abundance.

B. The project would draw down the groundwater table to the detriment of groundwater-dependent habitat, typically a drop of three feet or more from historical low groundwater levels.

C. The project does not include a wetland buffer adequate to protect the functions and values of existing wetlands.

5.2 ANALYSIS OF PROJECT EFFECTS

5.1A Implementation of the Proposed Project would result in significant removal of 0.44 acre of USACE jurisdictional areas, 0.49 acre of RWQCB jurisdictional areas, and 0.53 acre of CDFW jurisdictional areas (Table 11) under County Significance Guideline 5.1.A.

No groundwater withdrawals or activities that could result in lowering of the groundwater table are proposed, so no impact would occur under County Significance Guideline 5.1.B.

As explained in Section 1.5.3, there is no feasible buffer between the development footprint and cismontane alkali marsh; however, a fence to keep people out of the open space would be installed. This physical barrier is expected to be adequate to protect the functions and values of the remaining 0.1 acre of this wetland on site. Therefore a significant impact is not anticipated under County Significance Guideline 5.1.C.

5.3 CUMULATIVE IMPACT ANALYSIS

The Proposed Project's removal of 0.44 acre of USACE jurisdictional areas, 0.49 acre of RWQCB jurisdictional areas, and 0.53 acre of CDFW jurisdictional areas, while significant at the project level, would be fully mitigated by on- or off-site mitigation in accordance with the USACE. Given that mitigation would occur at ratios of 1:1 or 3:1 (with 1:1 being creation; Table 11), there would be no net loss of USACE or CDFW jurisdictional areas and, therefore, no cumulatively significant impact would occur.

5.4 MITIGATION MEASURES AND DESIGN CONSIDERATIONS

Implementation of MM 4.4.1a, MM 4.4.2a, 4.4.2b, and 4.4.2c would mitigate for removal of USACE, CDFW, and RWQCB jurisdictional areas.

5.5 ALTERNATIVES

5.5.1 Extraction to Varying Depth

This alternative would result in disturbance of the same area as described above for the Proposed Project; therefore, removal of jurisdictional waters would be the same as described.

5.5.2 Extraction to Natural Grade

This alternative would result in disturbance of the same area as described above for the Proposed Project; therefore, removal of jurisdictional waters would be the same as described.

5.5.3 No Project/Existing Plan Alternative

Up to approximately 122 acres of vegetation would be directly affected upon implementation of the No Project/Existing Plan Alternative; however, no specific development plan exists for this alternative. Impacts to jurisdictional waters are not available for this alternative, but are likely to be similar to those identified for the Proposed Project.

5.5.4 No Project/No Action Alternative

The No Project/No Action Alternative assumes that the site would not be used for aggregate extraction or mixed industrial and rural residential uses, but rather would remain undeveloped for the foreseeable future. Under this alternative, no impacts to jurisdictional waters would occur.

5.6 CONCLUSION

Implementation of the Proposed Project and alternatives other than the No Project/No Action Alternative would result in significant impacts to USACE jurisdictional areas. Because the USACE, CDFW, and County all require "no net loss" of wetlands, mitigation measures, as determined by the USACE, would reduce impacts to below a level of significance.

6.0 WILDLIFE MOVEMENT AND NURSERY SITES

6.1 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Any of the following conditions would be considered significant if:

A. The project would impede wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for their reproduction.

B. The project would substantially interfere with connectivity between blocks of habitat, or would potentially block or substantially interfere with a local or regional wildlife corridor or linkage.

C. The project would create artificial wildlife corridors that do not follow natural movement patterns.

D. The project would increase noise and/or nighttime lighting in a wildlife corridor or linkage to levels likely to affect the behavior of the animals identified in a site-specific analysis of wildlife movement.

E. The project does not maintain an adequate width for an existing wildlife corridor or linkage and/or would further constrain an already narrow corridor through activities such as (but not limited to) reduction of corridor width, removal of available vegetative cover, placement of incompatible uses adjacent to it, and placement of barriers in the movement path.

F. The project does not maintain adequate visual continuity (i.e., long lines-of-site) within wildlife corridors or linkage.

6.2 ANALYSIS OF PROJECT EFFECTS

The Proposed Project would result in less than significant impacts under the above guidelines as follows:

6.1.A The Proposed Project would directly remove nesting/foraging habitats of several sensitive animal species, and construction activity and extraction operations are expected to impede local wildlife movement slightly given that extraction operations would occur over many years, but the Proposed Project is designed to maintain connectivity of preserved habitats in open space on site with connections to off-site, vacant lands. Fencing of the extraction operation will direct wildlife away from the quarry and towards open space. Land surrounding the Proposed Project to the north and east is undeveloped and contributes to a larger habitat area for several plant and animal species. The animal species can use most habitats on site and can access habitats outside the site without restriction at this time. These areas provide a substantial nearby area for nesting/foraging such that these impacts would be considered less than significant.

6.1.B The Proposed Project would consist of hauling roads, and mining related structures and appurtenances that could create a barrier on the land surface for local wildlife movement across the western portion of the Proposed Project site but would not restrict regional wildlife movement likely occurring to the north and east of the development footprint in the Proposed Project open space 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 Proposed Project is designed to maintain connectivity of preserved habitats in the 304.6-acre open space with off-site vacant lands

to the north and east. Fencing of the extraction operation will direct wildlife away from the quarry and towards open space. Therefore, the site would not interfere substantially with connectivity between blocks of habitats (the site is not part of a regional corridor). Under County Guideline 6.1.B, no significant impact would occur.

6.1.C The Proposed Project would not create artificial wildlife corridors that do not follow natural movement patterns. The Proposed Project site is not part of a regional corridor, but the 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. Existing development already occurs adjacent to the northwestern portion of the development footprint, and already approved development occurs along the remainder of the western boundary of the development footprint. The applicant proposes to dedicate 304.6 acres of biological open space on site east of the development footprint that connect to adjacent public lands and private open space farther to the north and east. This would maintain the regional landscape level conservation function and continue to allow wildlife to move across all but the development footprint, which is adjacent to existing and planned developments.

6.1.D All Proposed Project-related lighting would be required to adhere to the San Diego County Light Pollution Code. Lighting within the development footprint adjacent to proposed open space would be of the lowest illumination allowed for human safety, selectively placed, shielded, and directed away from preserved habitat. Noise impacts resulting from the Proposed Project would affect habitat adjacent to the footprint, but would not impact any regional corridors and linkages since the Proposed Project site is part of neither. Under County Guideline 6.1.D, no significant impacts would occur.

6.1.E The Proposed Project would not reduce an existing wildlife corridor or linkage or further constrain an already narrow wildlife corridor. As stated above, the site is not part of a corridor or linkage, and 304.6 acres of habitat surrounding the development footprint would be preserved in open space as mitigation for impacts. This open space would preserve regional landscape level conservation function. Under County Guideline 6.1.E, no significant impact would occur.

6.1.F The Proposed Project would not affect visual continuity within wildlife corridors or linkages. The Proposed Project site is not within a corridor or linkage. The Proposed Project's development footprint abuts existing development to the northwest and already approved development along the remainder of its western boundary. The applicant proposes to dedicate 304.6 acres of biological open space on site east of the development footprint that connect to adjacent public lands and private open space farther to the north and east. This would maintain visual continuity across the entire eastern portion of the Proposed Project site and adjacent vacant lands to the north and east.

6.3 CUMULATIVE IMPACT ANALYSIS

As stated above, the 30 cumulative projects with available data (including the Proposed Project) would preserve a total of 1,829.30 acres of sensitive vegetation communities (37.78 acres of riparian/wetland habitats, 10.49 acres of native grassland, 430.63 acres of Diegan coastal sage

scrub, chamise chaparral of unknown acreage, and 1,350.4 acres of non-native grassland). As such, no cumulatively significant impact to wildlife corridors would occur. As the Proposed Project would ultimately be in conformance with the MSCP, cumulative impacts would be considered fully mitigated.

6.4 MITIGATION MEASURES AND DESIGN CONSIDERATIONS

No significant impacts are identified; therefore, no mitigation is required.

6.5 ALTERNATIVES

6.5.1 Extraction to Varying Depth

This alternative would result in the same type and lateral extent of disturbance as described above for the Proposed Project; therefore, impacts to wildlife movement would be the same as described.

6.5.2 Extraction to Natural Grade

This alternative would result in the same type and lateral extent of disturbance as described above for the Proposed Project; therefore, impacts to wildlife movement would be the same as described.

6.5.3 No Project/Existing Plan Alternative

As the uses under this alternative would be similar to the ultimate uses with the Proposed Project, impacts to wildlife movement would be similar.

6.5.4 No Project/No Action Alternative

The No Project/No Action Alternative assumes that the site would not be used for aggregate extraction or mixed industrial and rural residential uses, but rather would remain undeveloped for the foreseeable future. Under this alternative, no impacts to wildlife movement would occur.

6.6 CONCLUSION

No significant impacts are identified, and no mitigation is therefore required.

7.0 LOCAL POLICIES, ORDINANCES, AND ADOPTED PLANS

7.1 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? Would the project conflict with the provisions of an adopted Habitat Conservation Plan (HCP), NCCP plan, or other approved local, regional or state habitat conservation plan?

Any of the following conditions would be considered significant if:

A. For lands outside of the MSCP, the project would impact coastal sage scrub vegetation in excess of the County's five percent habitat loss threshold as defined by the Southern California Coastal Sage Scrub NCCP Guidelines.

B. The project would preclude or prevent the preparation of the subregional NCCP. For example, the project proposes development within areas that have been identified by the County or resource agencies as critical to future habitat preserves.

C. The project will impact any amount of wetlands or sensitive habitat lands as outlined in the RPO.

D. The project would not minimize and/or mitigate coastal sage scrub habitat loss in accordance with Section 4.3 of the NCCP Guidelines.

E. The project does not conform to goals and requirements outlined in any applicable Habitat Conservation Plan, Habitat Management Plan, Special Area Management Plan, Watershed Plan, or similar regional planning effort.

F. For lands within the MSCP, the project would not minimize impacts to BRCAs, as defined in the BMO.

G. The project would preclude connectivity between areas of high habitat values, as defined by the Southern California Coastal Sage Scrub NCCP Guidelines.

H. The project does not maintain existing movement corridors and/or habitat linkages as defined by the BMO.

I. The project does not avoid impacts to MSCP narrow endemic species and would impact core populations of narrow endemics.

J. The project would reduce the likelihood of survival and recovery of listed species in the wild.

K. The project would result in the killing of migratory birds or destruction of active migratory bird nests and/or eggs (Fish and Game Code (FGC) Sections 3500 – 3516).

L. The project would result in the take of eagles, eagle eggs or any part of an eagle (BGEPA).

7.2 ANALYSIS OF PROJECT EFFECTS

The Proposed Project would result in significant impacts under the above guidelines as follows:

7.1.C The Proposed Project would directly remove a total of 98.7 acres of sensitive habitat lands as outlined in the RPO. However, this guideline does not apply to the Proposed Project because it is exempt from the RPO.

7.1.I Three narrow endemic plant species (Otay tarplant, Dunn's mariposa lily, and variegated dudleya) and three narrow endemic animal species (QCB, burrowing owl, and golden eagle) occur on site. The Proposed Project has been significantly redesigned to minimize impacts to QCB, but removal of QCB, Otay tarplant, variegated dudleya, and burrowing owl would occur.

7.1.K Implementation of the Proposed Project could potentially result in the killing of migratory birds or destruction of active bird nests and/or eggs (protected by the FGC).

The Proposed Project would result in less than significant impacts under the above guidelines as follows:

7.1.A The Proposed Project is within the MSCP Subarea Plan. Therefore, County Guideline 7.1.A is not applicable.

7.1.B Implementation of the Proposed Project would not preclude or prevent the preparation of a subregional NCCP as the Proposed Project site occurs within a subregion with an approved NCCP Plan (MSCP). The Proposed Project would remove 0.3 acre of Proposed Hardline Preserve (less than 0.01 percent) of the 8,395.7 acres of Proposed Hardline Preserve within the County's MSCP Subarea. The Proposed Project would also remove 77 acres (less than two percent) of Major Amendment Area of the 5,019.8 acres of Major Amendment Area within the County's MSCP Subarea (Figure 12). As such, there would be a minimal impact to the overall preserve that would be less than significant. The Proposed Project would become consistent with the MSCP upon approval of the Major Amendment (Appendix K).

7.1.D Removal of coastal sage scrub were minimized by reducing the development footprint from 210 acres down to 102.7 acres and the habitat would be fully mitigated (see MM 4.4.1c). Under County Guideline 7.1.D, no significant impact would occur.

7.1.E Removal of sensitive plant and animal species would be mitigated, as appropriate, and the Proposed Project qualifies for exceptions to the BMO avoidance criterion for two plant species, San Diego barrel cactus and San Diego marsh-elder, as explained in sections 2.1.4 and 2.1.5. As such, the Proposed Project would conform to goals and requirements outlined in the Subarea Plan, and no significant impact would occur.

7.1.F Under the BMO definition, the habitat located within the qualifies as a BRCA. Proposed Project design has minimized removal of habitat within the BRCA to the maximum extent

practicable. The Project removal of habitat and sensitive species have been reduced and minimized through many iterations of Project design over many years of working with the County and wildlife agencies. The Proposed Project habitat removal has been reduced from 210 acres in the original proposal to 102.7 acres with the Proposed Project, and the most significant populations of QCB, variegated dudleya, San Diego goldenstar and Otay tarplant have been avoided. Habitat removal for all other covered species have also been significantly reduced by the revised footprint. Under County Guideline 7.1.F, no significant impact would occur.

7.1.G The Proposed Project would not preclude connectivity between areas of high habitat values. Mitigation for removal of sensitive vegetation communities is proposed to consist of preservation of 304.6 acres of habitat on site. As such, no significant impact would occur under County Guideline 7.1.G.

7.1.H As stated above, construction activity and extraction operations would not impact any regional wildlife corridors or linkages. The Proposed Project is designed to maintain connectivity of preserved habitats on site with connections to off-site vacant lands. As such, the site would continue to provide regional landscape level conservation function. Under County Guideline 7.1.H, no significant impact would occur.

7.1.I The Proposed Project would avoid direct impacts to one County narrow endemic plant species (Dunn's mariposa lily) and one County narrow endemic animal species (golden eagle). Under County Guideline 7.1.I, no significant impact to these species would occur.

7.1.J Individuals or locations of two listed species (Otay tarplant and QCB) would be removed upon Proposed Project implementation. These impacts, however, would not reduce the likelihood of survival and recovery of these species in the wild.

7.1.L As previously discussed, the Proposed Project site lies within an established golden eagle territory. The closest known nest location is from O'Neal Canyon approximately 1.2 miles from the development footprint (Susan Wynn, Pers. Comm. 2014) and is not within line of site due to existing topography. This topographic separation will minimize noise and activity impacts at the nest location. Implementation of the Proposed Project would not result in the take of eagles, eagle eggs, or any part of an eagle. Under County Guideline 7.1.L, no significant impact would occur.

7.3 CUMULATIVE IMPACT ANALYSIS

Each of the cumulative projects listed in Table 9 and discussed above would be required to conform to County Guidelines 7.1.A through 7.1.L and provide mitigation as appropriate. In addition, the Proposed Project results in less than significant impacts for nine of the 12 guidelines in Section 7.0; however, County Guideline C does not apply to the Proposed Project. Therefore, mitigation is proposed to reduce the Proposed Project impacts to narrow endemic plant and animal species and nesting birds protected by the FGC to below a level of significance for County Guidelines 7.1.I and 7.1.K.

7.4 MITIGATION MEASURES AND DESIGN CONSIDERATIONS

Impact 7.4.1 Implementation of the Proposed Project would impact four narrow endemic species: Otay tarplant, variegated dudleya, QCB, and burrowing owl.

MM 7.4.1 Mitigation for impacts to narrow endemic plant and animal species shall occur through implementation of MM 3.4.1a, 3.4.1b, 3.4.1k, 3.4.2a, 3.4.2e, and 3.4.2f.

Impact 7.4.2 Breeding birds may temporarily or permanently leave their territories to avoid construction and/or extraction operations, which could lead to reduced reproductive success and increased mortality.

MM 7.4.2 In order to ensure compliance with the FGC, clearing of native vegetation shall occur outside of the breeding season of most avian species (February 1 through September 15). Clearing during the breeding season of FGC-protected species could occur if it is determined that no nesting birds (or birds displaying breeding or nesting behavior) are present immediately prior to clearing based on a pre-construction survey conducted three days prior to clearing or grading activities. See MM 3.4.2b for conditions related to the CAGN.

7.5 ALTERNATIVES

7.5.1 Extraction to Varying Depth

This alternative would result in the same type and lateral extent of disturbance as described above for the Proposed Project; therefore, impacts related to policy, ordinance, and plan conformance would be the same as described.

7.5.2 Extraction to Natural Grade

This alternative would result in the same type and lateral extent of disturbance as described above for the Proposed Project; therefore, impacts related to policy, ordinance, and plan conformance would be the same as described.

7.5.3 No Project/Existing Plan Alternative

As the uses under this alternative would be similar to the ultimate uses with the Proposed Project, impacts related to policy, ordinance, and plan conformance would be similar.

7.5.4 No Project/No Action Alternative

The No Project/No Action Alternative assumes that the site would not be used for aggregate extraction or mixed industrial and rural residential uses, but rather would remain undeveloped for the foreseeable future. Under this alternative, no impacts related to policy, ordinance, and plan conformance would occur.

7.6 CONCLUSION

Implementation of the Proposed Project would result in a significant impact to sensitive lands as outlined in the RPO (the Proposed Project is exempt from the RPO), four narrow endemic species, and potentially breeding birds. Proposed on-site preservation and off-site acquisition of habitat (as necessary) is in accordance with ratios accepted by the resource agencies and County. Avoiding vegetation clearing during the bird breeding season would avoid potential impacts related to disruption of breeding activities or direct impacts to nesting birds.

8.0 SUMMARY OF PROJECT IMPACTS AND MITIGATION

Implementation of the Proposed Project would result in significant impacts to sensitive plant and animal species, natural communities, wildlife movement, and local policies.

Implementation of the Proposed Project would result in removal of Otay tarplant, Otay tarplant critical habitat, variegated dudleya, San Diego goldenstar, San Diego barrel cactus, and San Diego marsh-elder, as well as to County List C and D plant species. In addition, the Proposed Project would remove QCB, QCB critical habitat, CAGN, CAGN critical habitat, and burrowing owl, as well as other County Group 1 and 2 animal species.

Implementation of the Proposed Project would result in removal of the following sensitive vegetation communities: cismontane alkali marsh, disturbed wetland, tamarisk scrub, native grassland, Diegan coastal sage scrub (including disturbed), and non-native grassland. In addition, removal of USACE and CDFW jurisdictional areas would result from the Proposed Project.

Mitigation for removal of sensitive plant species would occur through preservation on site, translocation, on-site restoration, and off-site acquisition of suitable habitat, as appropriate. Mitigation for removal of sensitive animal species would occur through preservation of habitat on site and translocation, as appropriate. Removal of sensitive vegetation communities would be mitigated by preservation of 304.6 acres of habitat on site prior to habitat clearing. Long-term habitat management would be provided for all preserved areas on and off site through implementation of an RMP (Appendix L).

Increased noise could have a significant effect on sensitive animal species if not mitigated. Such impacts would be mitigated by preservation of additional on-site habitat of the same type impacted (at a 1:1 ratio) and through operational measures.

With implementation of the mitigation measures listed in Sections 3.4, 4.4, 5.4, 6.4, and 7.4 for significant impacts to sensitive biological resources, all Proposed Project-specific impacts would be mitigated to below a level of significance (Table 12).

Table 12
SUMMARY OF MITIGATION MEASURES

Proposed Mitigation	Level of Significance After Mitigation	Guideline Number(s)
MM 3.4.1a Removal of 105.5 acres of Otay tarplant critical habitat shall be mitigated with preservation of 93.8 acres of Otay tarplant critical habitat within the on-site biological open space. Removal of 16.69 acres of suitable habitat and 30 individual plants are being mitigated through preservation of 6.58 acres of suitable habitat which includes preservation of 510 (94 percent) of the Otay tarplant individuals. 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 of the Habitat Conservation Plan (Appendix K).	Less than significant	3.1.A, 7.1.I
MM 3.4.1b Removal of 120 of 4,987 individuals of variegated dudleya shall be mitigated by preservation of 4,867 individuals in accordance with Section 86.507 of the BMO. Removal of 13.06 acres of suitable habitat are being mitigated through preservation of 48.65 acres of suitable 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 of the Habitat Conservation Plan (Appendix K). These mitigation measures reduce impacts to less than significant.	Less than significant	3.1.B, 7.1.I

Table 12 (cont.) SUMMARY OF MITIGATION MEASURES		
Proposed Mitigation	**Level of Significance After Mitigation**	**Guideline Number(s)**
MM 3.4.1-c Removal of 1,214 individuals of San Diego goldenstar shall be mitigated as follows. 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 applicant proposes implementation of a restoration plan (on site) for the translocation of the impacted 1,214 individuals of San Diego goldenstar. 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 applicant proposes to fund implementation of an RMP that includes measures to protect and enhance the preserved and/or translocated populations. A San Diego Goldenstar Restoration Plan has been prepared and submitted to the County for review and approval (Appendix C of the Habitat Conservation Plan (Appendix K). Approval of the San Diego Goldenstar Restoration Plan and proof of recordation of an open space easement on site shall be required prior to commencement of habitat clearing per the conservation phasing plan and construction of extraction operation support facilities or extraction operations. The San Diego Goldenstar Restoration Plan shall be implemented within one year of habitat clearing and commencement of construction of extraction operation support facilities or extraction operations. Mitigation shall be implemented consistent with the conservation phasing plan. Removal of 13.06 acres of suitable habitat are being mitigated through preservation of 69.46 acres of suitable habitat. This will reduce impacts to less than significant.	Less than significant	3.1.B

Table 12 (cont.)
SUMMARY OF MITIGATION MEASURES

Proposed Mitigation	Level of Significance After Mitigation	Guideline Number(s)
MM 3.4.1d Removal of 196 of 362 individuals of San Diego barrel cacti shall be mitigated at a 2:1 ratio in accordance with Section 86.507 of the BMO. Mitigation shall consist of salvage of the 196 San Diego barrel cacti impacted on and off site and relocation of these individuals to areas of appropriate habitat on the Proposed Project site, as well as planting an additional 196 barrel cacti on site for a total of 392 individual cacti planted. The cacti translocation would be subject to the Otay Hills Project Translocation Plan (Appendix C of the Habitat Conservation Plan (Appendix K). Mitigation shall be implemented consistent with the conservation phasing plan. The Barrel Cactus Translocation Plan shall be prepared and submitted to the County for review and approval. Mitigation for San Diego barrel cactus shall be mitigated 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. This will reduce impacts to less than significant.	Less than significant	3.1.B
MM 3.4.1f The biological open space shall be actively monitored, maintained, and managed in accordance with an RMP. The RMP (discussed in MM 4.4.1e, below) shall ensure, for example, that access is restricted and invasive plant species are monitored and controlled.	Less than significant	4.1.D
MM 3.4.1e Removal of 142 of 290 individuals of San Diego marsh-elder shall be mitigated at a 2:1 ratio in accordance with Section 86.507 of the BMO. Mitigation shall include planting 284 individuals within the proposed biological open space. The applicant shall fund implementation of an RMP that includes measures to protect and enhance the preserved or created populations. This will reduce impacts to less than significant.	Less than significant	3.1.B

Table 12 (cont.) SUMMARY OF MITIGATION MEASURES		
Proposed Mitigation	**Level of Significance After Mitigation**	**Guideline Number(s)**
MM 3.4.1g Upon completion of the Proposed Project, final grading to establish the final landform, application of topsoil resources, and revegetation with native species (Seed Mix A) will occur for slope areas according to the Otay Hills Project Revegetation Plan prepared by EnviroMINE (Appendix C and Sheet 7 of the Reclamation Plan). The Proposed Project description already includes restoration of slopes adjacent to proposed open space with a native plant biological buffer (Seed Mix B) to help prevent the spread of any invasive plant species into open space (see MM 3.4.1i).	Less than significant	3.1.H, 4.1.D
MM 3.4.1h Temporary construction staking or fencing shall be erected under the supervision of a qualified biologist at or outside the edge of the impact areas where they interface with natural areas. This fencing shall be erected prior to commencement of brushing or grading activities or extraction activities and shall demarcate areas where human and equipment access and disturbance from grading are prohibited. Upon placement of the permanent boundary fence, monitoring adjacent to project open space may cease. Staging areas shall be restricted to approved impact areas only.	Less than significant	3.1.A, 3.1.B
MM 3.4.1i A hydroseed mix incorporating only native species (Seed Mix B) shall be used following extraction activities for all slope areas that are a biological buffer adjacent to open space. Weed control shall be provided for these areas according to the Otay Hills Project Revegetation Plan prepared by EnviroMINE (Appendix C and Sheet 7 of the Reclamation Plan).	Less than significant	3.1.H, 4.1.D

Table 12 (cont.) SUMMARY OF MITIGATION MEASURES		
Proposed Mitigation	**Level of Significance After Mitigation**	**Guideline Number(s)**
MM 3.4.1j Pets/domestic animals and unauthorized Proposed Project personnel shall not be allowed within the biological open space. As part of the RMP, permanent signage shall be posted every 500 feet along western and southern boundaries and along the portion of Otay Truck Trail that traverses the open space, and at locations of any unauthorized trails entering the open space. All signs shall 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 shall state the following: <u>Sensitive Environmental Resources</u> Area 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 the County of San Diego, Department of Planning & Development Services Ref. PDS2004-3300-04-004 Phone Number: (858) 694-2960	Less than significant	4.1.D

Table 12 (cont.)
SUMMARY OF MITIGATION MEASURES

Proposed Mitigation	Level of Significance After Mitigation	Guideline Number(s)
MM 3.4.1k Removal of 0.5 acre of native grassland shall be mitigated at a 2:1 ratio through on-site preservation of 0.7 acre of native grassland, as well as on- or off-site restoration or off-site acquisition and preservation of 0.3 acre of native grassland. Removal of 29.1 acres of non-native grassland on site and 2.0 acres of non-native grassland off site shall be mitigated at a 1:1 ratio by preservation of 16.1 acres of non-native grassland on site and 15.0 acres of grassland at an off-site location or through purchase of credits at an approved conservation bank consistent with the Burrowing Owl Strategy [County 2010b]. On-site and off-site mitigation requirements shall be met prior to commencement of habitat clearing or construction of extraction operation support facilities or extraction operations or each phase, as follows. The applicant shall: 1) purchase off-site credits from an approved conservation bank; or 2) acquire appropriate habitat within the County (consistent with the Burrowing Owl Strategy [County 2010b] for grassland habitat), dedicate the land as open space, and prepare an RMP to be approved by the County and resource agencies. An endowment for mitigation land off-site also shall be provided for management in perpetuity.	Less than significant	3.1.E, 3.1.F, 4,1,A, 7.1.I
MM 3.4.2a Removal of QCB shall be mitigated by preservation of 52 locations where QCB were observed and through preservation of 304.6 acres of biological open space on site, of which 303.5 acres is considered occupied by the QCB, and that contains 304.4 acres of QCB critical habitat. Supplemental funding of the AMA will also be provided through the RMP. If the QCB is not covered under the MSCP at the time of Proposed Project approval, effects on the species shall be subject to review and approval by the USFWS as part of the Section 7 or 10(a) consultation process. Mitigation shall be implemented consistent with the conservation phasing plan.	Less than significant	3.1.A, 7.1.I

Table 12 (cont.)
SUMMARY OF MITIGATION MEASURES

Proposed Mitigation	Level of Significance After Mitigation	Guideline Number(s)
MM 3.4.2b Removal of CAGN habitat shall be mitigated through preservation of four pair and 218.9 acres of CAGN habitat on site, which contains 185.0 acres of CAGN critical habitat, consistent with the conservation phasing plan. Prior to Proposed Project implementation, a preconstruction survey to demonstrate CAGN absence from the development footprint shall be required pursuant to USFWS protocol if habitat clearing is to occur during the breeding season (March 15 to August 15).	Less than significant	3.1.A
MM 3.4.2c Indirect impacts to 20.6 acres of CAGN habitat (Diegan coastal sage scrub [including disturbed]) from noise shall be mitigated through the preservation of 20.6 acres of Diegan coastal sage scrub (including disturbed) on site consistent with the conservation phasing plan. Additionally, the following measures shall be required to minimize potential adverse noise effects on the habitat and CAGN. • 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 controls: 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.	Less than significant	3.1.H

Table 12 (cont.) SUMMARY OF MITIGATION MEASURES		
Proposed Mitigation	**Level of Significance After Mitigation**	**Guideline Number(s)**
• 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 1-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 1-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 above in the fourth bulleted item. • 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.		
MM 3.4.2d Implementation of MM 3.4.1k shall mitigate removal of raptor foraging habitat	Less than significant	3.1.E, 3.1.F, 4,1,A, 7.1.I

Table 12 (cont.) SUMMARY OF MITIGATION MEASURES		
Proposed Mitigation	**Level of Significance After Mitigation**	**Guideline Number(s)**
MM 3.4.2e A survey for burrowing owl shall be conducted before habitat clearing in each Proposed Project phase consistent with the Strategy for Mitigating Impacts to Burrowing Owls in the Unincorporated County (County 2010b). If a burrowing owl(s) is sighted within the development footprint, the resource 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 active or passive translocation of the owl, outside of the breeding season or once the young have fledged, to a suitable area on the Proposed 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 resource agencies and County for review and approval in accordance with the CDFG Staff Report on Burrowing Owl Mitigation (2012).	Less than significant	3.1.B, 7.1.I

Table 12 (cont.)
SUMMARY OF MITIGATION MEASURES

Proposed Mitigation	Level of Significance After Mitigation	Guideline Number(s)
MM 3.4.2f Impacts from potential entrapment in the development footprint and injury or death to sensitive animal species shall be mitigated as follows. This is in addition to the six foot chain link fence that the applicant would place along the outside edge of extraction areas during construction for safety and security reasons as part of the Proposed Project description. • 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. • 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.	Less than significant	3.1.B, 7.1.I
MM 3.4.2h Noise impacts to the California gnatcatcher from ongoing operations are addressed in MM 3.4.2c. Prior to each phase of vegetation clearing (Phases 1 through 2c) a preconstruction survey to demonstrate CAGN absence from the development footprint shall be required pursuant to USFWS protocol if habitat clearing is to occur during the breeding season (March 1 to August 15). A preconstruction survey to demonstrate burrowing owl and tree-nesting raptor absence from the 500-foot buffer shall be required if habitat clearing is to occur during the tree-nesting raptor breeding season (January 15 to July 15). A preconstruction survey of the 900-foot buffer shall be required if habitat clearing is to occur during the ground-nesting raptor breeding season (February 1 to July 15).	Less than significant	3.1.L

Table 12 (cont.)
SUMMARY OF MITIGATION MEASURES

Proposed Mitigation	Level of Significance After Mitigation	Guideline Number(s)
MM 4.4.1a Mitigation for removal of 0.27 acre of cismontane alkali marsh shall occur at a 3:1 ratio (1:1 of the 3:1 shall be creation) through on- or off-site creation, restoration, and/or enhancement of 0.81 acre of cismontane alkali marsh; through purchase of 0.81 acre of credits from an approved wetland mitigation bank; or alternative mitigation acceptable to the County, USACE, RWQCB, and CDFW prior to clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations. Mitigation for removal of 0.01 acre of disturbed wetland and 0.06 acre of tamarisk scrub shall occur at a 1:1 ratio through on- or off-site creation of 0.07 acre of riparian or other wetland habitat; through purchase of 0.07 credits from an approved wetland mitigation bank; or alternative mitigation acceptable to the County, USACE, RWQCB, and CDFW prior to clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations. Mitigation for cismontane alkali marsh, disturbed wetland, and tamarisk scrub shall occur as part of Phase 1 as follows: Prior to the clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations for the Proposed Project, the applicant shall either: (1) purchase wetland habitat credits,(2) identify (and acquire, if necessary) appropriate habitat within the County and prepare a wetland restoration plan, or (3) identify and provide alternative mitigation acceptable to the County, USACE, RWQCB, and CDFW. Such alternative mitigation could include financial or in-kind contributions to a larger restoration or enhancement project. The wetland restoration plan would require written approval from the USACE, RWQCB, CDFW, and County. In addition, a bond shall be provided to the County prior to habitat clearing and commencement of construction of extraction operation support facilities or extraction operations to cover 120 percent of any restoration plan implementation costs. A biological open space easement shall be placed over all areas used for wetland mitigation and an endowment provided for management in perpetuity. This shall be in addition to the biological open space proposed for areas preserved on site and its associated endowment.	Less than significant	4.1.A, 5.1.A
MM 4.4.1b Mitigation for removal of native grassland shall occur in accordance with MM 3.4.1k.	Less than significant	4.1.A

Table 12 (cont.) SUMMARY OF MITIGATION MEASURES		
Proposed Mitigation	**Level of Significance After Mitigation**	**Guideline Number(s)**
MM 4.4.1c Mitigation for direct removal of 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) on site. The indirect noise impacts to 20.6 acres of Diegan coastal sage scrub (including disturbed) as a result of Proposed 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) on site. Required preservation of Diegan coastal sage scrub (including disturbed) shall total 120.7 acres on site prior to the clearing of habitat and commencement of the construction of extraction operation support facilities or extraction operations for each phase consistent with the conservation phasing plan.	Less than significant	4.1.A
MM 4.4.1d Implementation of MM 3.4.1k would mitigate for impacts to non-native grassland.	Less than significant	4.1.A

Table 12 (cont.)
SUMMARY OF MITIGATION MEASURES

Proposed Mitigation	Level of Significance After Mitigation	Guideline Number(s)
MM 4.4.1e The applicant shall dedicate 304.6 acres of biological open space on site for impacts resulting from the Proposed Project prior to the clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations for each phase consistent with the conservation phasing plan. The biological open space shall be managed by a conservation entity (to be approved by the County and resource agencies prior to commencement of habitat clearing and construction of extraction operation support facilities or extraction operations) that would be responsible for implementing the RMP (Appendix L). The RMP describes biological open space management. The RMP includes stewardship measures, including but not limited to, fencing and signs upkeep, trespass restriction (see MM 3.4.1j), and debris removal. The applicant shall offer evidence to the County and resource agencies that an endowment funding mechanism has been provided to the conservation entity to manage the land in perpetuity. This endowment amount shall be determined through the use of Property Analysis Record (PAR) or similar method. Funding of the RMP and endowment shall occur through the applicant funding annual RMP costs plus an additional amount that will be placed into the endowment account per phase until the endowment is fully funded. Endowment funding will be phased as follows: • Prior to initiating any work on Phase 1, 14 percent of the total endowment shall be funded. • Prior to Phase 2a, an additional 17 percent of the total endowment shall be funded (31 percent total). • Prior to Phase 2b, an additional 24 percent of the total endowment shall be funded (55 percent total). • Prior to 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.	Less than significant	3.1.A, 3.1.B, 3.1.E, 3.1.F, 3.1.I, 4.1.A, 4.1.B, 4.1.D, 7.1.I
MM 4.4.1e (cont.) The applicant may also elect to fund the entire endowment upfront prior to initiating grading on the site consistent with the RMP (Appendix L). 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.		

Table 12 (cont.)
SUMMARY OF MITIGATION MEASURES

Proposed Mitigation	Level of Significance After Mitigation	Guideline Number(s)
MM 4.4.1f The Proposed Project description includes revegetation of slopes following project completion (MM 3.4.1g) and restoration of slopes adjacent to proposed open space with a native plant biological buffer to help prevent the spread of any invasive plant species into open space (MM 3.4.1i). Implementation of MM 3.4.1f through 3.4.1j would also mitigate for impacts from invasive plant species.	Less than significant	3.1.H, 4.1.D
MM 4.4.2a Fill of USACE jurisdictional cismontane alkali marsh, tamarisk scrub, and disturbed wetland shall be mitigated as described in MM 4.4.1a. Fill of 0.16 acre of USACE jurisdictional non-vegetated Waters of the U.S. shall be mitigated at a 1:1 ratio or alternative mitigation acceptable to the County and USACE prior to the clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations.	Less than significant	4.1.B, 5.1.A
MM 4.4.2b Removal of CDFW jurisdictional cismontane alkali marsh, tamarisk scrub, and disturbed wetland shall be mitigated as described in MM 4.4.1a. Removal of 0.19 acre of CDFW jurisdictional streambed and pond shall be mitigated at a 1:1 ratio or alternative mitigation acceptable to the County and CDFW prior to the clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations.	Less than significant	4.1.B
MM 4.4.2c Removal of RWQCB jurisdictional cismontane alkali marsh, tamarisk scrub, and disturbed wetland shall be mitigated as described in MM 4.4.1a. Removal of RWQCB jurisdictional streambed, pond, and intermittent pond shall be mitigated at a 1:1 ratio or alternative mitigation acceptable to the County and RWQCB prior to the clearing of habitat and commencement of construction of extraction operation support facilities or extraction operations (Table 11).	Less than significant	4.1.B
MM 7.4.1 Mitigation for removal of narrow endemic plant and animal species shall occur through implementation of MM 3.4.1a, 3.4.1b, 3.4.1k, 3.4.2a, 3.4.2e, and 3.4.2f.	Less than significant	7.1.I
MM 7.4.2 In order to ensure compliance with the FGC, clearing of native vegetation shall occur outside of the breeding season of most avian species (February 1 through September 15). Clearing during the breeding season of FGC-protected species could occur if it is determined that no nesting birds (or birds displaying breeding or nesting behavior) are present immediately prior to clearing based on a pre-construction survey conducted three days prior to clearing or grading activities. See MM 3.4.2-b for conditions related to the CAGN.	Less than significant	7.1.K

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Appendix A-1

SURVEY INFORMATION

Appendix A-1 SURVEY INFORMATION - OTAY HILLS			
SURVEY DATE	**PERSONNEL**	**TIMES AND WEATHER CONDITIONS** (start/stop)	**PURPOSE**
Year 2000 Surveys			
March 23	S. Trnka P. Allen	N/A	Vegetation mapping, general botanical/ zoological surveys; Quino checkerspot butterfly (QCB) habitat assessment
March 31	S. Trnka	0830-1500; Clear, 62ºF, wind 1-3 mph/ Clear, 74ºF, wind 4-9 mph	QCB survey
April 1	S. Trnka	0800-1440; Clear, 62ºF, wind <1 mph/ Clear, 79ºF, wind 4-9 mph	
April 2	S. Taylor	0900-1620; Clear, 72ºF, wind 0-7 mph/ Clear, 78ºF, wind 5-10 mph	
April 3	S. Trnka	1115-1700; Clear, 75ºF, wind 1-3 mph/ Clear, 76ºF, wind 3-7 mph	
April 7	S. Trnka S. Taylor	0920-1600; Hazy, 72ºF, wind 0-7 mph/ Partly cloudy (but sunny), 74ºF, wind 5-9 mph	
April 9	S. Trnka	1030-1700; Clear (hazy), 76ºF, wind 1-3 mph/ Clear, 73ºF, wind 4-7 mph	
April 10	S. Trnka	0830-1535; Clear (hazy until 1000), 61ºF, wind <1 mph/Clear, 74ºF, wind 1-5 mph	
April 11	S. Trnka	1530-1745; Clear, 82ºF, wind to 7 mph/ Clear-hazy, 76ºF, wind to 7 mph	
April 14	S. Trnka	0930-1015; Partly cloudy, 66ºF, wind to 10 mph/Partly cloudy, 63ºF, wind 4-7 mph	
April 16	S. Trnka	0930-1625; Clear with scattered clouds, 71ºF, wind 0-3 mph/Clear, 72ºF, wind 2-9 mph	
April 17	S. Trnka S. Taylor	1010-1310; Partly cloudy, 75ºF, wind 2-7 mph/ Overcast and cloudy, 73ºF, wind >15 mph	
April 18	S. Trnka S. Taylor	1400-1630; Partly cloudy, 71ºF, wind 3-5 mph/Cloudy, 67ºF, wind 5->15 mph	
April 19	S. Trnka	0915-1350 and 1420-1715; Clear, 61ºF, wind 4-7 mph/Clear, 72ºF, wind 4-9 mph	
April 20	S. Taylor	1420-1550; Clear, 86ºF, wind 4-10 mph/ Clear, 86ºF, wind 4-7 mph	
April 21	S. Trnka	1220-1540; Cloudy, 71ºF, wind 4-9 mph/ Overcast and cloudy, 72ºF, wind 7-12 mph	
April 23	S. Trnka	1040-1750; Partly cloudy, 72ºF, wind 0-3 mph/Clear, 70ºF, wind 1-3 mph	
April 24	S. Trnka S. Taylor	1020-1705; Clear, 70ºF, wind 4-7 mph/ Clear, 74ºF, wind 4-7 mph	

Appendix A-1 (cont.) **SURVEY INFORMATION**			
SURVEY DATE	**PERSONNEL**	**TIMES AND WEATHER CONDITIONS** (start/stop)	**PURPOSE**
Year 2000 Surveys (cont.)			
April 25	S. Trnka	1030-1700; Clear-hazy, 73ºF, wind 4-7 mph/ Clear-hazy, 75ºF, wind 4-9 mph	QCB survey
April 29	S. Trnka	0930-1630; Clear and sunny, 64ºF, wind 4-8 mph/Clear, 72ºF, wind 4-7 mph	
May 1	S. Trnka	1100-1600; Clear, 88ºF, wind 3-6 mph/ Clear, 89ºF, wind 6-9 mph	
May 2	S. Trnka S. Taylor	1030-1545; Clear, 86ºF, wind 0-3 mph/ Clear, 89ºF, wind 5-9 mph	
May 18	L. Sward S. Trnka D. Langsford A. Mattson†	N/A	Rare plant survey
May 22	L. Sward S. Trnka D. Langsford A. Mattson	N/A	
June 13	D. Leonard‡ P. Allen	0600-1200; Foggy to clear, 59-80ºF, wind 0-5 mph	Coastal California gnatcatcher (CAGN) Survey 1, Part 1
June 14	S. Taylor	0600-1200; Overcast to clear, 63-75ºF, wind 0-5 mph	CAGN Survey 1, Part 2
June 21	S. Taylor D. Leonard P. Allen	0600-1200; Clear, 62-80ºF, wind 0-5 mph	CAGN Survey 2
June 28	S. Taylor D. Leonard P. Allen	0600-1200; Foggy to clear, 63-84ºF, wind 0-8 mph	CAGN Survey 3
Year 2001 Surveys			
January 23	C. Holland D. Griffin	0900; Mostly sunny, 58ºF, wind <5 mph	Fairy shrimp survey
February 7	D. Griffin B. Hendricks L. Quon	0830; Partly cloudy, 50ºF, wind <5 mph	
February 8	L. Quon	0830; Sunny, 48ºF, wind <5 mph	
February 26	D. Griffin E. LaCoste	1130; Cloudy, 68ºF, wind <5 mph	
March 1	E. LaCoste K. Osborne	1230-1500; Clear with cloud patches, 60-62ºF, wind 5-12 mph	QCB survey
	J. Powell D. Powell	1245-1700; Patchy, 63-67ºF, wind 1-9 mph	

Appendix A-1 (cont.) **SURVEY INFORMATION**			
SURVEY DATE	**PERSONNEL**	**TIMES AND WEATHER CONDITIONS** (start/stop)	**PURPOSE**
Year 2001 Surveys (cont.)			
March 2	C. Holland D. Griffin	0900; Partly cloudy, 60ºF, wind <5 mph	Fairy shrimp survey
	S. Trnka D. Langsford	Cloudy, under 60ºF	QCB habitat assessment
	J. Powell D. Powell	0930-1700; Patchy-overcast, 61-72ºF, wind 0-8 mph	QCB survey
	K. Osborne B. Hendricks	1030-1200 and 1300-1330; Clear to mostly cloudy, 58-62ºF, wind 0-5 mph	
March 3	J. Powell D. Powell	1515-1700; Patchy, 62-67ºF, wind 2-5 mph	
March 5	B. Hendricks B. Drake	1045-1346 and 1359-1600; Clear to partly cloudy, 65-73ºF, wind 2-17 mph	
March 7	B. Drake E. LaCoste	0856-1020 and 1237-1345; Patchy to mostly cloudy, wind 0-8 mph	
March 12	V. Marquez B. Drake	0935-1520; Clear to mostly cloudy, 61-72ºF, wind 2-6 mph	
	B. Hendricks K. Osborne	0930-1400; Clear to mostly cloudy, 63-76ºF, wind 1-10 mph	
March 13	J. Powell D. Powell	0950-1610; Clear, 64-69ºF, wind 0-8 mph	
March 14	D. Griffin M. McGrath P. Moreno	1015; Partly cloudy, 65ºF, wind <5 mph	Fairy shrimp survey
	E. LaCoste B. Drake	0920-1220 and 1232-1336; Clear to patchy clouds, 65-72ºF, wind 2-7 mph	QCB survey
	J. Powell D. Powell	0915-1600; Clear, 60-72ºF, wind 0-7 mph	
March 15	S. Trnka T. Grantham	1045-1335; Partly cloudy to overcast, mid 60ºF, wind 2-7 mph	
	E. LaCoste B. Drake	0925-1425; Patchy to partly cloudy, 64-74ºF, wind 2-9 mph	
March 19	K. Osborne B. Hendricks B. Drake	0915-1350; Clear to partly cloudy, 73-84ºF, wind 0-7 mph	
	J. Powell D. Powell	0930-1600; Clear, 76-86ºF, wind 0-9 mph	
March 20	J. Powell D. Powell	0920-1600; Clear to partly cloudy, 73-83ºF, wind 0-6 mph	
	B. Drake V. Marquez B. Hendricks	0928-1200; Partly cloudy, 75-84ºF, wind 1-6 mph	

Appendix A-1 (cont.) **SURVEY INFORMATION**			
SURVEY DATE	**PERSONNEL**	**TIMES AND WEATHER CONDITIONS** (start/stop)	**PURPOSE**
Year 2001 Surveys (cont.)			
March 21	E. LaCoste B. Drake	0937-1238 and 1324-1508; Partly to mostly cloudy, 70-84ºF, wind 0-9 mph	QCB survey
March 26	B. Hendricks B. Drake	0915-1538; Mostly cloudy, 71-78ºF, wind 1-9 mph	
March 27	S. Trnka T. Grantham A. Mattson	1130-1700; Clear and sunny, mid 70ºF, wind 0-5 mph	
	J. Powell D. Powell	1000-1600; Clear to mostly cloudy, 66-74ºF, wind 1-9 mph	
	B. Drake K. Osborne V. Marquez	0952-1604; Clear to partly cloudy, 64-72ºF, wind 0-7 mph	
March 28	B. Drake V. Marquez E. LaCoste	1405-1645; Partly to mostly cloudy, 69-75ºF, wind 0-10 mph	
	J. Powell D. Powell	0930-1600; Slightly overcast, 64-74ºF, wind 0-10 mph	
March 29	E. LaCoste K. Osborne B. Drake	0940-1200; Overcast, 67-73ºF, wind 0-3 mph	
March 31	S. Trnka T. Grantham A. Mattson	1030-not noted; Clear and sunny, low 70ºF, wind 2-10 mph	
April 2	B. Drake B. Hendricks K. Osborne	1339-1540; Mostly cloudy, 62-73ºF, wind 2-8 mph	
April 3	D. Waller V. Marquez	1050-1335; Mostly cloudy, 61-65ºF, wind 2-7 mph	
April 4	B. Hendricks	1500-1600; Partly cloudy, 70ºF, wind 3-6 mph	
	B. Drake B. Hendricks E. LaCoste	1035-1637; Partly cloudy, 65-81ºF, wind 1-9 mph	
April 5	B. Drake E. LaCoste	1100-1330; Overcast-mostly cloudy, 66-68ºF, wind 3-9 mph	
April 12	J. Messina	N/A	Vegetation mapping, general botanical, and rare plant surveys
	D. Griffin	1015; Partly cloudy, 60ºF, wind <5 mph	Fairy shrimp survey

Appendix A-1 (cont.) **SURVEY INFORMATION**			
SURVEY DATE	**PERSONNEL**	**TIMES AND WEATHER CONDITIONS** (start/stop)	**PURPOSE**
Year 2001 Surveys (cont.)			
April 13	J. Messina	N/A	Vegetation mapping, general botanical, and rare plant surveys
	S. Trnka T. Grantham A. Mattson	1400-1630; Clear and sunny, low 70ºF, wind 0-7 mph	QCB survey
	B. Drake J. Powell D. Powell	1429-1700; Clear, 70-73ºF, wind 2-8 mph	
April 14	J. Powell D. Powell B. Drake	1005-1206 and 1228-1700; Clear, 62-74ºF, wind 0-8 mph	
April 15	J. Powell D. Powell	1654-1800; Clear, 65-69ºF, wind 3-6 mph	
April 20	J. Messina R. Roberts	N/A	Vegetation mapping, general botanical, and rare plant surveys
April 27	J. Messina R. Roberts	N/A	
May 2	J. Messina R. Roberts K. Derby	N/A	
May 3	J. Messina R. Roberts D. Griffin	0900; Sunny and clear, 67ºF, wind <5 mph	Vegetation mapping, general botanical, rare plant surveys, and fairy shrimp surveys
May 4	J. Messina R. Roberts	N/A	Vegetation mapping, general botanical, and rare plant surveys
May 15	J. Messina R. Roberts M. Doalson	N/A	
May 16	J. Messina R. Roberts M. Doalson	N/A	
	D. Griffin E. LaCoste	0900; Partly cloudy, 67ºF, wind <5 mph	Fairy shrimp surveys
May 18	S. Trnka	N/A	Rare plant survey
	J. Messina R. Roberts M. Doalson	N/A	Vegetation mapping, general botanical, and rare plant surveys

Appendix A-1 (cont.) **SURVEY INFORMATION**			
SURVEY DATE	**PERSONNEL**	**TIMES AND WEATHER CONDITIONS** (start/stop)	**PURPOSE**
Year 2001 Surveys (cont.)			
May 22	L. Sward S. Trnka F. Sproul	N/A	Rare plant survey
May 24	J. Messina M. Doalson	N/A	Vegetation mapping, general botanical, and rare plant surveys
	L. Sward	N/A	Rare plant survey
May 25	J. Messina M. Doalson	N/A	
May 28	L. Sward S. Trnka J. Fischbeck	N/A	
June 6	J. Messina	N/A	
June 7	J. Messina	N/A	
June 8	J. Messina M. Doalson	N/A	
June 12	J. Messina	N/A	
June 13	J. Messina M. Doalson	N/A	
	E. LaCoste D. Griffin C. Holland D. Bise L. Quon	0630-1150; Cloudy, 65-72°F, wind 1-4 mph	CAGN Survey 1, Section A
June 14	J. Messina	N/A	Rare plant survey
	E. LaCoste D. Griffin D. Bise	0610-0940; Sunny and clear, 60-72°F, wind 0-7 mph	CAGN Survey 1, Section B
June 20	E. LaCoste D. Griffin C. Holland D. Bise	0630-1155; Mostly clear, 59-82°F, wind 1-7 mph	CAGN Survey 2, Section A
June 21	E. LaCoste D. Griffin C. Holland	0630-1130; Mostly clear to sunny, 65-82°F, wind 1-7 mph	CAGN Survey 2, Section B
June 27	D. Griffin C. Holland D. Bise	0600-1200; Mostly clear to sunny, 60-72°F, wind 3-10 mph	CAGN Survey 3, Section A
June 28	J. Messina R. Roberts	N/A	Rare plant survey

Appendix A-1 (cont.) **SURVEY INFORMATION**			
SURVEY DATE	**PERSONNEL**	**TIMES AND WEATHER CONDITIONS** (start/stop)	**PURPOSE**
Year 2001 Surveys (cont.)			
June 29	E. LaCoste C. Holland D. Bise	0650-1145; Mostly clear to sunny, 60-78°F, wind 0-7 mph	CAGN Survey 3, Section B
July 10	D. Griffin C. Holland M. McGrath E. LaCoste	N/A	Burrowing owl survey
July 12	C. Holland E. LaCoste	N/A	
Year 2002 Surveys			
March 8	S. Trnka R. Ditrick	1245-1430; Sunny and clear, 65-67°F, wind 0-8 mph	QCB habitat assessment
March 16	S. Trnka R. Ditrick	1015-1045; Drizzle, 54°F, wind 12-15 mph – survey cancelled	QCB survey
March 19	S. Trnka	1145-1505; Sunny and clear, 64-66°F, wind 5-10 mph	
March 22	S. Trnka R. Ditrick	1225-1415; Sunny with scattered clouds, 65-68°F, wind 2-10 mph	
March 30	S. Trnka A. Mattson	1345-1530; Sunny and hazy, 64-67°F, wind 8-12 mph	
April 4	S. Trnka R. Ditrick	1335-1525; Sunny and clear, 66-67°F, wind 7-12 mph	
Year 2003 Surveys			
April 10	S. Trnka R. Ditrick A. Mattson	N/A	QCB survey
February 17	G. Mason	1030-1400; Partly cloudy, 72°F, wind gusty 0-5 mph	
February 21	G. Mason	1130-1500; Sunny and clear, 74-83°F, wind 0-5 mph	
March 5	G. Mason	1310-1630; Clear and sunny, 71-72°F, wind 3-5 mph	
March 8	G. Mason P. McNicholas	1340-1545; Clear, 70-72°F, wind 2-7 mph	
March 14	P. McNicholas	1330-1630; Clear, 68-70°F, wind 0-3 mph	

Appendix A-1 (cont.) **SURVEY INFORMATION**			
SURVEY DATE	**PERSONNEL**	**TIMES AND WEATHER CONDITIONS** (start/stop)	**PURPOSE**
Year 2003 Surveys (cont.)			
March 20	P. McNicholas	1300-1600; Partly cloudy, 68-75°F, wind 2-5 mph	QCB survey
March 27	P. McNicholas	1130-1430; Partly cloudy, 75-81ºF, wind 0-5 mph	
April 7	G. Mason P. McNicholas A. Mattson	1115-1415; Clear, 78-86ºF, wind 4-7 mph	
April 9	R. Ditrick P. McNicholas	1015-1315; Clear, 78- 86ºF, wind 0-5 mph	
April 24	P. McNicholas	1145-1500; Sparse clouds, 80-82ºF, wind 0-5 mph	
April 26	P. McNicholas	1130-1430; Clear, 80- 84ºF, wind 2-10 mph	
April 29	P. McNicholas	1230-1515; Clear to partly cloudy, 74-79ºF, wind 4-8 mph	
Year 2004 Surveys			
May 24	S. Trnka B. Parker F. Sproul	1000-1720; N/A	Rare plant survey
May 25	S. Trnka B. Parker F. Sproul	0930-1635; Clear; 60ºF, wind 0-2 mph	
May 26	L. Sward D. Ritenour	N/A	Wetland delineation
June 8	B. Parker D. Ritenour F. Sproul	N/A	Rare plant survey
July 15	L. Sward	N/A	Wetland delineation
Year 2008 Surveys			
March 19	D. Allen R. Hogenhauer A. Mattson S. Nigro B. Parker K. Pettigrew D. Ritenour S. Trnka A. Varner J. Watts	1045-1600; Clear to partly cloudy, 68-74ºF, wind 0-7 mph	QCB survey

Appendix A-1 (cont.) **SURVEY INFORMATION**			
SURVEY DATE	**PERSONNEL**	**TIMES AND WEATHER CONDITIONS** (start/stop)	**PURPOSE**
Year 2008 Surveys (cont.)			
March 21	D. Allen R. Hogenhauer J. Kurnow A. Mattson K. Pettigrew S. Trnka	1045-1700; Clear to partly cloudy, 72-84ºF, wind 0-8 mph	QCB survey
March 26	D. Allen R. Hogenhauer B. Parker D. Ritenour	1030-1620; Clear, 73-80ºF, wind 1-12 mph	
March 27	D. Allen R. Hogenhauer A. Mattson S. Nigro B. Parker D. Ritenour S. Trnka A. Varner	0955-1500; Partly cloudy to clear, 62-82ºF, wind 0-7 mph	
April 3	R. Hogenhauer A. Mattson B. Parker D. Ritenour S. Trnka A. Varner J. Watts	1130-1230; Cloudy, 68-68ºF, wind 4-7 mph	
April 4	A. Mattson S. Nigro B. Parker D. Ritenour S. Trnka A. Varner J. Watts	1420-1630; Clear, 70-67ºF, wind 0-7 mph	
April 7	A. Mattson B. Parker D. Ritenour S. Trnka	1230-1645; Partly cloudy, 65-65ºF, wind 2-10 mph	
April 11	R. Hogenhauer D. Ritenour A. Varner	1000-1525; Clear, 78-90ºF, wind 1-12 mph	
April 14	A. Mattson B. Parker D. Ritenour S. Trnka	1000-1205; Clear, 84-85ºF, wind 0-4 mph	
Year 2010 Surveys			
January 18	L. Sward	N/A	Wetland delineation

Appendix A-1 (cont.) **SURVEY INFORMATION**			
SURVEY DATE	**PERSONNEL**	**TIMES AND WEATHER CONDITIONS** (start/stop)	**PURPOSE**
Year 2011 Surveys			
April 14	D. Leonard E. LaCoste	0730-1200; Clear, 55-70°F, wind 0-8 mph	CAGN Survey 1, Section A
April 15	D. Leonard E. LaCoste	0730-1200; Clear, 59-79 °F, wind 0-5 mph	CAGN Survey 1, Section B
April 25	L. Sward S. Trnka G. Aldridge C. Brungraber	N/A	Rare Plant Survey
April 26	A. Mattson S. Trnka G. Aldridge C. Brungraber	N/A	Rare Plant Survey
April 26	D. Leonard E. LaCoste	0800-1200; Overcast/Clear, 62-74°F, wind 0-4 mph	CAGN Survey 2, Section A
April 27	D. Leonard E. LaCoste	0800-1200; Clear, 64-82°F, wind 0-4 mph	CAGN Survey 2, Section B
May 5	D. Leonard E. LaCoste	0800-1200; Clear, 67-78°F, wind 0-10 mph	CAGN Survey 3, Section A
May 6	D. Leonard E. LaCoste	0800-1200; Overcast/Clear; 60-74 °F, wind 0-4 mph	CAGN Survey 3, Section B
June 13	L. Sward S. Trnka	N/A	Rare Plant Survey
Year 2012 Surveys			
January 9	E. Harris T. Baxter	0620-0850; 0% cloud cover, 54-67°F, wind 0-1 mph	Burrowing owl survey
January 16	E. Harris T. Baxter	1506-1715; 100% cloud cover, 53-58°F, wind 2-4 mph	Burrowing owl survey
January 23	E. Harris T. Baxter	0615-0905; 99-100% cloud cover, 50-59°F, wind 1-3 mph	Burrowing owl survey
January 30	G. Aldridge T. Baxter	1505-1720; 30-100% cloud cover, 58-66°F, wind 0-7mph	Burrowing owl survey
Year 2016 Surveys			
February 12	E. Harris	1230-1500; 0% cloud cover, 78-79°F, wind 0-1 mph	QCB host plant mapping
February 12	J. Bakker T. Rachels	0850-1500; 0% cloud cover, 65-79°F, wind 0-1 mph	QCB host plant mapping
February 22	J. Bakker E. Harris R. Hogenauer T. Rachels	0920-1320; 0% cloud cover, 67-75°F, wind 0-5 mph	QCB host plant mapping
February 29	J. Bakker E. Harris R. Hogenauer T. Rachels	0925-1450; 0-10% cloud cover, 60-67°F, wind 0-7 mph	QCB host plant mapping
March 1	E. Harris R. Hogenauer	0730-1340; 0-20% cloud cover, 60-76°F, wind 0-6 mph	QCB survey

Appendix A-1 (cont.) **SURVEY INFORMATION**			
SURVEY DATE	**PERSONNEL**	**TIMES AND WEATHER CONDITIONS** (start/stop)	**PURPOSE**
March 2	J. Bakker A. Mattson	0925-1335; 5-10% cloud cover, 74-76°F, wind 0-3 mph	QCB survey
March 10	J. Bakker R. Hogenauer A. Mattson	0935-1510; 35-45% cloud cover, 68-71°F, wind 0-8 mph	QCB survey
March 18	J. Bakker	0935-1510; 0% cloud cover, 70-75°F, wind 0-5 mph	QCB survey
	A. Mattson	1030-1530; 0% cloud cover, 70-75°F, wind 0-7 mph	QCB survey
	S. Trnka	1030-1530; 0-5% cloud cover, 70-75°F, wind 0-10 mph	QCB survey
March 23	J. Bakker R. Hogenauer A. Mattson	0855-1445; 0% cloud cover, 64-77°F, wind 0-8 mph	QCB survey

Appendix A-2

LIKELY LIMITS OF OCCURRENCE ANALYSIS

Memorandum

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www.**helixepi**.com

To: Arnie Veldkamp, Superior Ready Mix

Date: 14 January 2016 **From:** W. Larry Sward and Barry Jones

Subject: Likely Limits of Occurrence for 3 Plant Species at the Otay Hills Quarry

Message:

This memo presents our analysis of the Likely Limits of Occurrence for 3 sensitive plant species at your proposed Otay Hills Quarry. The species analyzed were determined by the County of San Diego based on their status as Narrow Endemic Species in their Multiple Species Conservation Program. The species analyzed include Otay tarplant (*Deinandra conjugens*), variegated dudleya (*Dudleya variegata*), and San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*).

The Likely Limits of Occurrence (LLO) for these species was determined by comparing the on-site distribution with slope orientation and vegetation type. Slope orientation was broken down into 4 types: north, south, east, and west, based on compass bearings (Table 1). North and south compass bearings were expanded to include northeast and northwest with north, and southeast and southwest with south. When the distribution of these species was plotted on a map with slope orientation many of the San Diego goldenstar and variegated dudleya were located on slopes with a northern orientation. Otay tarplant was closely linked with a southern orientation.

Table 1.
Slope Orientation

Compass Heading	Degrees
North	0° to 67.5° & 292.5° to 360°
South	112.5° to 247.5°
East	67.5° to 112.5°
West	247.5° to 292.5°

Concurrence for where these species occur on-site was improved when the habitats they were observed in was added to the analysis. The concurrence predictability, expressed as a percent

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of the individuals when analyzing for these factors ranged from 94 percent to over 99 percent, depending on the species (Figures 1, 2 and 3; Table 2).

Table 2.
Occurrence Analysis

Species	Likely Limits of Occurrence Parameters		Predictability (%)[1]
	Slope Orientation	Vegetation Type	
Otay tarplant	South	Non-native grassland	94
Variegated dudleya	North	Diegan Coastal Sage Scrub	99+
San Diego goldenstar	North	Diegan Coastal Sage Scrub, southern mixed chaparral, & southern interior cypress forest	95

[1] Based on the number of individuals within the LLO vs. the total individuals occurrences on-site, this is the percentage of the individuals in the LLO.

The LLO from this analysis provides the total area expected, impacted and preserved on-site for each species (Table 3). The impacts to the LLO for these species ranges from 16.69 acres for Otay tarplant to 13.27 acres for variegated dudleya and San Diego goldenstar. The corresponding preservation for these species is 6.58 acres (28 percent) for the tarplant, 48.90 acres (79 percent) for the dudleya, and 72.27 acres (84 percent) for the goldenstar.

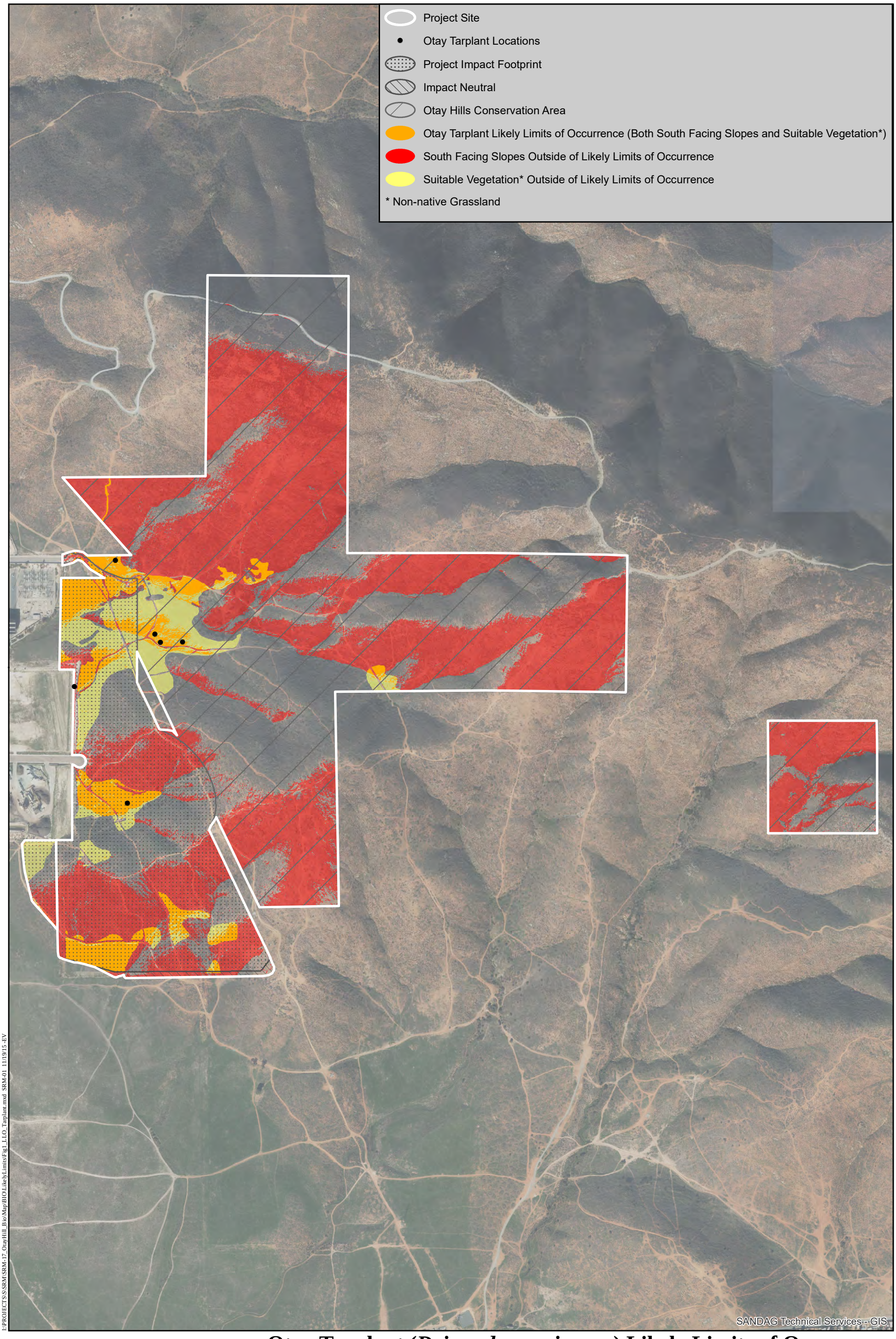
Table 3.
Likely Limits of Occurrence Analysis (acres/%)

Species	**Existing**	**Impacted[1]**	**Preserved[2]**
Otay tarplant	23.27	16.69	6.58
Variegated dudleya	62.17	13.27	48.90
San Diego goldenstar	85.54	13.27	72.27

[1] Includes off-site impacts.

[2] Includes impact neutral areas.

Attachments: Figures 1 through 3



I:\PROJECTS\SRM\SRM-17_OtayHill_BioMap\BIOL\likelyLimits\Fig1_LLO_Tarplant.mxd SRM-01 11/19/15 -EV

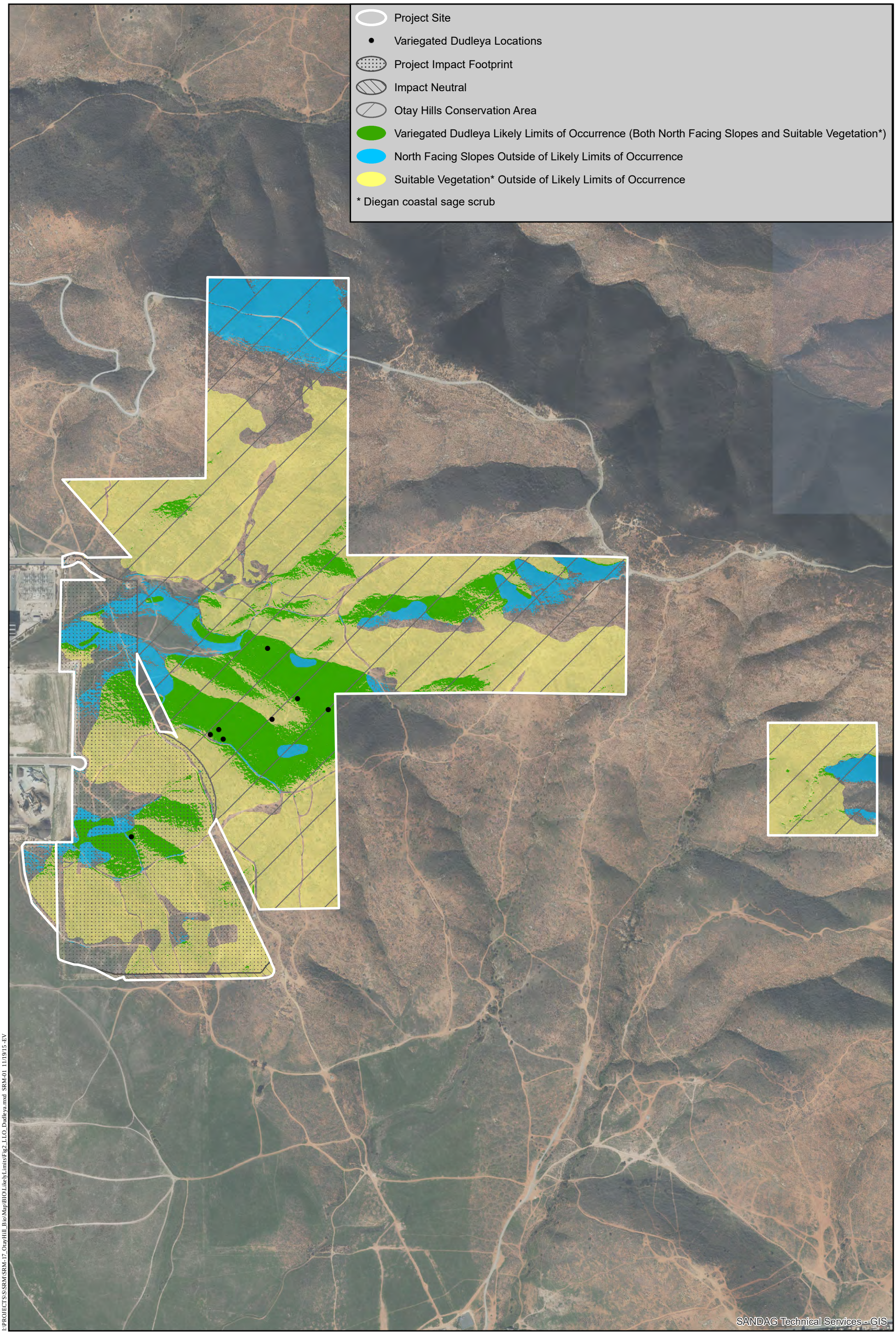
Otay Tarplant (*Deinandra conjugens*) Likely Limits of Occurrence

MULTIPLE SPECIES CONSERVATION PLAN MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 850 Feet

Figure 1



I:\PROJECTS\SSRM\SRM-17_OtayHill_Bio\Map\BIOLikelyLimitsFig2_LLO_Dudleya.mxd SRM-01 11/19/15 -EV

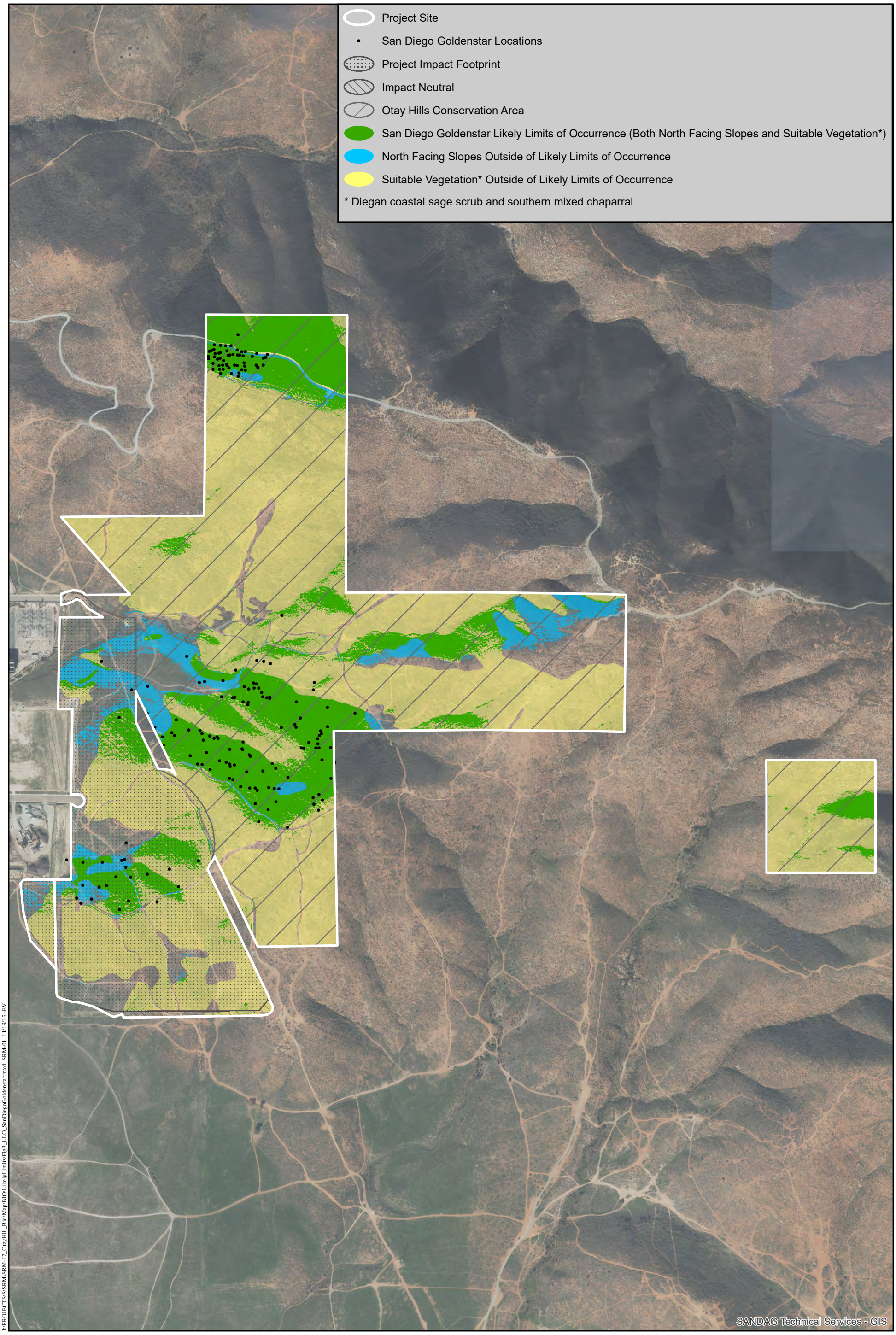
Variegated Dudleya (*Dudleya variegata*) Likely Limits of Occurrence

MULTIPLE SPECIES CONSERVATION PLAN MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 850 Feet

Figure 2



I:\PROJECTS\SRM\SRM-17_OtayHill_BioMap\BIO\LikelyLimits\Fig3_LLO_SanDiegoGoldenstar.mxd SRM-01 11/19/15 -EV

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

MULTIPLE SPECIES CONSERVATION PLAN MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 850 Feet

Figure 3

Appendix B-1

2000 QUINO CHECKERSPOT BUTTERFLY SURVEY REPORT

APPENDIX B-1

2000 QUINO CHECKERSPOT BUTTERFLY SURVEY REPORT

2000 Annual Report
U.S. Fish and Wildlife Service Protocol Level Presence/Absence Surveys for the Quino Checkerspot Butterfly
(*Euphydryas editha quino*)

Prepared for:

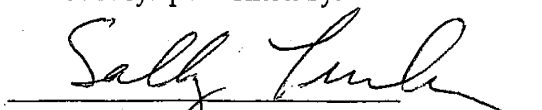
Jacob Brouwer
East Otay Project Site
San Diego County
California

Prepared by:

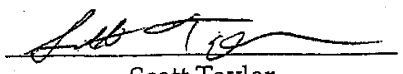
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(Threatened/Endangered Species Permit: TE778195-5)

June 9, 2000

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Sally Trnka



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INTRODUCTION/SITE DESCRIPTION

This report documents the results of HELIX Environmental Planning, Inc. (HELIX) quino checkerspot butterfly (QCB; *Euphydryas editha quino*) presence/absence surveys for the East Otay project site. All focused QCB surveys were performed under HELIX's endangered/threatened species permit (TE-778195-5).

The approximately 360-acre East Otay Project site is located in the southwest portion of San Diego County, in the southwestern foothills of the San Ysidro Mountains. The site is east of Brown Field Airport, east of the end of Otay Mesa Road. The border with Baja California is located less than a half of a mile to the south of the property. The site is described as: SW 1/4 of section 29 - 160 acres (APN 648-050-03); W 1/2 of the SE 1/4 section 29 - 80 acres (west half APN 648-050-04); N 1/2 of the NW 1/4 section 32 – 80 acres (APN 648-080-13, -14, -15); and NW 1/4 of the NE 1/4 of section 32 – 40 acres (APN 648-080-02).

The East Otay project site is in Area 1 of the U.S. Fish and Wildlife Service's (USFWS) mapped Year 2000 Quino Survey Area (USFWS 2000a). It is located within the County of San Diego and is mainly a County of San Diego MSCP Subarea Plan designated major amendment area. Land on the site is currently undeveloped. Land uses bordering the site include agricultural land to the west and south of the site and open space to the north and east.

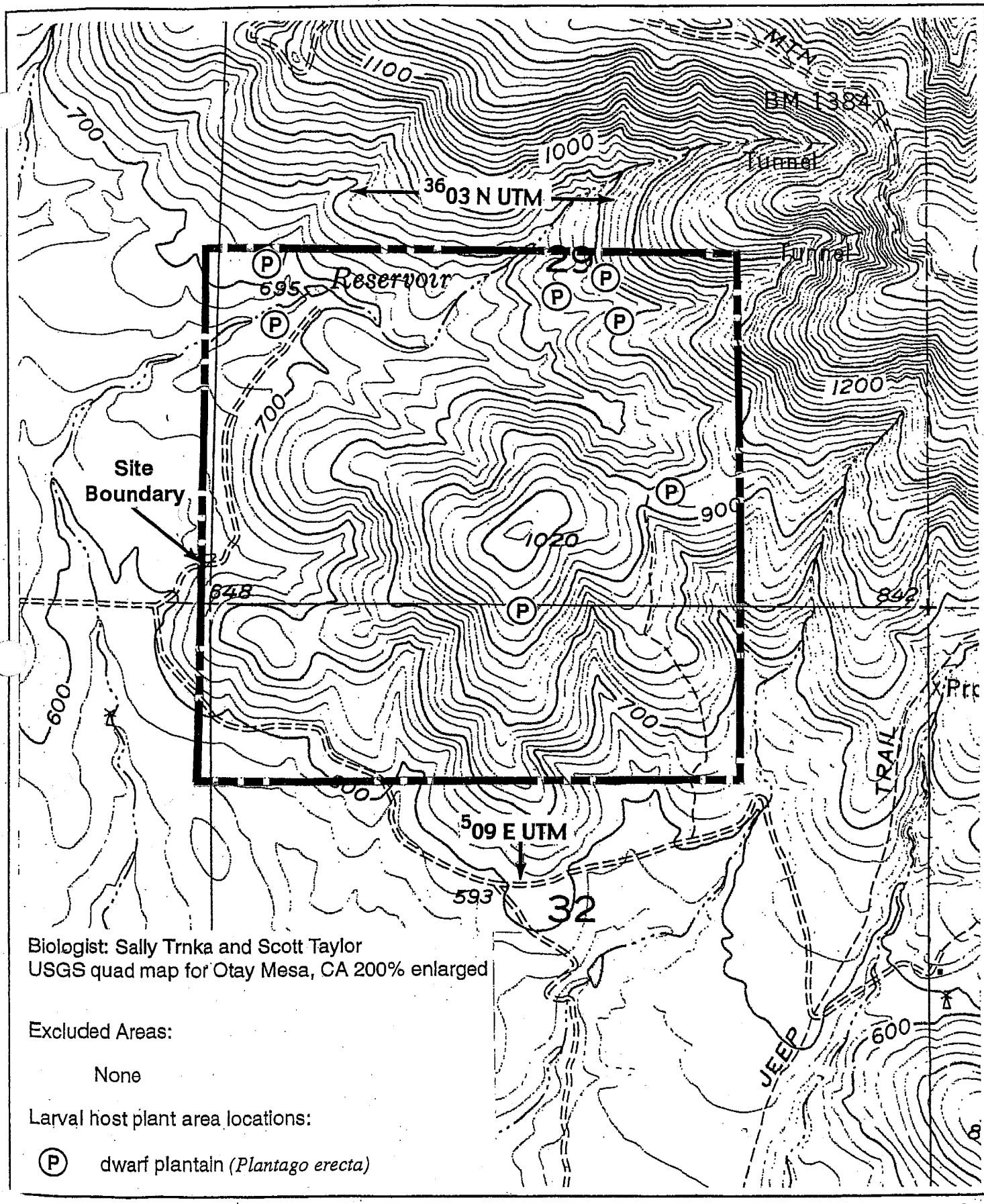
Topographically, the site contains one small and one large hilltop and a series of long wide ridges and deep broad canyons. Elevation on site ranges from approximately 575 feet above mean sea level in the western portion of the site to approximately 1,020 feet above mean sea level at the top of the central hill, and 1,050 along a ridgeline in the far northeast corner of the site. Higher elevation hilltops and mountains occur just north and east of the site.

METHODS

QCB HABITAT ASSESSMENT

The USFWS established its QCB Year 2000 Survey Protocol prior to the 2000 adult survey period (USFWS 2000b). The survey protocol defines a two-part strategy. The first part involves conducting a habitat assessment prior to the first weekly adult survey to identify and map, if present, areas which have the potential for adult or larval QCB to occur. Areas requiring QCB surveys are called non-excluded areas and are determined based on the presence of open or disturbed, native upland vegetation communities. Areas that may be excluded from surveys include (1) orchards, developed areas, or in-fill parcels largely dominated by non-native vegetation, (2) active/in-use agricultural fields without natural or remnant inclusions of native vegetation, or (3) areas which have closed-canopy vegetation, defined as dense vegetation where the upper portions of plants are overlap to a point where coverage between plants is approximates the coverage within a single plant.

Prior to QCB protocol surveys in 2000, Sally Trnka and Peter Allen of HELIX conducted a habitat assessment on March 23, 2000. All 360 acres were assessed for potential QCB habitat (Figure 1). The property is currently recovering from a large fire that swept through the site approximately three years ago. Because of this fire, and low levels of rainfall in the last few years, the site largely consists of open to sparsely vegetated coastal sage scrub. The eastern portions of the site also contain some non-native grassland, and small patches of native grassland (largely within the coastal sage scrub), southern mixed chaparral, mule fat scrub and disturbed habitat. Numerous dirt roads also occur throughout the site. No



Biologist: Sally Trnka and Scott Taylor
USGS quad map for Otay Mesa, CA 200% enlarged

Excluded Areas:

None

Larval host plant area locations:

(P) dwarf plantain *(Plantago erecta)*

Site Assessment and Host Plant Location Map for East Otay Project Site

Figure 1

HELIX

significant quantities of habitat on site qualified for any of the three survey exclusion categories, therefore, it was decided that surveys would be required for the entire property. Of the 360 surveyed acres, areas that were most intensely surveyed included the two main hilltops and all ridgelines. A more in depth description of each habitat type is provided in the Results section below.

QCB PROTOCOL SURVEYS

The second part of the 2000 survey protocol required that a focused survey be conducted once a week for adult QCB during the five-week flight period. The USFWS determined the flight period initiation date and notifies all permitted surveyors one week in advance. The flight period is based on the USFWS monitoring of QCB reference population activity in San Diego and Riverside counties. The USFWS notified HELIX on March 24, 2000 that the flight season had begun and QCB surveys should be initiated the following week. Surveys began on March 31, 2000 and were continued until May 2, 2000, at the termination of the five-week survey period.

Spring 2000 protocol (USFWS 2000b) level focused surveys for the QCB at the East Otay project site were conducted by HELIX biologists Scott Taylor and Sally Trnka (Table 1). Due to the large size of the site the 360-acre survey area was divided into four 90-acre sub-areas, the northwest, northeast, southwest and southeast corners of the site. Each individual area was covered by the same biologist each week. Each biologist surveyed according to USFWS protocol survey rates, typically covering one corner of the site per survey day. All potential habitat areas were surveyed at least once per week. Due to the variability in topography and large size of the site, temperature and wind conditions sometimes varied in different portions of the site. Each biologist recorded weather conditions separately to account for weather differences within each area being surveyed.

Biologists tried to be on site whenever possible to maximize potentially small windows of good weather. Unsuitable weather conditions did occur several times during the five-week survey period, but did not last for more than several days. Occasionally surveys were started, but were cancelled later the same day as weather conditions worsened to below protocol level conditions. These surveys were completed later the same week. The entire site was surveyed on a weekly basis according to protocol for all five weeks.

The surveys consisted of walking through potential QCB habitat (Figures 1) on site and identifying all butterflies observed. Butterfly species were identified by sight and with the aid of binoculars. Some butterfly species (namely those in the family Lycaenidae containing the blues and hairstreaks) were netted to aid identification and immediately released. No butterflies potentially resembling quino were netted. Any observed larval host plants (dwarf plantain [*Plantago erecta*], owl's clover [*Castilleja exserta*], and bird's beak [*Cordylanthus rigidus*]) were mapped throughout the 2000 adult survey period. Nectaring resources (*Lasthenia* spp., *Layia* spp., *Ericameria* spp., *Cryptantha* spp., and *Allium* spp.) were also noted in the field notes for each week. Areas of the highest quality potential QCB habitat were often revisited during each survey. These areas included hilltops, ridgelines, and large populations of nectar plants and/or host plants. The area where the one QCB was observed was revisited frequently.

A species list of all butterflies observed is included as Appendix A. A list of potential larval host plants and nectar sources is included as Appendix B. Original field notes are provided in Appendix C.

Nomenclature for this report is taken directly from Holland (1986) for vegetation communities, and Hickman (1993) and the Year 2000 Survey Protocol (USFWS 2000b) for plants. Identification of butterflies

Table 1
SUMMARY OF FIELD SURVEY CONDITIONS AND RESULTS FOR THE EAST OTAY PROJECT SITE

Site Visit #	Date of Survey	Survey Time (24 hr) (start/end)	Weather Conditions (start / end)*	Biologist(s)	Results*
Week 1 summary	03/31/00 – 04/06/00	N/A	N/A	N/A	Quino detected on the west-facing slope of the main hilltop. Eleven butterfly species observed. Dwarf plantain (*Plantago erecta*) was observed in small discrete patches, in flower. Nectar resources include onion (*Allium* sp.), cryptantha (*Cryptantha* sp.) and goldfields (*Lasthenia* sp.).
1a SW corner	03/31/00	0830 / 1500	clear; wind 1-3 mph; 62° F / clear; wind 4-9 mph; 74° F	Sally Trnka	No quino detected. Five butterfly species observed. Nectar resources included cryptantha and onion.
1b SE corner	04/01/00	0800 / 1440	clear; wind < 1 mph; 62° F / clear; wind 4-9 mph; 79° F	Sally Trnka	No quino detected. Eight butterfly species observed. Dwarf plantain present. Nectar resources include cryptantha and goldfields.
1c NE corner	04/02/00	0900 / 1620	clear; wind 0-7 mph; 72° F / clear; wind 5-10 mph; 78° F	Scott Taylor	Quino detected. Eight butterfly species observed. Dwarf plantain observed. Nectar resources include onion and cryptantha.
1d NW corner	4/3/00	1115 / 1700	clear; wind 1-3 mph; 75° F / clean; wind 3-7 mph; 76° F	Sally Trnka	No quino detected. Seven butterfly species observed. Dwarf plantain present. No nectar resources observed.
Week 2 summary	4/7/00 – 4/13/00	N/A	N/A	N/A	No quino detected. Eleven butterfly species observed. Dwarf plantain is present. Nectar resources include onion and cryptantha.
2a SW corner	4/7/00	1200 / 1630	hazy; wind 0-7 mph; 72° F, / partly cloudy (but sunny); wind: 5-9 mph; 74° F	Sally Trnka	No quino detected. Four butterfly species observed. Nectar resources include onion and cryptantha.
2a NE corner	4/7/00	0920 / 1630	hazy (morning overcast burned off later in day); wind: 0-2 mph; 73° F / clear; wind: 5-12 mph; 75° F	Scott Taylor	No quino detected. Nine butterfly species observed.
2b NW corner	4/9/00	1030 / 1700	clear (hazy); wind: 1-3 mph; 76° F / clear; wind: 4-7 mph; 73° F	Sally Trnka	No quino detected. Seven butterfly species observed. Nectar resources include onion.

Table 1 (cont.)
SUMMARY OF FIELD SURVEY CONDITIONS AND RESULTS FOR THE EAST OTAY PROJECT SITE

Site Visit #	Date of Survey	Survey Time (24 hr) (start/end)	Weather Conditions (start / end)*	Biologist(s)	Results*
2c SE corner (partial)	4/10/00	0830 / 1535	clear (also hazy until 1000); wind: <1 mph; 61° F / clear; wind: 1-5 mph; 74° F	Sally Trnka	No quino detected. Seven butterfly species observed. Nectar resources include cryptantha.
2d SE corner (finish)	4/11/00	1530 / 1745	clear; wind: to 7 mph; 82° F / clear but hazy; wind: to 7 mph; 76° F	Sally Trnka	No quino detected. Four butterfly species observed.
Week 3 summary	4/14/00 – 4/20/00	N/A	N/A	N/A	No quino detected. Nine butterfly species observed. Dwarf plantain is present. No new nectar resources.
3a NW corner (cancelled)	4/14/00	0930 /1015	partly cloudy; wind: to 10 mph; 66° F / partly cloudy; wind: 4-7 mph; 63° F	Sally Trnka	No quino detected. No butterfly species observed. Cancelled survey due to poor weather conditions.
3b NW corner	4/16/00	0930 / 1625	clear, scattered clouds; wind: 0-3 mph; 71° F / clear; wind: 2-9 mph; 72° F	Sally Trnka	No quino detected. Five butterfly species observed. Nectar resources include onion.
3c SE corner (partial)	4/17/00	1010 / 1310	partly cloudy; wind: 2-7 mph; 75° F / overcast and cloudy; wind: >15 mph; 73° F	Sally Trnka	No quino detected. Five butterfly species observed. Nectar resources include goldenfields. Cancelled survey due to poor weather conditions.
3c NE corner (partial)	4/17/00	1010 / 1310	partly cloudy; wind: 2-10 mph; 75° F / overcast; wind: >15 mph; 78 ° F	Scott Taylor	No quino detected. Six butterfly species observed.
3d SE corner (partial)	4/18/00	1400 / 1630	partly cloudy; wind: 3-5 mph; 71° F / cloudy; wind: 5->15 mph; 67° F	Sally Trnka	No quino detected. Four butterfly species observed. Ended survey due to poor weather conditions.
3d NE corner (partial)	4/18/00	1400 / 1630	partly cloudy; wind: 3-5 mph; 7 ° F / cloudy; wind: 5->15 mph; 67° F	Scott Taylor	No quino detected. Five butterfly species observed. Ended survey due to poor weather conditions.
3e SE corner (finish) SW corner	4/19/00	0915 / 1350 and 1420 / 1715	clear; wind: 4-7 mph; 61° F / clear; wind: 4-9 mph; 72° F	Sally Trnka	No quino detected. Nine butterfly species observed.

Table 1 (cont.)
SUMMARY OF FIELD SURVEY CONDITIONS AND RESULTS FOR THE EAST OTAY PROJECT SITE

Site Visit #	Date of Survey	Survey Time (24 hr) (start/end)	Weather Conditions (start / end)*	Biologist(s)	Results*
3f NE corner (finish)	4/20/00	1420 / 1550	clear; wind: 4-10 mph; 86° F / clear; wind: 4-7 mph; 86° F	Scott Taylor	No quino detected. Three butterfly species observed.
Week 4 summary	4/21/00 - 4/27/00	N/A	N/A	N/A	No quino detected. Nine butterfly species observed. *Plantago erecta* still present but drying. No new nectar resources.
4a NW corner (partial)	4/21/00	1220 / 1540	cloudy; wind: 4-9 mph; 71° F / overcast and cloudy; wind: 7-12 mph; 72° F	Sally Trnka	No quino detected. Three butterfly species observed. Ended survey due to poor weather conditions.
4b NW corner (finish)	4/23/00	1040 / 1750	partly cloudy; wind: 0-3 mph; 72° F / clear; wind: 1-3 mph; 70° F	Sally Trnka	No quino detected. Six butterfly species observed.
4c SE corner	4/24/00	1020 / 1705	clear; wind: 4-7 mph; 70° F / clear; wind: 4-7 mph; 74° F	Sally Trnka	No quino detected. Eight butterfly species observed.
4d NE corner	4/24/00	1020 / 1705	clear; wind: 4-7 mph; 70° F / clear; wind: 4-7 mph; 74° F	Scott Taylor	No quino detected. Seven butterfly species observed.
4e SW corner	4/25/00	1030 / 1700	clear but hazy; wind: 4-7 mph; 73° F / clear but hazy; wind: 4-9 mph; 75° F	Sally Trnka	No quino detected. Six butterfly species observed.
Week 5 summary	4/28/00 - 5/4/00	N/A	N/A	N/A	No quino detected. Twelve butterfly species observed. *Plantago erecta* present, but dry. No new nectar resources.
5a NW corner	4/29/00	0930 / 1630	clear and sunny; wind: 4-8 mph; 64° F / clear; wind: 4-7 mph; 72° F	Sally Trnka	No quino detected. Nine butterfly species observed.
5b SE corner (partial)	5/1/00	1100 / 1600	clear; wind: 3-6 mph; 88° F / clear; wind: 6-9 mph; 89° F	Sally Trnka	No quino detected. Six butterfly species observed.
5b NE corner (partial)	5/1/00	1100 / 1600	clear; wind: 3-6 mph; 88° F / clear; wind: 4-10 mph; 89° F	Scott Taylor	No quino detected. Nine butterfly species observed.

Table 1 (cont.)
SUMMARY OF FIELD SURVEY CONDITIONS AND RESULTS

Site Visit #	Date of Survey	Survey Time (24 hr) (start/end)	Weather Conditions (start / end)*	Biologist(s)	Results*
5c SE corner (finish) and SW corner	5/2/00	1030 / 1545	clear; wind: 0-3 mph; 86° F / clear; wind: 5-9 mph; 89° F	Sally Trnka	No quino detected. Seven butterfly species observed.
5c NE corner (finish) and SW corner	5/2/00	1030 / 1545	clear; wind: 0-3 mph; 8 ° F / clear; wind 5-9 mph; 89° F	Scott Taylor	No quino detected. Eight butterfly species observed.

*Refer to Field Notes in Appendix C for specific survey information.

was based on personal knowledge, museum specimens, and field guides by Emmel & Emmel (1973), Scott (1986), Garth and Tilden (1986), Tilden and Smith (1986), Brown et al. (1992), Pyle (1995), and Stewart (1997).

RESULTS

The following is a list of vegetation communities present on site (Table 2). Descriptions of the vegetation communities on site are also provided as they relate to the QCB surveys.

Table 2
VEGETATION COMMUNITIES / HABITATS PRESENT ON THE EAST OTAY PROJECT SITE

Mule Fat Scrub
Native Grassland
Diegan Coastal Sage Scrub
Diegan Coastal Sage Scrub - disturbed
Diegan Coastal Sage Scrub / Chaparral
Non-native Grassland
Disturbed Habitat

MULE FAT SCRUB

Mulefat scrub is a tall, herbaceous, riparian scrub community dominated by mule fat (*Baccharis salicifolia*) and interspersed with shrubby willows (*Salix* spp.). This habitat occurs along intermittent stream channels with a fairly coarse substrate and moderate depth to the water table. This habitat occurs on a very small portion of the north west corner of the site. Portions of this habitat were sparsely vegetated and were surveyed for QCB.

NATIVE GRASSLAND

Native grassland is a community dominated by perennial bunchgrasses such as purple needlegrass (*Nassella 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. On site native grassland occurs on north-facing slopes. A few larger patches of this habitat occur on site, however, it is largely interspersed within openings in Diegan coastal sage scrub habitat. On site this habitat is dominated by purple needlegrass, but also contains a large number of non-native annual grasses. Other species found in this habitat include San Diego goldenstar (*Muilla clevelandii*) and California blue-eyed grass. Native grassland habitat was surveyed for QCB.

DIEGAN COASTAL SAGE SCRUB (INCLUDING DISTURBED AND COASTAL SAGE SCRUB/CHAPARRAL ECOTONE)

Coastal sage scrub is one of the two major shrub types that occur in California. This habitat type occupies xeric sites characterized by shallow soils. Sage scrub is dominated by subshrubs whose leaves abscise

during drought. This adaptation allows these species to better withstand the prolonged drought period in the summer and fall. Sage scrub species have relatively shallow root systems and open canopies that allow for the occurrence of a substantial herbaceous component.

The Diegan coastal sage scrub on site contains a diverse suite of plant species and species composition varied within different portions of the site. Dominant species include California sagebrush (*Artemisia californica*), and flat-top buckwheat (*Eriogonum fasciculatum*). Other, less numerous species included lemonadeberry (*Rhus integrifolia*), laurel sumac (*Malosma laurina*), white sage (*Salvia apiana*), deerweed (*Lotus scoparius*), and lessingia (*Lessingia filaginifolia* var. *filaginifolia*). In open canopy areas herbaceous understory plants include needlegrass (*Nassella* sp.) ashy spike-moss (*Selaginella cinerascens*), wishbone bush (*Mirabilis californica* var. *californica*), and San Diego barrel cactus (*Ferocactus viridescens*). Disturbed Diegan coastal sage scrub on site typically contained a lower diversity of shrub species, lower shrub cover, and higher cover by non-native annual grasses. All areas of Diegan coastal sage scrub were surveyed.

The Diegan coastal sage scrub/chaparral ecotone (or transitional habitat) on site contained a mixture of species from these two habitats. Southern mixed chaparral is composed of broad-leaved, sclerophyllous shrubs that grow to about 6 to 10 feet tall and form dense often nearly impenetrable stands. This habitat occurs on dry, rocky, often steep north-facing slopes with little soil. As conditions become more mesic, broad-leaved, sclerophyllous shrubs that resprout from underground root crowns become dominant. On-site dominant plant species observed within this ecotone include spiny redberry (*Rhamnus crocea*), laurel sumac, and California sagebrush. Portions of this habitat did not contain a closed canopy and were surveyed for QCB.

CHAMISE CHAPARRAL

Chamise chaparral is dominated by chamise (*Adenostoma fasciculata*). This habitat is found from Baja California, Mexico to northern California in pure or mixed stands. Mission manzanita (*Xylococcus bicolor*) and black sage are commonly minor associates within this community. On site, the chamise chaparral was dominated by a sparse cover of chamise. Because of the open canopy structure, this habitat was surveyed for the QCB.

NON-NATIVE GRASSLAND

Non-native grassland is a dense to sparse cover of annual non-native grasses. On-site this habitat occurred primarily in the western portion of the site and was dominated by wild oat (*Avena* sp.) and brome (*Bromus* spp.). This habitat was surveyed for QCB.

DISTURBED

In general, disturbed areas occur where native habitat has recently been disturbed by off-road vehicles. Some disturbed areas contain little, if any, vegetation. Other areas include ruderal vegetation dominated by non-native, weedy species. Many of the species characteristic of disturbed habitat also occur in non-native grassland, but disturbed habitat is dominated by invasive species other than grasses. On site disturbed habitat is largely the result of off-road vehicle use of the site. This habitat occurs along unvegetated dirt roads located within other habitat types and in the north west corner of the site, in an area that is dominated by mustard (*Brassica* sp.) and fennel (*Foeniculum vulgare*). All dirt trails and other sparsely vegetated portions of disturbed habitat on site were surveyed for the QCB.

As described in the methods section, hilltops, ridgelines, and dirt roads through all habitats were concentrated on during QCB surveys. Although nearly the entire site qualified for surveying under the existing protocol, areas that had more promise were identified in the course of the survey period. These areas tended to be along the tops of ridgelines, on the two main hilltops, and in the vicinities of the QCB larval host plant (Figure 1). Also, less disturbed portions of coastal sage scrub were thought to be more favorable habitat as these areas contained more open ground with cryptogamic crust (often containing ashy spike-moss [*Selaginella cinerascens*] and Bigelow's spike-moss [*Selaginella bigelovii*]) and lower cover by non-native grasses.

The largest populations of dwarf plantain occurred in two patches in the north east corner of the site. In other locations this plant occurred in small patches with 300-400 individuals. All plants observed on site were fairly small and had dried up by the last few weeks of the survey.

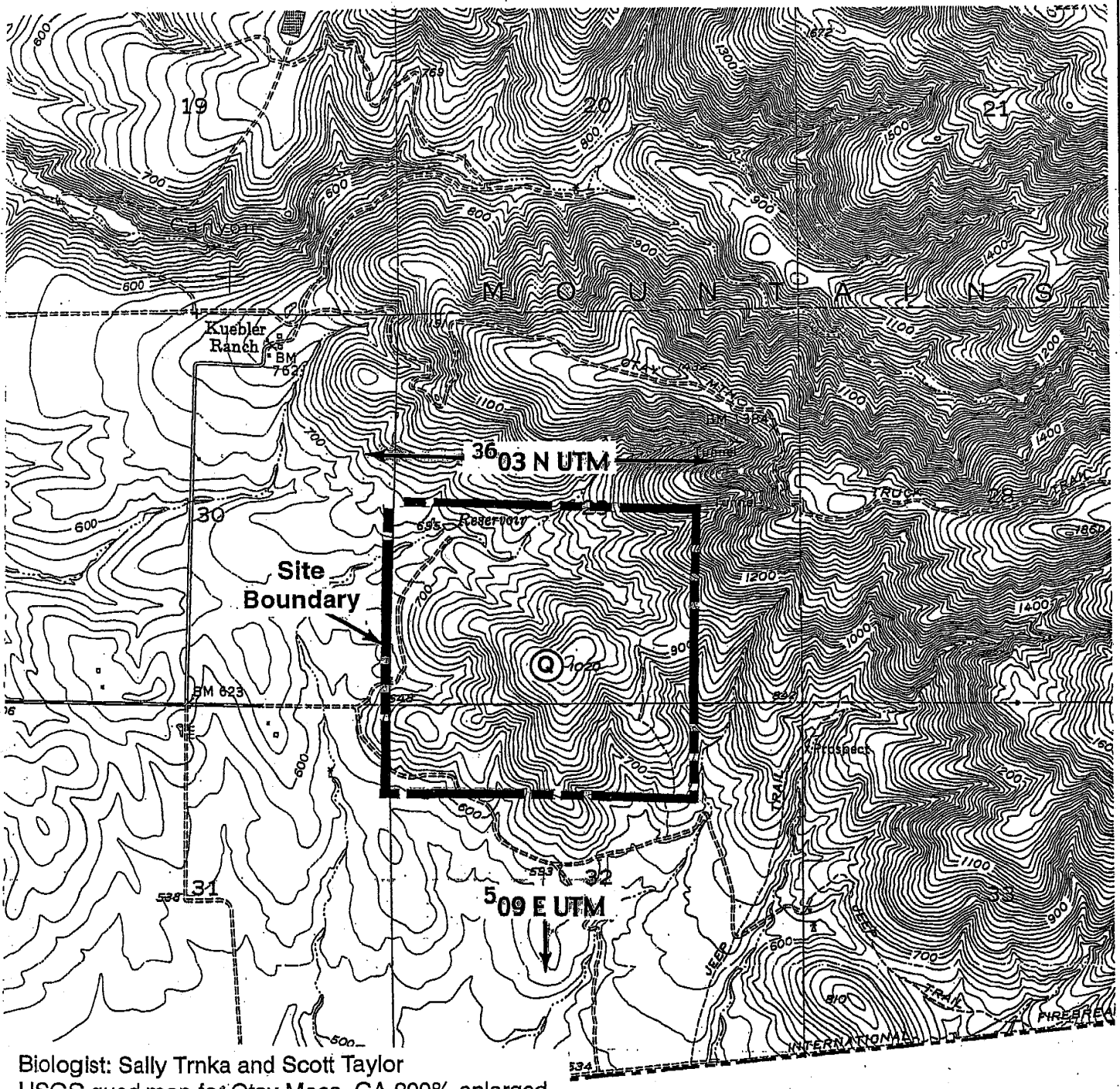
Potential nectar sources for the QCB were spread out throughout the site, and occurred in small patches (e.g., goldfields [*Lasthenia* sp.] and onion [*Allium* sp.]) or as scattered individuals (e.g., popcorn flower [*Cryptantha* sp.], and were generally located within coastal sage scrub habitat. A list of these and other potential nectar sources is presented in Appendix B.

A QCB was observed on site during the first week of surveys (Figure 2), just west of the main hilltop located at the center of the property. Only one sighting of this species occurred during the five-week survey period. The observed individual was flying near a dirt road leading to the main hilltop. The individual flew closer to the biologist, landed beside the road, and was able to be closely observed at a distance of approximately two yards for several seconds before it flew off. The biologist was not able to take a photograph of the butterfly because an off-road vehicle interrupted the taking of the photograph. The area of the sighting was searched thoroughly on the day of the observation and repeatedly during the following four weeks of surveys, but no additional observations of this species were made on site.

A total of twenty butterfly species were observed during the protocol surveys (Appendix A). During the five week survey period the species composition of observed butterflies changed. The species diversity present on site corresponds to the undeveloped and largely upland nature of the habitat present on site. Several species, namely the anise swallowtail (*Papilio zelicaon*), west coast lady (*Vannessa annabella*) and painted lady (*Vannessa cardui*) were often observed hilltopping on both of the hills on site.

CONCLUSION

Year 2000 protocol surveys for QCB were conducted on the 360-acre East Otay Site. One individual QCB was observed on site during the first week of the season. Repeated attempts to relocate this individual and to locate any other individuals during the survey period were unsuccessful.



Biologist: Sally Trnka and Scott Taylor
USGS quad map for Otay Mesa, CA 200% enlarged

Key:

Q Quino checkerspot butterfly locations (1 total)

Areas excluded from survey (none)

Quino Location Map for East Otay Project Site

Figure 2

HELIX

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APPENDIX A

BUTTERFLY SPECIES OBSERVED
(East Otay Project Site)

Scientific Name	Common Name
Anthocharis sara	Sara orangetip
Apodemia mormo virgulti	Behr's metalmark
Pontia protodice	Common white
Brephidium exilis	Pygmy blue
Callophrus perlexa	Perplexing hairstreak
Celastrina ladon echo	Echo blue
Coenonympha californica	California ringlet
Colias harfordi	Harford's sulfur
Erynnis funeralis	Funereal duskywing
Euphilotes bernadino bernadino	Bernadino blue
Euphydryas editha quino	Quino checkerspot
Everes amyntula	Western tailed blue
Glaucopsyche lygdamus australis	Southern blue
Leptotes marina	Marine blue
Papilio eurymedon	Pale swallowtail
Papilio zelicaon	Anise swallowtail
Speyeria callippe comstocki	Comstock's fritillary
Strymon melinus	Gray hairstreak
Vannessa annabella	West coast lady
Vannessa cardui	Painted lady

APPENDIX B

POTENTIAL LARVAL HOST PLANTS AND NECTAR SOURCES OBSERVED
(East Otay Project Site)

POTENTIAL LARVAL HOST PLANT SPECIES

Scientific Name	Common Name
Plantago erecta	Dwarf plantain

POTENTIAL NECTAR PLANT SPECIES

Scientific Name	Common Name
Most likely nectar sources	
Allium sp.	Onion
Cryptantha sp.	Popcorn flower
Lasthenia sp.	Goldfields
Other possible nectar sources	
Brassica sp.	Mustard
Calystegia macrostegia	Morning-glory
Dichlostema capitatum	Blue dicks
Eriogonum fasciculatum	California buckwheat
Eriophyllum confertiflorum	Golden yarrow
Erodium sp.	Filaree
Eschscholzia californica	California poppy
Hedypnois cretica	Crete weed
Hypochaeris glabra	Smooth cat's ear
Lepidium sp.	Peppergrass
Linanthus sp.	Ground pink
Mirabilis californica	Wishbone bush
Sisyrinchium bellum	Blue-eyed grass
Viola pedunculata	Johnny-jump-up

APPENDIX C

QUINO CHECKERSPOT FIELD NOTES

QUINO CHECKERSPOT GENERAL FORM

SRM01

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 03/31/00 Site visit no. Week 1 1/3

Site name East Otay Mining

Locality Otay, San Diego County

Total site acres 360 Total acres surveyed 90

Total hours of field survey 6.5 Average acres surveyed per hour 13.8

Time	Sky	Wind	Temperature F
Start 8:30am	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 (1-3) 4-7 8-12 12-15 >15	62
End 3:00pm	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	74
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Surveyed the south west quadrat of the site. This area consisted mainly of open coastal sage scrub and non-native grassland. Also checked the main hilltop briefly.

Attached
- [X] List of butterflies observed
- [X] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [X] Copy of original field notes
- [ ] Photographs
- [ ] Other

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
W[illegible] Tiger Swallowtail (*P. rutulus*)		
S[illegible]rangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)	Unknown white 1 (1)	
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	1 (1)	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
[illegible]oast Lady (*V. annabella*)		
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
[illegible] Metalmark (*Apodemia mormo virgulti*)	II (2)	
Wright's Metalmark (*Calephelis wrighti*)		
Unknown blue	III (3)	
Funereal duskywing	III (3)	

1-3mph / 62°F

QUINO Survey Week 1; survey 1/3

03/31/00 East Otay Mining Site (south west quadlat) Sally Tmka

animal species
sparrow
red tailed hawk
white 1
raven
CA ringlet 1
blue 11+
lizard
brown unknown (not elfin)

Song sparrow (gray head, long rounded tail)
Kestrel (♀)
Behr's metalmark 11
Funereal duskywing 111
desert cottontail
Northern harrier
swallow

flowering plants
Calochortus - pink
Viola ped.
Dic. cap.
Oxalis sp. (big. yellow flowers)
Cryptantha sp. (~ 4cm tall, few individuals)
Dodecatheon
Eri fas
Lot sco
Vig lac
Isomeris arborea
Calystegia mac.
Pink
Brassica sp.
sweet pea (Lathyrus sp.)

11:40am winds 4-9 / clear & sunny / 75°F
note: fields of Bras. sp in NW6 to west of site
~1/4 mile - 1 mile

(pers. mil. 58)

end: 3pm / clear / 4-9mph / 74°F
notes: surveyed all potential habitat - largely open CSS & non-native gras
chkd both hilltops
dirt hikers numerous just off-site

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/01/00 Site visit no. Week 1 2/3

Site name East Otay Mining

Locality Otay, South San Diego County

Total site acres 360 Total acres surveyed 90

Total hours of field survey 6hrs 40min Average acres surveyed per hour 13.5

Time	Sky	Wind	Temperature F
Start 8:00am	(Clear) Patch Overcast/Cloudy Drizzle Shower	(<1) 1-3 4-7 8-12 12-15 >15	62
End 2:40pm	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) (8-12) 12-15 >15	79
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Surveyed the ~~northwest~~ southeast quadrat.

Numerous dirt bikers and ATV riders on site within the survey area.

Attached
- [X] List of butterflies observed
- [X] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [X] Copy of original field notes
- [ ] Photographs
- [ ] Other

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	2	
West Tiger Swallowtail (*P. rutulus*)		
S. angetip (*Anthocharis sara*)	2	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	3	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	1	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
Y oast Lady (*V. annabella*)		
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowli californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	9	
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)	1	
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
Metalmark (*Apodemia mormo virgulti*)	12	
Wright's Metalmark (*Calephelis wrighti*)		
Funereal duskywing	5	

East Otay Mining Site

04/01/00
SJT
going 2/3 1st wk

survey area: ~~north west~~ South east quadrat

Start: 8am / clear / no wind (<1mph) / 62°F

Species observed:

Meadowlark
~~Sha~~ Cooper's hawk
raven
Sparrow
Behr's metalmark |||| ||| ||
common white |||
Funereal duskywing |||
brown (not ethn, moth?)
Sara's orangetip ||
Swallowtail ~~(tiger)~~ || (Anise)
Southern blue ||| |||
Pygmy blue (?) |
CA ringlet |

SDBTJ
horned lark

blue ||

(moth-like light blue margin)

Perplexing brown

gray head / brn body Sparrow

flowering sp

Dic cap
Calyteg. mac.
Lot sco
Mal fas
Eri fas
Vig lac
Cry sp.

Oxalis
Pholistoma
pink
euphorbia (Chamys.)
sweet pea
Solanum sp.

end: 2:40pm / clear / 4-9mph with occasional gusts / 79°F

10:30am winds pick up 4-9mph
dirt bikers |||| ; ATU riders ||

new sp. Chamise chap.

Aden. fas. dom
Hel. sco. dom
Lot sco
End bot
Cry mic.
Ant cal

Vig lac
Sel. con.
Fen. vir.
Car mel

Sal mel
Voc whip
Eri fas
Mal fas

* numerous dirt bikers / ATU riders on site throughout survey period

QUINO CHECKERSPOT GENERAL FORM

Biologist name Scott Taylor

HELIX permit no. TE778195-5

Subconsultant permit no. _____

Survey date 4/2/00 Site visit no. 1

Site name E. Otay Mining Site

Locality Western foothills of Otay Mtn.

Total site acres 360 Total acres surveyed 90

Total hours of field survey 7 1/3 Average acres surveyed per hour 12.3

Time	Sky	Wind	Temperature F
Start 0900	(Clear) Patch Overcast/Cloudy Drizzle Shower	(<1) 1-3 (4-7) 8-12 12-15 >15	72°
End 1620	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) (8-12) 12-15 >15	78°
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

NE corner of site surveyed – see attached notes

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [x] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

Otay Mining Site 4/2/00

NE corner

0900 72°F 0-7 mph clear

Sara orange-tip XX	Calif. pinglet X
Behr's metalmark XX	Common raven
Red-tailed hawk	House finch
Anise swallowtail X	Southern blue XX
Funereal dusky wing XX	Bramble hairstreak X
Loggerhead shrike	S.D. black-tailed jack.
	Botta's pocket gopher
Flowering plants	Western meadowlark
Oxalis +	Desert cottontail
Lathyrus +	White-crowned sparrow
Vitis -	Rufous-crowned sparrow
Dichelostemma +	Greater roadrunner
Eriogonum -	Calif. ground squirrel
Allium	Rock wren
Fritillaria	No. red-diamond rattler
Dodecatheon -	Western fence lizard
Camchalagum +	American crow
Euphorbia (not misera) +	Calif. towhee
Solanum +	Side-blotched lizard
Plantago +	Bobcat (scat)
Cryptantha +	Granite spiny lizard

Flowering plants (cont.)
Calystegia +
Brassica -

Bramble hairstreak
West coast lady
* Quino checkerspot

* See notes on attached form. Observed for a short time period. Here is what happened: As I came around a road bend I saw a butterfly near the road ahead. It landed facing me, flat (as a pancake) on the ground. As I approached (20 ft away, perhaps), it flew. The flight looked exactly like a quino's flight type. Just then a jeep came around the bend towards me and the supposed quino. I put my hands out and stopped the jeep from coming up the road. I turned back to the butterfly and saw it land just 2 yards or so away. It spread its wings out completely and I was able to confirm it was a quino. Then it flew before I could ready my camera. It flew toward the jeep, which was slowly moving by on another road. The wind was gusting and the quino disappeared. I spent the next 1½ hours trying to relocate it and get my pictures.

During my time spent trying to relocate the butterfly, many ORVers came through the area. Almost every 5 to 10 minutes a motorcycle, ~~bulldozer~~ or other vehicle came tearing up through the area.

There are so many openings on the site that it is difficult to pin down where the butterfly might have gone. Of course I am spending the most ~~#~~ time where it was originally seen, ~~with~~ when someone isn't zooming by on any number between 2 and 4 wheels.

No luck finding the quino. A couple of times I thought I saw something vaguely quino like, but never was able to confirm.

78° clear 5-10mph 1620

= ⁂ Otay Mining Site 4/4/00

tterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)		
nise Swallowtail (*P. zelicaon*)	4	
W ter Swallowtail (*P. rutulus*)		
ara Orangetip (*Anthocharis sara*)	7	
elder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
leepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)	1	
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
Coast Lady (*V. annabella*)	7	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	8	
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Lepiotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*) = (Bramble)	~~8~~	
Ort Purple Hairstreak (*Atlides halesus*)		
ehr's Metalmark (*Apodemia mormo virgulti*)	4	
Wright's Metalmark (*Calephelis wrighti*)		
Funereal dusky wing	6	

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/03/00 Site visit no. Week 1 3/3

Site name East Otay Mining

Locality Otay; South San Diego County

Total site acres 360 Total acres surveyed ~85

Total hours of field survey 5hr 45min Average acres surveyed per hour 14.8

Time	Sky	Wind	Temperature F
Start 11:15am	(Clear) Patch Overcast/Cloudy Drizzle Shower hazy	<1 (1-3) 4-7 8-12 12-15 >15	75
End 5:00pm	(Clear) Patch Overcast/Cloudy Drizzle Shower sunny	<1 (1-3) (4-7) 8-12 12-15 >15	76
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Surveyed the northwest quadrat.
Surveyed slightly less than 90 acres because Scott meandered through the south east corner of my survey area yesterday during his survey.
Checked vicinity of yesterday's quino siting.

Attached
- [x] List of butterflies observed
- [x] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	2	
W[illegible] Tiger Swallowtail (*P. rutulus*)		
S[illegible]rangetip (*Anthocharis sara*)	15	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)	1	
California Ringlet (*Coenonympha californica*)	33	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
[illegible]oast Lady (*V. annabella*)		
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	25	
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
[illegible] Metalmark (*Apodemia mormo virgulti*)	2	
Wright's Metalmark (*Calephelis wrighti*)		
Funereal duskywing	6	

East Otay Mining Gnat Survey

~~South east~~ north west quadrat

Sally Trnka
04/03/00

start 11:15am / clear & hazy
1-3mph / 75°F
mileage - 822 →

Sara's orangetip 𝍸 𝍸 𝍸
Southern blue 𝍸 𝍸 𝍸 𝍸 snd brn raptor, squeal, shrt slight rust tail
mockingbird 𝍸 |
western meadowlark
CA ringlet 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 |||
Funereal duskywing 𝍸 |
raven
fox sparrow (red/white head w/ blk stripes & gorget)
Behr's metalmark |||
SD BTJ
Kestrel
Anise swallowtail ||
red tailed hawk

desert cottontail
ground squirrel
lizard
CA towhee
brown ~~moth~~ moth
Sphynx moth
Sulfur 1
loggerhead shrike

Flowering plants

Bras. sp.
Dic cap
Lot sco
Sys bal
Plagio. sp.
Lathyrus sp.
Viola ped.
Caly. mac.
Oxalis
Dodec.
Allium (pink flwr - no onion smell)

~~Catchfly~~
Eschz. cal.
pink
Pholistoma
paintbrush & phnts 5
tiny wht flwrs
Chamys.
Astragalus

winds 3-6mph @ 12:30 →

end: 5pm / clear & sunny / 3-7 mph / 76°F

~~Adet cat~~
~~Lepidoptera~~

notes: 4 ATV's / 2 bikes on site during survey
* lots of butterflies today, especially first several hours, but conditions were excellent & winds mild for this area all afternoon
* checked vicinity of gnat siting but did not observe it

Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	✓	
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	✓	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	✓	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)	✓	
California Ringlet (*Coenonympha californica*)	✓	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)	✓	
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vanessa cardui*)		
West Coast Lady (*V. annabella*)	✓	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	✓	
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)	✓	
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)	✓	
Git Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	✓	
Wright's Metalmark (*Calephelis wrighti*)		
Funereal duskywing	✓	

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trinka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/07/00 Site visit no. Week 2 1/3

Site name East Otay Mining

Locality Otay; San Diego County

Total site acres 360 Total acres surveyed Approximately 60

Total hours of field survey 4hrs 30min Average acres surveyed per hour 13.3

Time	Sky	Wind	Temperature F
Start 12pm	Clear Patch (Overcast/Cloudy) hazy Drizzle Shower	(<1) 1-3 4-7 8-12 12-15 >15	72
End 4:30pm	Clear (Patch) Overcast/Cloudy sunny Drizzle Shower	<1 1-3 (4-7) (8-12) 12-15 >15	74
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Surveyed the southwest quadrant. Checked the main slope. Did not survey the entire section.

Attached
- [X] List of butterflies observed
- [X] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [X] Copy of original field notes
- [ ] Photographs
- [ ] Other

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
W[illegible] Tiger Swallowtail (*P. rutulus*)		
S[illegible] Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	4	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
[illegible]oast Lady (*V. annabella*)	1	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
[illegible]s Metalmark (*Apodemia mormo virgulti*)	6	
Wright's Metalmark (*Calephelis wrightii*)		
Funereal duskywing	3	

East Otay Mining Site

Sally Trnka
04/07/00
Start 12pm / hazy / 73°
winds 0-7mph

Species observed

raven
funereal duskywing 1/1
western meadowlark
~~common white~~ 1
ringlet 1/1
West coast lady 1
CA kingsnake 1
Behr's metalmark 1/1/1
mockingbird
kingbird
CA towhee
desert cottontail
SDBTJ
red tail hawk
lizard
lark sparrow
Sparrow dusky red cap, lng tail

- few butterflies
- partly cloudy / hazy all day
- moderately windy during entire surve
- did not survey entire quadrant
- surveyed in the south west quadrant
- also surveyed portion of main hill within this quadrant & briefly visited the top of the main slope

flowering plants

Dic cap — tiny wht
Eri fas — tiny yellow
Lot sco — conchalagua
Calyst. mac — Vig lac
Lathyros — Esc. cal
Min. cal — Crypt.
Pholistoma — Calchort. spl. (1)
Allium — lepidium sp.
Viola ped.
Oxalis — wood sorrel

12:45 wind picked up - to 12mph

2:30 6-9mph sust.

end! 4:30pm / patchy cloudy but sunny between winds 5-9mph / 79°F

QUINO CHECKERSPOT GENERAL FORM

Biologist name Scott Taylor

HELIX permit no. TE778195-5

Subconsultant permit no. _____

Survey date 4/7/00 Site visit no. 2

Site name E. Otay Mining Site

Locality Western Foothills of Otay Mtn

Total site acres 360 Total acres surveyed 90

Total hours of field survey 7hrs 10min Average acres surveyed per hour 12.6

Time	Sky	Wind	Temperature F
Start 0920	(Clear) Patch Overcast/Cloudy Drizzle Shower	(<1) 1-3 4-7 8-12 12-15 >15	73°
End 1630	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) (8-12) 12-15 >15	75°
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments NE corner of site

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)		
Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	~~20~~ 25	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	1	
Coast Lady (*V. annabella*)	1	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	6	
Echo Blue (*Celastrina ladon echo*)	2	
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)	1	
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)	1	
Grt Purple Hairstreak (*Atlides halesus*)		
's Metalmark (*Apodemia mormo virgulti*)	3	
Wright's Metalmark (*Calephelis wrightii*)		
Funereal dusky wing	5	

Otay Mining Site 4/7/00

0920 hazy, clear 73° (ground) 0-2 mph
(morning overcast burned off)

Painted lady
No. mockingbird
Desert cottontail
Anna's hummingbird
Calif. towhee
West coast lady
American kestrel
Western fence lizard
Horned lark
Rufous-crowned sparrow
Funereal duskywing
Loggerhead shrike
White-crowned sparrow
Botta's pocket gopher
Greater roadrunner
Rock wren
Behr's metalmark

Flowering plants
Castilleja
Calendrina

American crow
SD Black-tailed jackrabbit
Side-blotched lizard
Mourning dove
Red-tailed hawk
Lesser goldfinch
Western kingbird
Anise swallowtail
Calif. ringlet
Common raven
Southern blue
Spotted towhee
Calif. thrasher
No. red-diamond rattler
Echo blue
Pygmy blue
Bramble hairstreak
Calif. kingsnake (banded)
Western meadowlark
Calif. grnd squirrel
Blue-gray gnatcatcher

1630 75° (ground) clear 5-12 mph

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/09/00 Site visit no. Week 2 2/3

Site name East Otay Mining

Locality Otay; San Diego County

Total site acres 360 Total acres surveyed 90

Total hours of field survey 6.5 hrs Average acres surveyed per hour 13.8

Time	Sky	Wind	Temperature F
Start 10:30am	Clear Patch Overcast/Cloudy Drizzle Shower (hazy)	<1 (1-3) 4-7 8-12 12-15 >15	76
End	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	73
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Surveyed the northwest corner of the site.

Checked the main hill in the center of the property, especially in the vicinity of the previous quino siting.

Attached
- [x] List of butterflies observed
- [x] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)		
[illegible]angetip (*Anthocharis sara*)	2	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	1	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	40	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
[illegible]oast Lady (*V. annabella*)	2	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)	1 unknown blue	
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
[illegible] Metalmark (*Apodemia mormo virgulti*)	4	
Wright's Metalmark (*Calephelis wrightii*)		
Funereal duskywing	4	

East Otay Mining Site

Sally Tonka
04/09/00
wk 2 2/3

species observed

Brown (CA) towhee
raven
CA vingfet
blue grosbeak
oriole
wht-crowned sparrows
lady 11
loggerhead shrike
Tonereal duskywing 1/1
red-tailed hawk
common wht 1
Sara's orangetip 11
sparrow (?) gray head
blue 1
bumblebee
Cryptantha sp.
western meadowlark
pocket gopher (burrows)
lizard
desert cottontail
roadrunner
Behr's metalmark 1/11
tiny orange butterfly (pygmy-size)
grasshopper sparrow
swallow
mocking bird
* where are the Southern blues?
lots of Lot sco in bloom

survey northwest corner
10:30am / sunny & hazy / 1-3mph / 76

flowering plants

Bras. sp.
Dic cap
Caly mac
Erod. mos
Erod. cic.
vetch
Vig lae
Sys bel
Isomeris arb.
Lot sco
Silene sp.
unknown purple
Oxalis
Viola ped
Allium
photis.
conchalagua.
Solanum sp.
Eri fas.
Plagio
Euphorb
Sidalcea
Mir cal
Thacelia sp
Lathyrus
Cast. aff.
albino Sys bel!

- Skies cleared around 11am
- fields of Bra. on site in NOG
- numerous dirt bikers / ATV's

end: 5pm / clear / 4-7mph / 73°
winds were mild all day, warm & sunny

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trinka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/10/00 Site visit no. Week 2 3/3

Site name East Otay Mining Site

Locality

Total site acres 360 Total acres surveyed 90

Total hours of field survey 7hrs 5min Average acres surveyed per hour 12.8

Time	Sky	Wind	Temperature F
Start 8:30am	Clear Patch Overcast/Cloudy Drizzle Shower (hazy)	(<1) 1-3 4-7 8-12 12-15 >15	61°F
End 3:35pm	(Clear) Patch Overcast/Cloudy Drizzle Shower (sunny)	<1 (1-3) 4-7 8-12 12-15 >15	74° F
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Surveyed south east corner of the site. No ATV / dirt bikers. No blue butterflies were observed for a second day in a row.

Only a moderate number of butterflies were observed despite the great weather conditions.

Attached
- [x] List of butterflies observed
- [x] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	2	
West Tiger Swallowtail (*P. rutulus*)		
S. angetip (*Anthocharis sara*)	1	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	1	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	14	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
Coast Lady (*V. annabella*)		
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)	4	
Grt Purple Hairstreak (*Atlides halesus*)		
Metalmark (*Apodemia mormo virgulti*)	7	
Wright's Metalmark (*Calephelis wrightii*)		
Funereal duskywing	1	

East Otay Mining Site

Sally Trinka
04/10/00
wk 2 3/3

start: 8:30am / hazy / no wind (<1) / 61°F
SOUTHEAST CORNER

species observed

domestic dog
western meadowlark
mockingbird
kingbird (yel belly, thick bill, no wht on tail)
Sphinx moth
Oriole (same sp. as yest.)
red-tailed hawk
SDBTJ
kestrel
raven
desert cottontail
wht crowned sparrow

CA ringlet |||| |||| ||||
CA roadrunner
lady
Sara's orangetip |
perplexing hairstreak |||| (blk wing tips, 2 blk dots on wings)
common wht |
sparrow - gray head, wht gorget, blk dot on chest

Behr's metalmark |||| ||
horned lark
Anise swallowtail ||
swallow
funereal duskywing

flowering plants

Bras. sp.
Dic cap.
Erod. cic.
Lot sco
Caly mac
Mir cal
Eri fas
Sal mel
Cypt. sp.
Vig lac
Esch. cal
Lathy.
pholistoma
oxalis
Viola ped.
Chamys.
Solanum sp.
Conchalagua
Lasthenia sp.
Phacelia sp. (cic?)

note: sunny by 9am but still hazy (smoggy too)
sunny & clear by 12; winds mild 1-5mph

end: 3:35pm / clear & sunny / 1-3mph (occassional gusts to 7mph) / 74°F

Mileage - start 16320
343 x two
23 x 3
46

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/11/00 Site visit no. Week 2 - Finish survey 1/3

Site name Otay Mining

Locality Otay; San Diego County

Total site acres 360 Total acres surveyed Approximately 30

Total hours of field survey 2hrs 15 min. Average acres surveyed per hour 13.3

Time	Sky	Wind	Temperature F
Start 3:30pm	Clear Patch Overcast/Cloudy Drizzle Shower hot & sunny	<1 1-3 4-7 8-12 12-15 >15	89° F
End 5:45pm	Clear Patch Overcast/Cloudy Drizzle Shower hazy but sunny	<1 1-3 4-7 8-12 12-15 >15 max during gusts	76° F
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Returned to the ~~north~~ south west corner to finish surveying this area. Checked the small hill in this corner.

Few butterflies were observed.

Attached
- [x] List of butterflies observed
- [x] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
iger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	7	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vanessa cardui*)		
oast Lady (*V. annabella*)	2	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
urple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	3	
Wright's Metalmark (*Calephelis wrightii*)		
Forever distinguishing	3	

East Clay Mining Site

Sally Trula
4/11/00
Start: 3:30pm
sunny, clear, hot; mild winds gusting to 7mph; 82°F

Species observed

CA ringlet ||||| ||
western meadowlark
sphynx moth
swift
Behr's metalmark |||
red-tailed hawk
sparrow
CA towhee
lizard
funereal duskywing ||| moth
desert cottontail
pocket gopher (burrow)
West coast lady || hilltopping
tarantula! on small hill
SDBTJR
ground squirrel

end: 5:45pm
clear/hazy/sunny
winds to 7mph in gusts
overall very mild & warm
76°F

flowering plants

Bras. sp.
tiny purple flwr
Dic cap
Eri. fas
Vig lac
Lot sco
Caly mac
Min cal
Viola ped.

note: few butterflies observed
still no blues

- 2 ATV's (border patrol) along southern site boundary
- photographed the West coast lady's
- finished the ~~[illegible]~~ southwest corner of the site

Butterflies Observed (larvae or adults)	Number	Comments 04/13/06
Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
We[illegible] Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	✓	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	✓	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	✓	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedonia chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vanessa cardui*)	✓	
W[illegible]ast Lady (*V. annabella*)	✓	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	✓	
Echo Blue (*Celastrina ladon echo*)	✓	
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)	✓	
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)	✓	
Gr[illegible]ole Hairstreak (*Atlides halesus*)		
Be[illegible] Metalmark (*Apodemia mormo virgulti*)	✓	
Wright's Metalmark (*Calephelis wrighti*)		
Funereal duskywing	✓	

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trinka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/14/00 Site visit no. Week 3 1/3

Site name East Otay Mining

Locality Otay; San Diego County

Total site acres 360 Total acres surveyed NA

Total hours of field survey 45 min Average acres surveyed per hour NA

Time	Sky	Wind	Temperature F
Start 9:30am	Clear Patch (Overcast/Cloudy) Drizzle Shower	<1 1-3 4-7 (8-12) to 10mph 12-15 >15	66° F
End 10:15am	Clear Patch (Overcast/Cloudy) Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	63° F
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Surveyed in the north west quadrant.
No butterflies were observed.
Cancelled survey due to poor weather conditions.

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
...iger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
...d Lady (*Vanessa cardui*)		
... Coast Lady (*V. annabella*)		
Virginia Lady (*V. virginiensis*)	1	
Red Admiral (*V. atalanta*)	2	
Buckeye (*Junonia coenia*)	0	
Mourning Cloak (*Nymphalis antiopa*)	2	
California Sister (*Adelpha bredowii californica*)	2	
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
...rple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)		
Wright's Metalmark (*Calephelis wrightii*)		

East Otay Mining Site

04/14/00
Sally Trubee

Dave Goodward w/ Bill Haas

start 9:00am

9:30 am
winds to 10mph
partly cloudy
66°F
no butterflies

10:15 am
partly cloudy
winds 4-7mph
(occassional to 10mph)
63°F

Leave site @ 10:30am
(drizzling on way home)

Species observed:
grasshopper sparrow
western meadowlark
raven
desert cottontail

North west corner

flowering plants
Bras. sp.
Dic cap
Erod. cic.
Lot sco
Eri fas.
Caly nac.
Vig lac
Lup. sp.
Hymenoclea

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/16/00 Site visit no. Week 3 1/3

Site name East Otay Mining Site

Locality Otay; San Diego County

Total site acres 360 Total acres surveyed 90

Total hours of field survey 6 hrs 55 min Average acres surveyed per hour 13.0

Time	Sky	Wind	Temperature F
Start 9:30am	Clear (Patch) Overcast/Cloudy Drizzle Shower scattered clouds / sunny	<1 (1-3) 4-7 8-12 12-15 >15	71° F
End 4:25pm	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 (1-3 4-7 8-12) 12-15 >15	72° F
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
note:	scattered clouds cleared around 12pm.		

Description of areas surveyed/commments

Surveyed the northwest quadrant. Beautiful weather.
Many dirt bikers/ATV riders were present today (~30!)
Lots of ringlets, very few other butterflies were observed.

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	2	
Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	31	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
West Coast Lady (*V. annabella*)	1	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	9	
Wright's Metalmark (*Calephelis wrighti*)		
Funereal duskywing	1	

East Otay Mining Site

4/16/00
Sally Trnka

Northwest corner

Start: 9:30am
sunny, scattered cld
71° F
winds to 3mph
beautiful weather!

species observed

western meadowlark
grasshopper sparrow
red-tailed hawk
CA ringlet
West coast lady
ground squirrel
moth
Behr's metalmark
mourning dove
echo blue
swallow
funereal duskywing
~~perplexing hairstreak~~

pale yellow & black ckkd snake small head

SDBTJ

desert cottontail
sharp-shinned hawk
sparrow red-crown

NNG:
bro hor
bro mad
bro dia
Avena bar

Cabbage white
lizard
ravens
white-crowned sparrow
Anise swallowtail (on top of main hill)

(starting abt. 12:30
winds increased to 7-10 mph
(still died down to 4-7 ~~most~~ of the time)
some)

(clouds cleared around 12)

flowering plants

Brss. sp.
Erod. cic.
Dic cap
Caly mac
Lot sco
Vig lac
Hymenoclea
Sys bel
Ert fas
Oxalis sp.
Sidalcea
Hypoc. gla
Son. ole
Mir. cal

Chary.
Solanum sp.
Lathyrus
Castil. aff
Violapod
Allium sp.

- dirt bikers/ATV riders numerous today, at least 30 on site during course of survey; all come from nearby staging area

end - 4:25
clear & sunny
dirt bikers still on site
winds mild to moderate 2-9 mph
72° F

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/17/00 Site visit no. Week 3 2/3

Site name East Otay Mining

Locality Otay; San Diego County

Total site acres 360 Total acres surveyed ~40 acres

Total hours of field survey 3 hrs Average acres surveyed per hour 13.3

Time	Sky	Wind	Temperature F
Start 10:10 am	Clear Patch Overcast/Cloudy Drizzle Shower (partly cloudy)	<1 1-3 4-7 8-12 12-15 >15	75°F
End 1:10 pm	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	72.5°F
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Surveyed the south east corner of the site.
Conditions became too windy to continue survey - stopped seeing flying butterflies

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
ger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	3	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
P. d Lady (*Vanessa cardui*)		
V. Coast Lady (*V. annabella*)	1	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)	2	
rple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	3	
Wright's Metalmark (*Calephelis wrighti*)		
Funereal duskywing	2	

East Otay Mining Site

04/17/00
Sally Tmka
start: 10:10 am
75°F; 2-7 mph
partly cloudy

Winds from south!
fertilizing/plowing
south of the property
survey south east corner

Species observed

lark sparrow
rufous-crowned sparrow
raven
CA ringlet III
perplexing hairstreak II
funereal duskywing II
lizard
moth
bumblebee
Western meadowlark
Behr's metalmark III
West coast lady I
mourning dove

SDBTJ
desert cottontail
CA towhee
Acmon blue

flowering plants

Erod. cic.
Lot sco
Lathyrus
Crypt. sp
Erod. bot.
Dic cap.
Son ole
Eri. fas
Caly mac
Esch. cal
Min cal
Chamy
Vig lac

Sol. sp.
Phacelia (cic?)
Pholistoma sp.
Hymenoclea
Bras. sp.
Lasthenia

beginning ~12:30
winds increased to
8-12 mph

end: 1:10pm
72.5°F windy >10 mph - 15
overcast/cloudy gusts > 20 mph

QUINO CHECKERSPOT GENERAL FORM

Biologist name Scott Taylor

HELIX permit no. TE778195-5

Subconsultant permit no. _____

Survey date 4/17/00 Site visit no. 3 (part 1 of 3)

Site name E. Otay Mining Site

Locality Western foothills of Otay Mtn.

Total site acres 360 Total acres surveyed 41

Total hours of field survey 3 Average acres surveyed per hour 13.8

Time	Sky	Wind	Temperature F
Start 1010	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	75°
End 1310	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	78°
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments NE corner of site. Survey cancelled due to high winds.

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	1	
Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	1	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	11	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
West Coast Lady (*V. annabella*)	1	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)	1	
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)		
Wright's Metalmark (*Calephelis wrighti*)		
Funereal dusky wing	3	

Otay Mining Site 7/17/00

10.0 75° (Ground) 1210 pt partly cloudy

Rufous-crowned sparrow	Lesser goldfinch
Common raven	House finch
Misc swallowtail	Red-tailed hawk
West coast lady	Botta's pocket gopher
Unif. ground squirrel	Calif. ringlet
CD Black-tailed jack	Desert cottontail
Western meadowlark	Lark sparrow
Coyote (scat)	Calif towhee
Marine blue	Rock wren
White-crowned sparrow	Costa's h-bird
Anna's h-bird	Forever dusky-wing
Coastal whiptail	Western fence lizard
Sara Orange-tip	Turkey vulture

Wind started really blowing at around 1310, and sky became completely overcast, so we decided to stop surveying the site and come back

1310 12-25 mph 78° (Ground) overcast

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/18/00 Site visit no. Week 3 2/3 (continued)

Site name East Otay Mining Site

Locality Otay; South San Diego County

Total site acres 360 Total acres surveyed ~35

Total hours of field survey 2.5 Average acres surveyed per hour 14.0

Time	Sky	Wind	Temperature F
Start 2:00pm	Clear Patch (Overcast/Cloudy) Drizzle Shower	<1 (1-3) 4-7 8-12 12-15 >15	71
End 4:30pm	Clear Patch (Overcast/Cloudy) Drizzle Shower	<1 1-3 4-7 8-12 12-15 (>15)	67
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	temp/wind taken @ 4:55pm after end of survey
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Continue to survey south east corner of the site. Although rain was present in other parts of the County this morning, the soils at the site were dry when we arrived. It appeared to have rained on site earlier & dried out.

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
V ger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	2	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
P d Lady (*Vannessa cardui*)	4	
W Coast Lady (*V. annabella*)	2	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)	1	
rple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)		
Wright's Metalmark (*Calephelis wrighti*)		

East Otay Mining Site

4/18/00
Sally Trnka

start: 2:00pm; 71°F
partly cloudy; 3-5mg
survey south east corner
(cont. from 4/17)
rained earlier in day throughout SD, but on site veg & ground are dry — ponded water in road pools around perimeter of site (not present yesterday) show that it did rain on site

species observed

CA ringlet II SDBTJ
raven
CA towhee
bumblebee
moth
perplexing hairstreak I
West coast lady IIIB
(hilltopping on main hill - 2)
lizard
Western meadowlark
mouse
kestrel
pocket gopher
kingbird
Painted lady IIII

flowering plants

Lot sco
Min cal
Caly mac
Dic cap
Solan. sp.
Crypt. sp.
Lathyrus sp.
Chamy. sp.
Eri fas
Lasthenia
phacelia
Esch. cal

- west facing slope windy 8-12 mph, gusting to 15mph
- east facing slope calm 1-5mph

end: 4:30pm; cloudy → 67°F; 5-20 from southwest varied by slope aspect
conditions worsened, ended sooner

(temp. taken at 4:55pm)

QUINO CHECKERSPOT GENERAL FORM

Biologist name Scott Taylor

HELIX permit no. TE778195-5

Subconsultant permit no. _____

Survey date 4/18/00 Site visit no. 3 (part 2 of 3)

Site name E. Otay Mining Site

Locality Western Foothills of Otay Mtn.

Total site acres 360 Total acres surveyed 228

Total hours of field survey 2.5 Average acres surveyed per hour 13.8

Time	Sky	Wind	Temperature F
Start 1400	Clear Patch Overcast (Cloudy) Drizzle Shower	<1 (1-3) 4-7 8-12 12-15 >15	71°
End 1630	Clear Patch Overcast (Cloudy) Drizzle Shower	<1 1-3 4-7 8-12 (12-15 >15)	67°
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

NE corner of site. Only 2 of the 2.5 hrs surveyed count. High winds and low temps caused us to cancel survey.

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	8	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	3	
West Coast Lady (*V. annabella*)	5	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	1	
Wright's Metalmark (*Calephelis wrighti*)		
Funereal dusky wing	1	

Otay Mining Site 4/18/00

1400 3-5 mph 71° (ground) partly cloudy

Greater roadrunner
Funereal dusky-wing
Wrentit
Desert cottontail
SD. Blacktailed jack
Western meadowlark

New Flowering plants
Eschscholzia
Prisophyllum

West coast lady
Painted lady

Calif. towhee
Rufous-crowned sparrow
Coyote (scat)
Common raven
Red-tailed hawk
White-crowned sparrow
Botta's pocket gopher
Loggerhead shrike
Calif. ringlet
Behr's metalmark
Calif. ground squirrel
Calif. quail
American kestrel

Weather conditions turned bad, high winds starting and temperature getting lower. Quit surveys at approx. 1610, with ground temp approx. 70° still; by time back to car we took the following and temp, wind, etc.

1630 5-20 mph 67° (ground) partly cloudy

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trinka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/19/00 Site visit no. Week 3 finish survey 2/3 do survey 3/3

Site name East Otay Mining Site

Locality Otay; San Diego County

Total site acres 360 Total acres surveyed ~15 in the south east corner 90 in the south west corner ~15 in south east corner 13.8 in south west corner

Total hours of field survey 7hrs 30min Average acres surveyed per hour

Time	Sky	Wind	Temperature F
Start 9:15am	(Clear) Patch Overcast/Cloudy Drizzle Shower sunny	<1 1-3 (4-7) 8-12 12-15 >15	61
End 1:50pm (35 min)	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7 8-12) 12-15 >15	— not taken
Start 2:20pm	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7 8-12) 12-15 >15	— not taken
End 5:15pm (2hrs 55 min)	(Clear) Patch Overcast/Cloudy Drizzle Shower Sunny	<1 1-3 (4-7 8-12) 12-15 >15	72

Description of areas surveyed/commments

Finish surveying the south east corner of the site

Survey the south west corner of the site

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	1	
W ger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	1	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	26	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	1	
oast Lady (*V. annabella*)	9	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	2 unknown blues	
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)	1	
rple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	28	
Wright's Metalmark (*Calephelis wrightii*)		
Funereal duskywing	2	

East Otay Mining Site

4/19/00
Sally Trnka

finish south east corner / survey southwest corner

start: 9:15am / clear & sunny / cool, 61°F / 4-7mph

- a few dirt bikers on site

- around 11:45 winds increased 4-12mph; still seeing butterflies

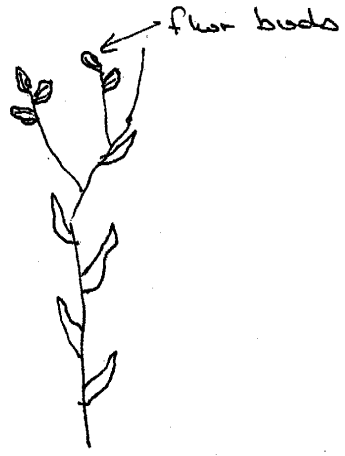
* off-site 1:50 → (lunch) 2:20

species observed

Western meadowlark
CA ringlet |||| |||| |||| |||| |
swallows
ground squirrel
SDBTJ
West coast lady |||| ||||
moth
EA towhee
oriole - Bullock's
Behr's metalmark |||| |||| |||| ||||
blue 1 (big)
Anna's
~~Cabbage~~ wht 1
Common
mockingbird
wht-crowned sparrow
painted lady 1
Anise swallowtail 1
mouse
horned lark family
desert cottontail
funereal duskywing ||
blue (small) 1
kestrel
raven
lizard
kingbird
ruffous-crowned sparrow
grasshopper sparrow
Perplexing hairstreak 1
CA towhee
red-tailed hawk

flowering plants

Bras. sp.
Dic cap.
Caly mac
Eri fas.
Vig lac
Erod cic
Lot sco
Chamy. sp.
Min cal
Lathyrus sp.
Calch. sp.
Lastheria
Siddcea
Bloomeria cro
Dudleya var. (? chk Jep.) yes!
Son deg
Sys bal
hordeum (NNG)
Viola ped
Oxalis
Vetch
Iso mer



end: 5:15pm / clear & sunny / 72°F
winds 4-9 mph (were at this level from around 3pm on)

approximately 1 hr spent finishing southeast corner of survey area

QUINO CHECKERSPOT GENERAL FORM

Biologist name Scott Taylor

HELIX permit no. TE778195-5

Subconsultant permit no. _____

Survey date 4/20/00 Site visit no. 3 (part 3 of 3)

Site name E. Otay Mining Site

Locality Western foothills of Otay Mtn.

Total site acres 360 Total acres surveyed 21

Total hours of field survey 1.5 Average acres surveyed per hour 13.8

Time	Sky	Wind	Temperature F
Start 1420	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	86°
End 1550	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	86°
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments NE corner of site. ORV traffic a problem (see notes)

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	1	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	3	
Coast Lady (*V. annabella*)	6	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)		
Wright's Metalmark (*Calephelis wrightii*)		

Otay Mining Site 4/20/00

1420 clear 4-10 mph 86° (ground)

Western meadowlark	Botta's pocket gopher
House finch	Desert cottontail
Westcoast lady ✱	Western fence lizard
Painted lady ✱	Calif. ringlet \
Rufous-crowned sparrow	Anna's h-bird
Calif. towhee	Calif. ground squirrel
Red-tailed hawk	Coyote (scat)
S.D. Black-tailed jack	Lark sparrow
Common raven	Turkey vulture

ORV's present on site today in small but annoying numbers. 3 bikers were doing laps to top of hill, then around the west side, to the east side, then over the top again. I think these guys are seriously hampering the butterflies; disrupting them constantly

1550 clear 4-7 mph 86° (ground)

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	✓	
Wes[illegible]r Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	✓	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	✓	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vanessa cardui*)	✓	
W[illegible]st Lady (*V. annabella*)	✓	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)	✓	(unknown blue)
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)	✓	
G[illegible]ole Hairstreak (*Atlides halesus*)		
B[illegible]s Metalmark (*Apodemia mormo virgulti*)	✓	
Wright's Metalmark (*Calephelis wrighti*)		
Funereal duskywing	✓	

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trenka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/21/00 Site visit no. Week 4 1/3

Site name East Otay Mining

Locality Otay; San Diego County

Total site acres 360 Total acres surveyed ~45

Total hours of field survey 3hrs. 20min. Average acres surveyed per hour 13.5

Time	Sky	Wind	Temperature F
Start 12:20pm	Clear Patch (Overcast/Cloudy) Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	72
End 3:40pm	Clear Patch (Overcast/Cloudy) Drizzle Shower	<1 1-3 4-7 (8-12) 12-15 >15	72
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Surveyed the northwest corner of the site.
Temperatures dropped quickly after 3:40 as cloud cover increased.
California ringlets were observed but few other butterflies were seen flying.

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
W[illegible]iger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	22	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
[illegible]oast Lady (*V. annabella*)	2	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Evores amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
[illegible]urple Hairstreak (*Atlides halesus*)		
[illegible]s Metalmark (*Apodemia mormo virgulti*)	2	
Wright's Metalmark (*Calephelis wrighti*)		

East Otay Mining Site

Survey north west corner

Sally Tmka
04/21/00

start: 12:20pm
cloudy, occassional sun
72°F; winds 4-9 mph

2:10pm; cloudy; 71° w
winds 7-12mph

3:40; cloudy; 72°F
winds 7-12mph
but cold

4pm; overcast & cloud
4-10mph; 63°F
cold
stopped surveying

note: disking of NW6/
Brassica fields to west
of site

species observed

raven
Western meadowlark
CA ringlet
mourning dove
CA towhee
lizard
ground squirrel
West coast lady
moth
mockingbird
Behris metalmark
gopher snake (photo)
sparrow
bumblebee
desert cottontail
wht-crowned sparrow
lesser goldfinch

flowering plants

Bras. sp.
Erod cic
Dic cap.
Sys. bel
Cely mac
Mim cal
Ent fas
vetch
Hymenoclea
stachys
Lot sco
Sidalcea
Cal spl
Lupinus sp.
plantago erecta
oxalis alb

David
858-780-8748 (h)
573-1286 (w)

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/23/00 Site visit no. Week 4 1/3 (continued)

Site name East Otay Mining

Locality Otay; San Diego County

Total site acres 360 Total acres surveyed 90

Total hours of field survey 6 hrs 35 min Average acres surveyed per hour 13.7

Time	Sky	Wind	Temperature F
Start 10:40 am	Clear Patch (Overcast/Cloudy) Drizzle Shower	(<1) (1-3) 4-7 8-12 12-15 >15	72
End 5:15pm	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Finish surveying the north west corner. Redict earlier survey because of the poor weather conditions (within protocol but few butterflies were flying).

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
Wes Tiger Swallowtail (*P. rutulus*)		
S angetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	24	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	1	
V ast Lady (*V. annabella*)	2	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)	1 unknown blue	
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)	3	
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Gri Purple Hairstreak (*Atlides halesus*)		
B Metalmark (*Apodemia mormo virgulti*)	23	
Wright's Metalmark (*Calephelis wrightii*)		

East Otay Mining Site

04/23/00
Sally Tinka

start: 10:40am
partly cloudy / 0-3mph / 72
(but sunny)
finish the northwest corner

around 1:30pm winds increased 4-9 mph

end: 5:15pm
clear & sunny; 70° F
1-3mph
(died back down around 4:30pm)
only a few fluffy wht clouds

Species observed

CA ringlet 𝍸 𝍸 𝍸 𝍸 𝍸 ||| ||
Western meadowlark
Swallow
moth
lizard
CA towhee
desert cottontail
ground squirrel
raven
painted lady |
gray hairstreak |||
orange dot on back of HW
mockingbird
lesser goldfinch
rufous-crowned sparrow
wht-crowned sparrow
quail
Bewis mockingbird 𝍸 𝍸 𝍸 𝍸 |||
honeybee
yellow-rumped warbler
kingbird
red-tailed hawk
Spanow. yellow around face
SDŞTJ
west coast lady ||
CA rattlesnake
blue
horned lizard (dead in dirt road)

Flowering species

Bras. sp.
Erod cic
Hyrenoclea
Caly mac
Eri fas
Lot sco
Vig lac
Cal spl
Hyp gla
Mir cal
Dic cap
Solanum parishii
Silene gallica
Oxalis albicans ssp. californica
fragrant shrub Ericon
Sidalcea
Sys. bal
Cast. affin.
Lathy.
Mim. aur. (red)
Blo. cro.
Phacelia cic
Dud var* – in clear rocky patches surrounded by grasses
Viola ped
Esch. cal.
spiny treel/shrub
yarrow

QUINO CHECKERSPOT GENERAL FORM

Biologist name: Sally Trnka

HELIX permit no.: TE778195-5

Subconsultant permit no.: —

Survey date: 04/24/00 Site visit no.: Week 4 1/3 (continued)

Site name: East Otay Mining Site

Locality: Otay; San Diego County

Total site acres: 360 Total acres surveyed: 90

Total hours of field survey: 6hrs 45min Average acres surveyed per hour: 13.3

Time	Sky	Wind	Temperature F
Start 10:20 am	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	70
End 5:05pm	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	74
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Surveyed the south east corner of the site.
Most of the survey period was sheltered from the wind (which was from the west.) Winds increased to 10mph mid-day, then died back down.
Overall, beautiful weather but very few butterflies. Lots of lizards.

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	1	
Western Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	13	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	4	
West Coast Lady (*V. annabella*)	3	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowli californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)	2	
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)	2	
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Gri Purple Hairstreak (*Atlides halesus*)		
Northern Metalmark (*Apodemia mormo virgulti*)	8	
Wright's Metalmark (*Calephelis wrightii*)		
Funereal duskywing	2	

East Okay Mining Site

4/24/00
Sally Trnka

Start: 10:20am
wind 4-7mph
70° clear
from west
most of day was sheltered from winds by main hill

species observed

funereal dusky wing ||
road runner
swallow
lizard
Western meadowlark
moth
honeybee
raven
CA towhee
gray hairstreak ||
CA ringlet ||||
~~grasshopper sparrow~~
SDBTJ
Costa's hum.
desert cottontail
marine blue ||
kingbird
ground squirrel
red-tailed hawk
mockingbird
ground squirrel
Behr's metalmark |||| ||
Anise swallowtail |
Bullock's oriole
gopher snake
CA rattlesnake
horned lizard * (near top of main hill)
rufous-crowned sparrow
Bewick's wren - like faintly striped back & tail, long bill, brow stripe (light
Painted lady ||||
West coast lady |||| starting 2pm winds increased to 8-10mph
So. alligator lizard (gray, black red & wht chkrd bk)
side-blotched lizard ~~robust no tadpoles on hilltop~~ main (2:30pm) ↓ present in afternoon - not late morning
lark sparrow
sparrow - grayhead

flowering plants

Lot sco
Sil gal
Ero cic
Hyp gla
Mir cal
Cal spl
Cry sp.
Eri fas
Phac cic
Eri con
Dic cap
Caly mac
Sol par
Vic lac
Lathyrus sp.
Oxalis alb cal
Chamy.
Sidalcea sp.
Cast aff
Esch. cal.
Lasthenia
Lamarkia

Beautiful weather - very few butterflies, lots of lizards

end: 5:05pm
74°F, clear, 4-7mph

QUINO CHECKERSPOT GENERAL FORM

Biologist name Scott Taylor

HELIX permit no. TE778195-5

Subconsultant permit no. _____

Survey date 4/24/00 Site visit no. 4

Site name E. Otay Mining Site

Locality Western foothills of Otay Mtn

Total site acres 360 Total acres surveyed 90

Total hours of field survey 6.75 Average acres surveyed per hour 13.3

Time	Sky	Wind	Temperature F
Start 1020	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	70°
End 1705	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	74°
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments NE corner of site

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	2	
West Tiger Swallowtail (*P. rutulus*)		
Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	1	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	10	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
Coast Lady (*V. annabella*)	2	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)	1	
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
's Metalmark (*Apodemia mormo virgulti*)	2	
Wright's Metalmark (*Calephelis wrighti*)		
Funereal dusky wing	2	

Otay Mining Site 4/24/00

1020 4-7 mph clear 70° (ground)

Calif. ringlet ~~x x x~~ Botta's pocket gopher
Desert cottontail Western meadowlark
Common raven Greater roadrunner
Lesser goldfinch Anise swallowtail X
Red-tailed hawk
Plowing plants Common white
Collinsia heter. Anna's h-bird
Clarkia Western fence lizard
Eriodictyon Cliff swallow
Goldenrod cistis Marine blue
Muilla Lark sparrow
Zauschneria Rufous-crowned sparrow
Siddcea West coast lady X
Funereal dusky wing X
SD Black-tailed jack Calif. towhee (2 nests 3 eggs ACAL 4 eggs RCRO)
Behr's metalmark X Calif. quail
White-crowned sparrow. Loggerhead shrike
No. mockingbird Western kingbird
Calif. thrasher Costa's h-bird
Coyote (scat) Mourning dove
Calif. ground squirrel Side-blotched lizard
Rubber plants

Clear 1705 4-7 mph 74° (ground)

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/25/00 Site visit no. Week 4 3/3

Site name East Otay Mining

Locality Otay; San Diego County

Total site acres 360 Total acres surveyed 90

Total hours of field survey 6 hrs 30 min Average acres surveyed per hour 13.8

Time	Sky	Wind	Temperature F
Start 10:30am	(Clear) Patch Overcast/Cloudy Drizzle Shower hazy	<1 1-3 (4-7) 8-12 12-15 >15	73
End 5:00pm	(Clear) Patch Overcast/Cloudy Drizzle Shower hazy	<1 1-3 (4-7) (8-12) 12-15 >15	75
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Survey the south west corner.
No dirt bikers or ATV's today.

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Butterflies Observed (LARVAE OR ADULT)	Number	Comments
Pale Swallowtail (*Papilio eurymedon*)	1	
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)		
S[illegible]angetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	32	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	1 unknown lady	
[illegible]oast Lady (*V. annabella*)	1	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)	1 unknown blue	
Marine Blue (*Leptotes marina*)	4	
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)	1	
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
[illegible] Metalmark (*Apodemia mormo virgulti*)	10	
Wright's Metalmark (*Calephelis wrighti*)		

East Otay Mining Site

4/25/00
Sally Trnka
start: 10:30am
hazy & clear / 73°F /
winds 4-7mph (west)
Surveying ~~south~~ west corner
no dirt bikes / ATV's!

sparrow, yellow around face
long tail
West coast lady!

species observed

lizard
CA ringlet
western meadowlark
grasshopper sparrow
mockingbird
marine blue
blue 1
moth
sparrow - striped face in NWG
loggerhead shrike (pr)
red-tailed hawk
raven
[redacted]
morning dove
desert cottontail
all brown butterfly (not elfin)
blue grosbeak
kingbird
Pygmy blue
ground squirrel
CA towhee
lark sparrow
pale swallowtail
Bullock's oriole
wht-crowned sparrow
[redacted]
Behr's metalmark
& lady 1
sphinx moth

flowering plants

Bras sp.
Hymen.
Erod. ac.
Lot sco
Dic cap
Caly mac
Vig lac
Cal spl
Sys bel
Vetch
Eri fas
Sidal sp.
Sil gal
Lath
Sol par
Mim cal
Chamy
collinsia
Cast aff
Oxalis alb cal
Phacic
Eri con
Viola ped

end: 5:00pm / hazy & clear /
4-9mph (west/northwest) / 75°

Pale Swallowtail (*Papilio eurymedon*)	✓	
Anise Swallowtail (*P. zelicaon*)	✓	
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	✓	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	✓	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vanessa cardui*)	✓	
West Coast Lady (*V. annabella*)	✓	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)	✓	
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)	✓	
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Gri Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	✓	
Wright's Metalmark (*Calephelis wrightii*)		
Funereal duskywing	✓	

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Tunka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 04/29/00 Site visit no. Week 5 1/3

Site name East Otay Mining Site

Locality Otay; San Diego County

Total site acres 360 Total acres surveyed 90

Total hours of field survey 6 hrs Average acres surveyed per hour 15

Time	Sky	Wind	Temperature F
Start 9:30am	(Clear) Patch Overcast/Cloudy Drizzle Shower sunny	<1 1-3 (4-7) 8-12 12-15 >15	64
End 4:30pm	(Clear) Patch Overcast/Cloudy Drizzle Shower sunny	<1 1-3 (4-7) 8-12 12-15 >15	72
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Survey northwest corner of the site.

Attached
- [X] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [X] Copy of original field notes
- [ ] Photographs
- [ ] Other

Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)		
S angetip (*Anthocharis sara*)	4	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	2	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	26	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	Unknown lady 2	
oast Lady (*V. annabella*)	5	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)	2	
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)	1	
Sonoran Blue (*Philotes sonorensis*)	Unknown blue 2	
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)	1	
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
Metalmark (*Apodemia mormo virgulti*)	5	
Wright's Metalmark (*Calephelis wrightii*)		
Comstock fritellary	5	

East Otay Mining Site

4/29/00
Sally Tmka

Start: 9:30am
64 / 4-8mph / clear & sunny

Starting ~11am
winds 8-12mph f-/ NW

Buddy Black - tilling west of site adjacent property - went on site briefly - showed him prop. boundaries

~~Western fence liz.~~

species observed

CA ringlet ||||, ||||, ||||
raven
horned lark
swallow
grasshopper sparrow
moth
western meadowlark
yellow jacket
lizard
~~cabbage white~~
Sara's orangetip ||||
Comstock hillstreak ||||
gray hairstreak
Bullock's oriole
ground squirrel
mockingbird
bumblebee
Behr's metalmark |||
CA towhee
common wht ||
red-tailed hawk
red-winged blackbird
Echo blue |
blue ||
western tailed ||
lady ||
West coast lady ||||

flowering plants

Bras sp.
Erod. cic.
Hymen. sp.
Caly mac
Vlg lac
Son ole
Lot sco
Dic cap
Cal spl
Hyp gla
Sidal.
Chamy
Mir cal
Sisy bel
Crys. cor
vetch
Heliam sco
Plagio sp
Lathy
Sil gal
Cast aff
Solan. & parishii
collinsia sp.
Phac. cic.
Solanum wht.
Phlistoma
Viola ped.
oxalis alb.

end: 4:30pm
clear / sunny / 4-7mph
72°F

few dirt bikers in survey area today

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 05/01/00 Site visit no. Week 5 2/3

Site name East Otay Mining

Locality Otay; San Diego County

Total site acres 360 Total acres surveyed 70

Total hours of field survey 5 hrs Average acres surveyed per hour 14

Time	Sky	Wind	Temperature F
Start 11:00 am	(Clear) Patch Overcast/Cloudy Drizzle Shower Sunny & hot	<1 (1-3) (4-7) 8-12 12-15 >15	88
End 4:00pm	(Clear) Patch Overcast/Cloudy Drizzle Shower Sunny	<1 1-3 (4-7) 8-12 12-15 >15 to 9mph	89
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Surveyed the south east corner of the site.

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)		
S angetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	1	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	2	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
Y oast Lady (*V. annabella*)	1 unknown lady	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)	1 unknown blue	
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)	1	
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
Metalmark (*Apodemia mormo virgulti*)	15	
Wright's Metalmark (*Calephelis wrightii*)		
Common Checkered Skipper	2	

East Otay Mining Site

5/1/00
Sally Trnka
start: 11am
clear/sunny / 88°F
3-6° F
sampling southeast corner

species observed

western meadowlark
desert cottontail
ground squirrel
CA ringlet ||
CA towhee
lady 1
honeybee
raven
Acmon blue 1
Behr's metalmark ~~|||| ||| |||| Loss. fil~~
oth

common wht 1
mockingbird
blue 1
SOBTJ
mourning dove
swallow
sparrow
comstock fritillary ||
~~Bras sp.~~
woodrat (nest)

* one row of tilled soil in NW6 at south end of survey area (adjacent property - to south is tilled)

flowering plants

Lot sco
Caly mac
Cal sp1
Dic cap
Vig lac
Eri fas
Sol parv.
Chamy
Mal fas
The cic
Lathy

Eri fas
Erod cic
~~Behr's metalmark~~
Sidalcea
Cast aff
Crypt. sp.
Lasthenia
Uropap.
Esch. cal
Cast pur (1 plant)
Collinsia

Mir cal
oxalis
Bras sp.
Loss. fil.

* warm weather - very few butterflies or wildlife

end: 4pm / sunny, clear / 89° F / ~~bb~~ 8-9 mph

QUINO CHECKERSPOT GENERAL FORM

Biologist name Scott Taylor

HELIX permit no. TE778195-5

Subconsultant permit no. N/A

Survey date 5/1/00 Site visit no. 5 part 1 of 2

Site name E. Otay Mining Site

Locality Western Foothills of Otay Mtn

Total site acres 360 Total acres surveyed 70

Total hours of field survey 5 Average acres surveyed per hour 14

Time	Sky	Wind	Temperature F
Start 1100	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	88°
End 1600	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) (8-12) 12-15 >15	89°
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

NE corner of site

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other

Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	1	
West Tiger Swallowtail (*P. rutulus*)		
(angetip (*Anthocharis sara*)	2	
Felder's Orangetip (*A. celhura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	1	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	15	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vanessa cardui*)		
W Coast Lady (*V. annabella*)		
ia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)	1	
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
's Metalmark (*Apodemia mormo virgulti*)	7	
Wright's Metalmark (*Calephelis wrighti*)		
Comstock's Fritillary	11	
Funereal Dusky wing	1	
Bernardino Blue	1	

E. Otay Mining Site 5/1/00

NE corner

1100 3-6 mph clear 88° (ground)

Comstock's Fritillary	No. mockingbird
Costa's h-bird	Sage sparrow
Botta's pocket gopher	Horned lark
Western meadowlark	Calif. ringlet
Marine blue	Behr's metalmark
Western fence lizard	Common raven
Red-tailed hawk	SD Black-tailed jack.
Anise swallowtail	Sara orangetip
Desert cottontail	Coyote (Scat)
Bushtit	Robber fly
Red-winged blackbird	Tarantula hawk
Rufous-crowned sparrow	Calif. towhee
Funereal dusky wing	Calif. quail
Anna's h-bird	White-throated swift
Bernardino (square-dotted) blue	Granite spiny-lizard
Common white	

Very hot day - not much animal activity.
Wind hot as well.

89% (ground) 9-10 mph clear 1600

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trinka

HELIX permit no. TE778195-5

Subconsultant permit no. —

Survey date 05/02/00 Site visit no. Week 5 do 3/3

Site name East Otay Mining

Locality Otay; San Diego County

Total site acres 360 Total acres surveyed 70

Total hours of field survey 5 hrs 15 min Average acres surveyed per hour 13.3

Time	Sky	Wind	Temperature F
Start 10:30am	(Clear) Patch Overcast/Cloudy Drizzle Shower Sunny	<1 (1-3) 4-7 8-12 12-15 >15	86
End 3:45pm	(Clear) Patch Overcast/Cloudy Drizzle Shower Sunny	<1 1-3 (4-7) 8-12 12-15 >15	89
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments Finished surveying southeast corner, Surveyed the south west corner of the site.

Attached
- [X] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [X] Copy of original field notes
- [ ] Photographs
- [ ] Other

Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	2	
West Tiger Swallowtail (*P. rutulus*)		
S angetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	6	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
V oast Lady (*V. annabella*)	1 unknown lady	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*) Bernadino blue	10	
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
Metalmark (*Apodemia mormo virguli*)	29	
Wright's Metalmark (*Calephelis wrightii*)		
Comstock hitellary	6	
Funereal duskywing	1	

East Otay Mining Site

5/2/00
Sally Tuska

start: 10:30am
86°F / clear & sunny / 0-3mph

species observed

coastal whiptail
swallow
Behr's metalmark ||||
moth
CA ringlet ||||
raven
rufous-crowned sparrow
funereal duskywing |
mockingbird
CA towhee
comstock hittelary ||||
Anise swallowtail ||
lady |
San Ber blue ||||
desert cottontail
western meadowlark
red-tailed hawk
mourning dove
grasshopper sparrow
lesser goldfinch
honeybee
SDBTJ

* Sage is Munz's not nellif.

flowering plants

Eri fas
Caly mac
Hymen. cret.
Lot sco
Dic cap
Vig lac
Salv munz
Helian. sco
Esc. cal
Cal spl
Lathyrus
Bras sp
Osmad. berella
Cast. aff
oxalis
Muilla cle
Sil gal
Min cal

no dirt bikers on site

end: 3:45pm / clear / sunny
5-9mph / 89° F

Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	✓	
West Tiger Swallowtail (*P. rutulus*)		
Sar[illegible]eip (*Anthocharis sara*)	✓	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	✓	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	✓	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vanessa cardui*)		
Wes[illegible]ast Lady (*V. annabella*)	✓	
Vir[illegible]Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)	✓	
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)	✓	
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)	✓	
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Gri Purple Hairstreak (*Atlides halesus*)		
B[illegible]letalmark (*Apodemia mormo virgulti*)	✓	
Wright's Metalmark (*Calephelis wrighti*)		
Funereal duskywing	✓	
Comstock Ringlet	✓	
Bernardino blue	✓	

QUINO CHECKERSPOT GENERAL FORM

Biologist name Scott Taylor

HELIX permit no. TE778195-5

Subconsultant permit no. N/A

Survey date 5/2/00 Site visit no. 5 part 2 of 2

Site name E. Otay Mining Site

Locality Western foothills of Otay Mtn

Total site acres 360 Total acres surveyed 70

Total hours of field survey 5 hrs 15 min Average acres surveyed per hour 13

Time	Sky	Wind	Temperature F
Start 1030	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 (1-3) 4-7 8-12 12-15 >15	86°
End 1545	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) (8-12) 12-15 >15	89°
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments NE corner + SW corner

Attached
- ☒ List of butterflies observed
- ☐ List of larval host plants, nectar plants, and plant communities observed on the site
- ☐ Field maps
- ☒ Copy of original field notes
- ☐ Photographs
- ☐ Other

Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	5	
West Tiger Swallowtail (*P. rutulus*)		
S angetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	3	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	3	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vanessa cardui*)		
Coast Lady (*V. annabella*)		
Virginia Lady (*V. viginiensis*)	1	
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)	2	
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
's Metalmark (*Apodemia mormo virgulti*)	15	
Wright's Metalmark (*Calephelis wrighti*)		
Bernardino blue	9	
Comstock's fritillary	9	

E. Otay Mining Site 5/2/00

NE corner / SW corner

1030 0-3 mph clear 86° (Ground)

Western meadowlark
Calif. towhee
Behr's metalmark
Walking stick
Red-tailed hawk
Horned lark
SD Black-tailed jackrabbit
Anise swallowtail
Tarantula hawk
Cassin's kingbird
Common white
Western fence lizard
Calif. ringlet
Grasshopper sparrow
Mourning dove
Desert cottontail
Robber fly
Bottal's pocket gopher
Common raven
Bernardino blue
SD horned lizard
Virginia lady
Comstock's fritillary
No mockingbird
Bell's sage sparrow
Marine blue
Rufous-crowned sparrow
Coyote (scat)

A good butterfly day. The summer butterflies are really coming on

1545 5-9 mph clear 89° (ground)

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Appendix B-2

2001 QUINO CHECKERSPOT BUTTERFLY SURVEY REPORT

APPENDIX B-2

2001 QUINO CHECKERSPOT BUTTERFLY SURVEY REPORT

2001
Quino Checkerspot Butterfly
(*Euphydryas editha quino*)
Survey Report for
The East Otay Project Potential Mitigation Site

Prepared for:

U.S. Fish and Wildlife Service

Prepared by:

HELIX Environmental Planning, Inc.
8100 La Mesa Blvd., Suite 150
La Mesa, California 91941-6476
(Threatened/Endangered Species Permit: TE778195-5)

May 31, 2001

Surveys performed by:

Sally Trnka

Ted Grantham

Amy Bridgeman

Derek Langsford, Ph.D.

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Figure 1	Quino Location Map	2

INTRODUCTION

This report documents the results of quino checkerspot butterfly (QCB; Euphydryas editha quino) surveys conducted by HELIX Environmental Planning, Inc. (HELIX) biologists within six potential mitigation parcels located in Otay Mesa in southern San Diego County (Figure 1). The surveys were conducted under HELIX's U.S. Fish and Wildlife Service (USFWS) threatened/endangered species permit (TE778195-5). The focus of the surveys was to determine presence of the QCB within proposed mitigation areas. These surveys do not prove absence of the QCB in areas where it was not observed.

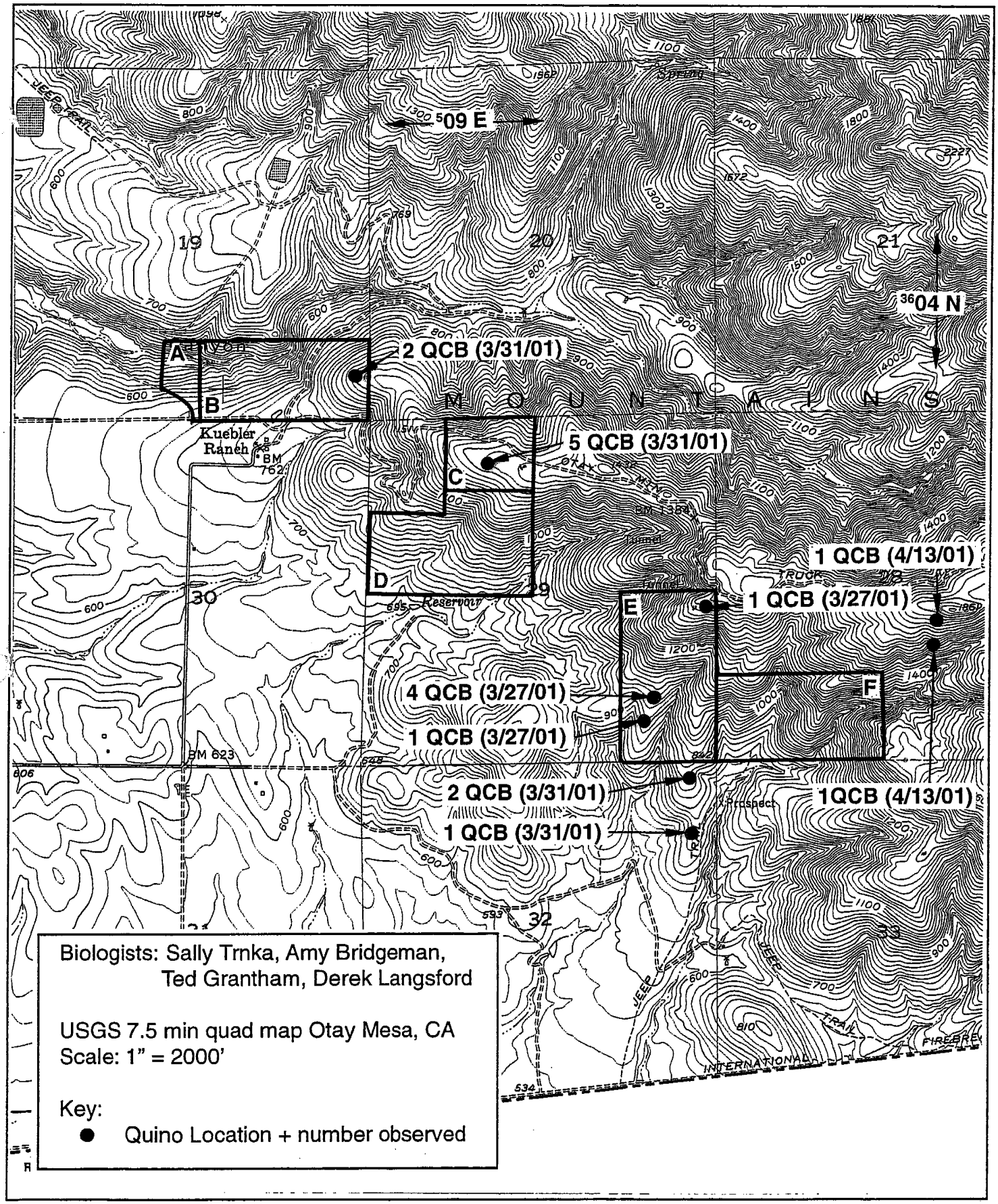
METHODS

The methods employed during the site assessment and during the presence surveys for the QCB recognized the guidelines in the USFWS Year 2000 Survey Protocol for the QCB (USFWS 2000). The mitigation area was divided into six parcels: Parcels A through F (Figure 1). During the site assessment Parcel A was excluded from surveys due to a lack of high quality QCB habitat. Parcels B and C were surveyed three times, Parcels E and F were surveyed two times and Parcel D was surveyed once. The frequency of the surveys was based on the quality of potential habitat and site accessibility. Every effort was made to do the presence surveys during the most favorable weather conditions (Table 1). See Appendix A for photographs of QCB observed. Copies of original field notes are provided in Appendix B.

Table 1
SURVEY INFORMATION

Survey Date	Personnel*	Location	Start/Stop Time	General Weather Conditions	QCB Observations
March 2, 2001	ST, DL	Habitat Assessment All Parcels	N/A	cloudy; under 60º F	None
March 15, 2001	ST, TG	Parcel B, C and D	B = 10:45 am/12:20 pm C = 12:35 pm/2:05 pm D = 2:50 pm/3:35 pm	partly cloudy to overcast wind 2-7 mph; mid 60's º F	None
March 27, 2001	ST, TG, AB	Parcels B, C and E	B = 3:00 pm/4:10 pm (TG) E = 11:30 am/4:20 pm (ST, AB) C = 4:25 pm/5:00 pm (ST, AB)	clear and sunny wind 0-5 mph; mid 70's º F	Yes (Parcel E)
March 31, 2001	ST, TG, AB	Parcels B, C, E and F	B = 10:30 am/12:10 pm (AB) C = 12:30 pm/1:40 pm (AB) E = 11:15 am/not noted (TG, ST) F = 1:45/not noted (TG, ST)	clear and sunny wind 2-10 mph; low 70's º F	Yes (Parcels B and C; south of Parcel E)
April 13, 2001	ST, TG, AB	Parcel F	2:00 pm/4:30 pm	clear and sunny wind 0-7 mph; low 70's º F	Yes (Northeast of Parcel F)

Sally Trnka = ST; Ted Grantham = TG; Amy Bridgeman = AB; DL=Derek Langsford



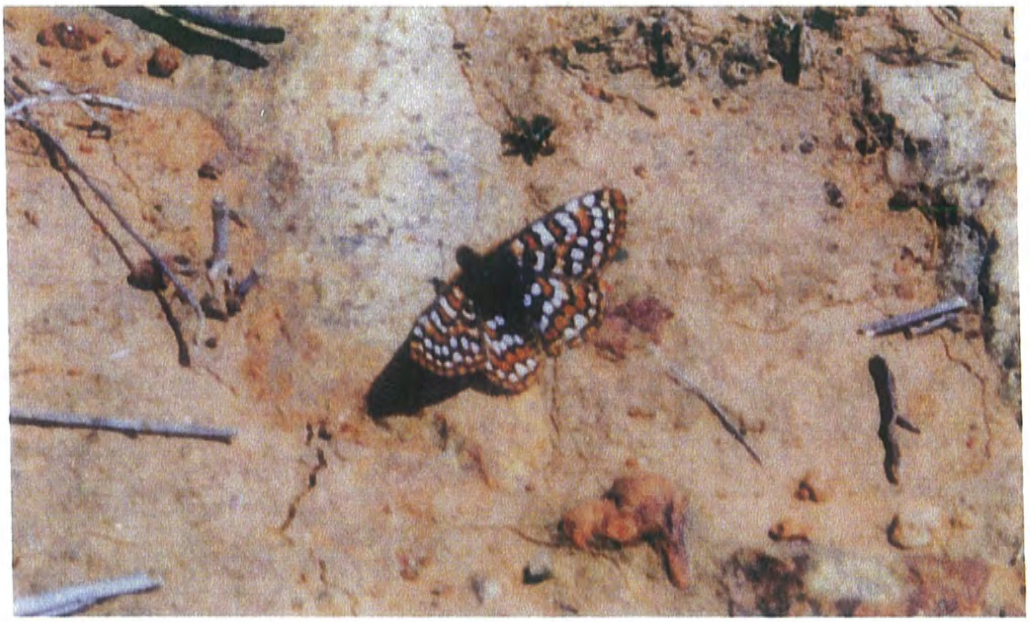
Quino Checkerspot Location Map for the East Otay Project: Potential Mitigation Sites

HELIX

Figure 1

APPENDIX A

PHOTOGRAPHS



Parcel B.
Quino checkerspot butterfly.
Photo taken 3/31/01 by Amy Bridgeman



Parcel C.
Vicinity of Quino checkerspot butterfly.
Photo taken 3/31/01 by Amy Bridgeman



Parcel C.
Quino checkerspot butterfly.
Photo taken 3/31/01 by Amy Bridgeman



Parcel E; Hilltop.
Quino checkerspot butterfly.
Photo taken 3/27/01 by Sally Trnka



Parcel E; Eastern Ridgeline.
Nectaring resources.
Photo taken 3/31/01 by Sally Trnka

APPENDIX B

FIELD NOTES

TG & ST

SRM-01 Mitigation Land 3/15/01
Quino Habitat Assessment
(Quino 2)

Area X B 64°F part. cloudy
winds 2-5 mph
Brassica sp. West facing slope, rock outcrops
Eriogonum
Oxalis sp.
Art Cali
Eriodictyon
Camissonia
Eriog. fasciculatum
Rhus integrifolia
Mule fat
Shooting-Stars
Blue-dicks
Plantago erecta (10+ plants)
Otay Sunflower
Popcorn flower

Western meadowlark

start: 10:45
end: 12:20 65°F, part. cloudy
Winds 3-5 mph

TG & ST

3/15/01

Area C start: 12:35 pm

overcast, chilly, open drizzle, <65°F

wind: 3-7 mph

(empty - sold)

Clarkia // All Ripleyan Hardest

Plantago erecta / Southern Live

Cryptantha (pop-corn) // Arise Swallowtail

Bt. Cali

Layia platyglossa

Dry-by-the-wind (Salsola)

Nuttall's Sage (Salvia mellifera)

Eriophyllum spp.

Deerweed

Eriodictyon

Ceanothus (purple flower w/ yellow center)

Yucca whipplei

Sage plant

Hemizonia virgidescens

Agoseris heterophylla

Helianthemum scoparium (dry flowers)

end: 2:05 pm

deep haze, 60°F

winds 4-7 mph

TG & ST

3/15/01

Area D start: 2:50 pm

overcast, 60°F

wind: 3-7 mph

Viguiera (S.D. Sunflower)

Monardella cali

Cryptantha (carpet)

Eriogonum

CA poppy

Clarkia

Deerweed

Nuttall's sage

Ceanothus (purple flowers)

White sage

end: 3:35 pm

winds 2-7 mph

overcast

SRM-01 Q2 03/15/01

Area ~~A~~ B Sally Tuska

animals

Anna's hum.
Sara's orangetip IIII
So. blue IIII IIII IIII IIII IIII IIII
common wht IV
~~Blue unknown 1~~
Perplexing hairstk IIII I
raven
moth
ladybug
grey hairstk 1

An. crow
bumblebee
filelary Consd. 1
forehead dusky wasp 1
Behr's metlstk II

flowering plants

Bra sp.
Ero nos/bot/cic
Cry sp.
Pha wht
Dic cap
Esc cal

Caly mac
Lot sco
Bro mad
Ane bar
San arg (lgt flwr)

Lath sp. (sweet pea)
Son ~~asp~~ ola
Lep sp.
Cas aff
Vig lac

Dodec.

start: 10:45am / 64° F / 1-5 mph / partly cloudy ~~clear~~ & sunny

Do / Pe

end: 12:20 / 1-5 mph / hazy / 65° F

SRM-01 G2
AREA B1

3/15/01
Sally Tinke
& TG

start 12:35pm / hazy / 1-5mph / 65°F

animals

lark sparrow
Sonas Orangetip 1111
CA mnglet 1
crow
moth
swallowtail 1
perplexing hawk 1
lady 1

blk-tailed jkrbt
CA towhee

note: few flowing plnts other than Cry sp.

flowering plnts

Cry sp.
Cea (wht, thick lvs)
Cea (purple) tom
Sal mon
Vio ped
Lot sco
Sis bel
Ero nas/bot/cic
Dodec.
Graph cal

Sol. sp.

end 2:05pm
2-7mph / hazy / 60°

SRM-01

AREA D

03/15/01

SJT / TG

start: 2:50pm / 60° / hazy/cloudy / 2-7 mph

Animals

painted lady 1

sparrow

Flowering plts

Bras sp.

pink

Cry sp.

Lepidium sp.

Esc cal

Ero cic/nas/bot

Caly mac

Sol sp.

Lot sco

Sal mon

end 3:35pm / ~~hazy, cloudy~~ overcast / 2-7 mph / 60°F

3/27/01 TG

Mitigation Laurel Sperm-1

Area #B

3:00 pm

Sunny, (part hazy), winds 5-7 mph, 68°F

Westcoast Lady ##	Dune sedge
CA ringlet ##	Coast Sagewort
Painted Lady #	CA poppy
Southern Blue #	" (white)
Purplesheen Hairstreak ##	Encelia
Sara orangetip #	S.D. sunflower
Funereal Duskywing	Eriogonum
	Art. Cali
	Ceanothus
	Ceanothus
	Indian paintbrush
	Ceanothus
	White Sage
	Laurel sumac
	Yucca sp.
	Plantago erecta (15+)
	Brassica sp.
	Avena sp.

End 4:10 pm
Sunny & clear, winds 6-8 mph
70°F

Ho mi, 5 to

1

SRM-01 Mitig. Parcels
Quino Survey Area E

03/27/01
SJT/AB

start: 11:30 am/sunny/clear/ 70°F/ 0-3 mph

Cryptantha
erodium
Dichelostemma
deerweed - Lotus scoparius
Lepidium
Conchalagua
Eriogonum
~~Hypochaeris~~ glabra
dandilion
Silene gallica
Lotus sp.
Grindelia camporum
monardella
mustard
sweet pea
purple
solanum
Mirabilis

~~opposite~~

Plantago

Gilia
Castilleja affinis

Euphorbia
Oxalis

Inc Rpt

perplexus ~~HH~~ III
Beh ||
Sara ||
white IIII
funereal III
banded ady

hea
lizard
caterpillar
(not quino)

SRM-01
03/27/01

Quino

SJT / AB

Survey Area E

bigwell

~~grass Bay grass~~ 11

Point-1

Cata (muggy eaten plants near deerpad (not sure)

Allium
dichelostemon
deerweed
99 C agua
Clarkia -like
Solanum
Mustard
Indian paintbrush
Snapdragon
Lepidium
Cryptantha
Sm aster Cryptantha
Microlabis (not sure)
plantago - 1

rflies Observed (larvae or adults)	Number	Comments
Swallowtail (*Papilio eurymedon*)		
Swallowtail (*P. zelicaon*)		
Tiger Swallowtail (*P. rutulus*)		
etip (*Anthocharis sara*)	1111	
's Orangetip (*A. cethura*)		
abage White (*Artogeia rapae*)		
y Orange (*Eurema nicippe*)		
mon White (*Pontia protodice*)	11	
California Dogface (*Zerene eurydice*)		
fa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
fornia Ringlet (*Coenonympha californica*)	V	
narch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
ne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
no Checkerspot (*E. editha quino*)	111 (called same as Sabbeus)	
bb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
lita Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	1	
Coast Lady (*V. annabella*)		
Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
keye (*Junonia coenia*)		
Mouming Cloak (*Nymphalis antiopa*)		
lifornia Sister (*Adelpha bredowii californica*)		
ayr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
estern Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
ho Blue (*Celastrina ladon echo*)		
onoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
mon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
ray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
erplexing Hairstreak (*Callophrys perplexa*)	1111	
n Purple Hairstreak (*Atlides halesus*)		
Metalmark (*Apodemia mormo virgulti*)	1111	
Wright's Metalmark (*Calephelis wrighti*)		
Blue	1111	
Lady	1111	
Funeral Duskywing	11	

SRM-01 Mitig. Parcels 03/27/01
Quino Survey Site E SJT / AB

start: 11:30am / sunny & clear / 76°F / 0-3 mph

flowering plnts

Lot sco
Lepidium sp.
conchalcagua
Cy sp. (red)
Erod bot/mos/cic
~~Hyp glo~~
Daud
Cas aff
Dic cap
Silene gal
Eri fes
Bras sp.
Vic lac
pink
Caly mac
Gilia sp.
Lath sp.
Cy sp. (big)
Lot str (?)
Pha cic
Esc cal
Sol sp.
Plantago
oxalis

tons of Cy spp

animals

CA ringlet 1
South. blue II
blue IIII
lady IIII III
moth
Behr's hrmk IIII IIII II
common wht IIII II
painted lady III
kestrel
funereal duskywing IIII I
perplexing IIII IIII
2 quino (same as Amy)! +1 +2
west coast lady III
Sara IIII IIII
Kinghird
~~Am.~~ raven

end: 4:20pm / 61°F / hazy / 0-5 mph

SRM-01
Parcel ~~A~~ C

03/27/01
SJT / AB

flw plants

Solanum	Lot str	Min aur
Cry sp.	Eri con	San yellow
Cea ton	Lepidium sp.	Plantago ere
Yucca	Erod cic / bot / mos	Lasth.
Cea otayensis	Lot sco	Mal fas
Lathy. sp.	Vio ped	Dodec.

lady ||| ||
CA ringlet |
No harrier
CA towhee
raven
fox sparrow
Painted lady |

start: 61° / hazy / 0-5 mph / 4:~~30~~ 25 pm
end: ~~60~~ 59° F / overcast / 0-5 mph / 5pm

SRM-01 Mitigation

3/31/01
T&ST

Area E
11:35 a.m.
Sunny, calm, ground 2-temp, 76°F
ground cover (Eriogonum fasc.)
soil's clean
[Common flowering plants in vicinity]
[E.O. Eriogonum] → all over ridgeline
Facilia sepultorii
Eriogonum
Lathyrus
Lotus scoparius
Distichlis
Lupine
Cryptantha (Eriogonum spp)
CA poppy
Evolvulus
Calandrinia
Acacias
Cuscuta lanigera (Deep-purple)
Brassica sp.
Indian Paintbrush
Ceanothus otayensis → 10 plants, top of slope

Perma sensitive
Horned lizard

Ferro cactus (3 varieties)
Art. californica
Leaved sumac

3/31/01
T&ST

gilia (white w/ blue anthers)
Linanthus sp. (yellow)

Area F
1:45 pm
Hazy, winds 0-1 mph, 72°F
recent fire disturbance (< 2 years)
high % of Evolvulus
Flowering plants:
Ceanothus otay
Yucca schidigera
Distichlis
Cryptantha (spp.)
Calandrinia
Cuscuta
Helianthemum
Simmondsia chinensis
Mangania sp. - not = flower
CA poppy
Calochortus macrostigma
Lupine
Marah Macrocarpus
Salvia spathacea
Facilia sigarthica
"Break-apart plant"
& not flowering

Perma sensitive
Lady
Eriogonum
Fiesta
Occurs
Alium
Pepper plant
& Dudleya
Lotus scoparius

Area C

3/31/01 AM MLT-SITE

Begin 12:30p 4-7 70° mostly overcast, slightly hazy

End 1:40 4-7 69 , slight haze.

Sora HHH 11

lady 1 painted lady 1

blue HHH IIII

perplexing hairstreak 1

gnat! 1 - on dirt road almost end.

funereal 1

white 1

flowering

Plantago | Buckwheat

Oxytheca

Cordylanthus

Ceanothus divaricatus + occidentalis.

monkey flower

mustard

Eriodictyon

dandelion

Eriogonum

desert wild

Chamise

popcorn flower

yucca

sage sp.

Johnny jump up

blue eyed grass

yellow pea bush

Indian paintbrush

619 - 5102 - 6202

mustard

Avoid Allison Ave 5-Alt

12:52 Ok tagging other butterfly counts to get photos of gnat ~ 100 per

found territories - @ least 3 gnat chasing 2 occasional passersby/ear other. Plus 1 on dirt path - closer to road

2 gnat chasing each other

Plus 1 seen again @ spot 101 / 1 at least

3/31/01 AME-MIT SITE

Begin 1030 wind 0-3 75° pinground in Shade
End 1210, wind 0-7, 85°

Sarabe Orangetip
HH HH IIII

Funereal dusky wing
HH IIII

~~white~~ perplexing hairstreak
~~HH~~ HH IIII
white w/ dot — cabbage
common white III
Blue
HH HH III

Lady HH
Anise swallowtail - at top.
II

Caterpillar (not q. sure)

Counts up/running 31/1130

at least ~1145 AM
2 queens
Meija ferrotorialis
defending their spots ① Saw
the same 2 queens Charmingly.
other for quite awhile. Lit on bare
ground under plantago.

flowering

Eriogonum
mulefat (by road)
mustard
dandelion
wild radish
deerweed
Cryptantha (patches)
Eriogonum
poppy
virgulata
popcornflower
Orthocarpus
Calycadenia macrolepis
tidy tips
Lotus sp.
Camotheus tomentosus
(@ top hill)
phacelia
Solanum
oxalis
mirabilis
Allium
clarkia
Grindelia

little b. bird
wasp
raven
bee
Spanish sparrow
squirrel

Plantago

Castilleja exserta — top hill

IIII

SRM-01 East Oley Mtg. 4/13/01

Parcel F

Sally Tinkler
Amy Bridgens

start: 2:00pm / sunny / clear / 71°F / 0-7 mph

end: 4:30pm / sunny/clear / 73°F / 0-5 mph

Page 1

BLM Montezuma

Survey 479

Parcel F

1

Sat 2/10/07

Sunny & clear, windy 35 mph, 70°F

Pinus ponderosa — Ponderosa Pine

Pinus edulis — Pinyon Pine

Juniperus monosperma — Common Juniper

Cercocarpus montanus — Mountain Mahogany

Artemisia

Gutierrezia sarothrae

Juniperus osteosperma — Utah Juniper

Quercus gambelii — Gambel Oak

Opuntia phaeacantha — Common Prickly Pear

Sphaeralcea coccinea — Scarlet Globemallow

Gaura villosa — Velvet Gaura

Appendix B-3

2002 QUINO CHECKERSPOT BUTTERFLY SURVEY REPORT

APPENDIX B-3

2002 QUINO CHECKERSPOT BUTTERFLY SURVEY REPORT

2002 Annual Report
U.S. Fish and Wildlife Service Protocol Level Presence/Absence Surveys for the Quino Checkerspot Butterfly
(*Euphydryas editha quino*)

Prepared for:

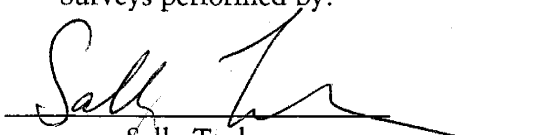
The Otay Hills Project Site

Prepared by:

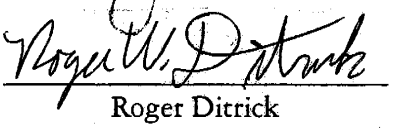
HELIX Environmental Planning, Inc.
8100 La Mesa Blvd., Suite 150
La Mesa, California 91941-6476
(Threatened/Endangered Species Permit: TE778195-5)

May 13, 2002

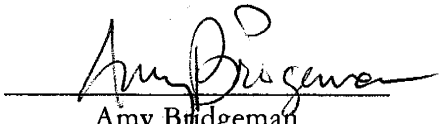
Surveys performed by:



Sally Trnka



Roger Ditrick



Amy Bridgeman

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APPENDIX B – POTENTIAL NECTAR SOURCES	
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INTRODUCTION

This report documents the results of HELIX Environmental Planning, Inc.'s (HELIX's) year 2002 quino checkerspot butterfly (QCB; *Euphydryas editha quino*) presence/absence surveys for the Otay Hills project site. All surveys were performed under HELIX's endangered/threatened species permit (TE-778195-5).

The approximately 50-acre Otay Hills project site and associated access road are located in the southwest corner of San Diego County, in the southwestern foothills of the San Ysidro Mountains (Figure 1) within the U. S. Fish and Wildlife Service (USFWS) QCB Adult Focused Survey Area 1 (USFWS 2002). The project area is situated east of Brown Field Airport, northeast of the end of Otay Mesa Road. The border with Baja California is located less than a mile to the south of the property. All of the surrounding lands are currently undeveloped.

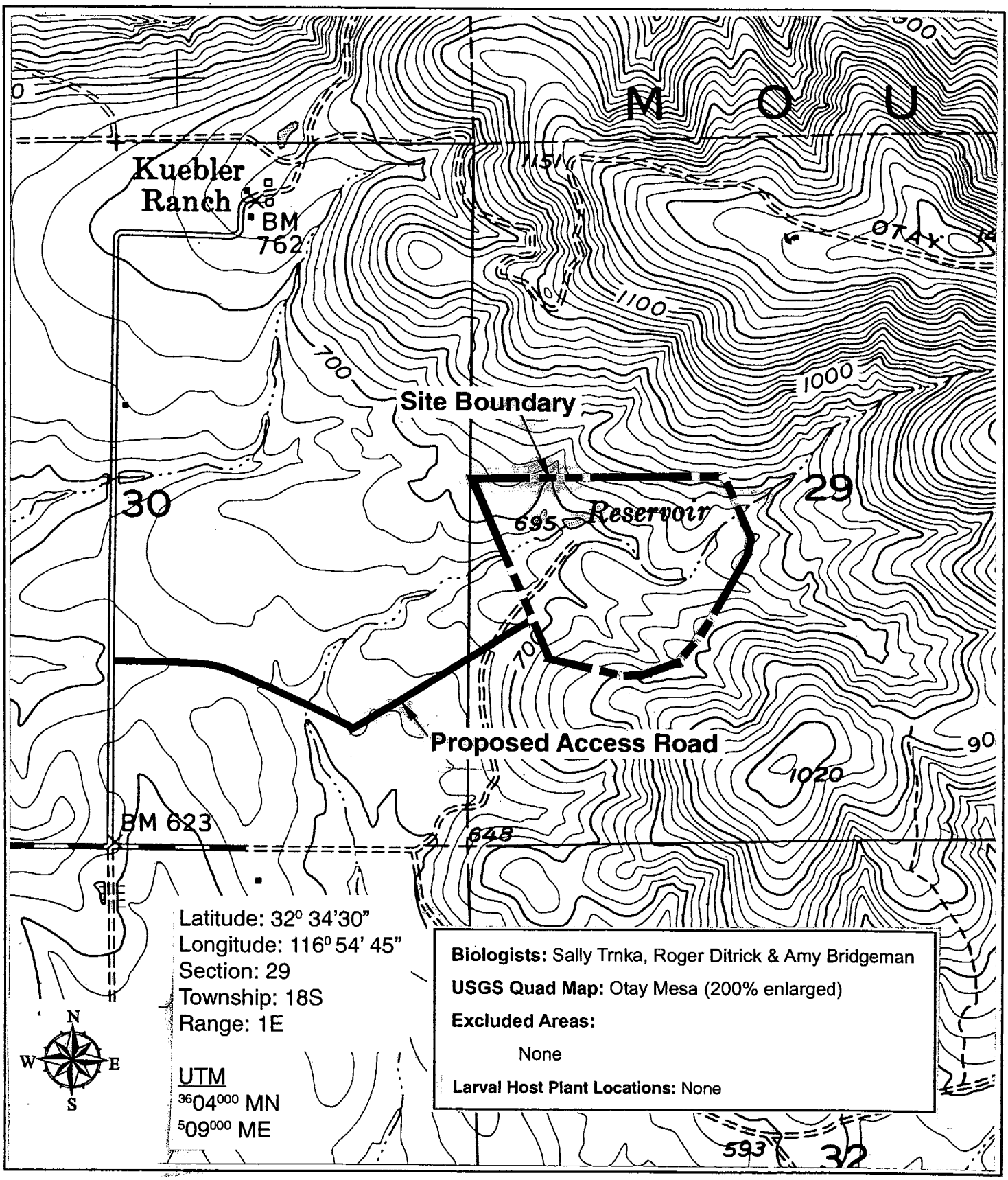
The project site is situated in the northwest corner of a site that was previously surveyed for QCB in 2000 (HELIX). On-site elevations range from approximately 670 feet to 800 feet above mean sea level. Native vegetation communities, namely Diegan coastal sage scrub, dominate the project site. Land located to the west of the project site has been previously disturbed while that located to the east, north and south is mainly undeveloped land dominated by Diegan coastal sage scrub. The proposed access road is situated in an area that has been disturbed in the past by agriculture activities and is currently dominated by non-native grassland.

The following is a discussion of survey methods, results, conclusions, field notes, maps, and species lists.

METHODS

The methods employed during the site assessment and presence/absence surveys for the QCB followed the USFWS Year 2002 Survey Protocol for the QCB (USFWS 2002). Prior to conducting the 2002 QCB protocol surveys, a QCB habitat assessment was performed on March 8, 2002 by Sally Trnka and Roger Ditrick. All 50 acres of the project site and proposed access road were assessed for potential QCB habitat (Figure 1). No significant quantities of habitat on site qualified for any of the survey exclusion categories, therefore, it was decided that surveys would be required for the entire property. Of the approximately 50 surveyed acres, areas that were most intensely surveyed included Diegan coastal sage scrub habitat and dirt roads.

Every effort was made to perform the presence/absence surveys during the most favorable weather conditions for QCB. Five presence/absence surveys were conducted between March 8 and April 4, 2002 (Table 1). All surveys were within the weather-condition parameters identified in the 2002 protocol. Approximately 50 acres of habitat were surveyed, the majority of which had also been surveyed during the 2000 flight season. The 2002 QCB survey area was mapped on a USGS quad (Figure 1). A species list, including all butterflies observed, is included as Appendix A. A list of all flowering plants observed during the 2002 surveys is included as Appendix B. Copies of field notes are provided in Appendix C.



Site Assessment and Host Plant Location Map

OTAY HILLS PROJECT

Figure 1

HELIX

Table 1
SUMMARY OF FIELD SURVEY CONDITIONS AND RESULTS

Site Visit #	Date of Survey	Survey Time (start/end)	Weather Conditions (start /end)[1, 2]	Biologist[3]	Results
1	03/08/02	1245/1430	Start: Temp[2] 65° F, sunny and clear, wind 0-3 mph End: Temp 67° F, sunny and clear, wind 2-8 mph	ST/RD	No QCB observed
2	03/16/02	1015/1045	Temp 54° F, cloudy; occasional drizzles, wind 12-15 mph	ST/RD	Survey cancelled
2	03/19/02	1145/1505	Start: Temp 66° F, clear and sunny, wind 5-10 mph End: Temp 64° F, clear and sunny, wind 5-10 mph	ST	No QCB observed
3	03/22/02	1225/1415	Start: Temp 65-68° F, sunny with scattered light clouds, wind 3-8 mph End: Temp 68° F, sunny with scattered light clouds, wind 2-10 mph	ST/RD	No QCB observed
4	03/30/02	1345/1530	Start: Temp 67° F, sunny with haze, wind 8-12 mph End: Temp 64° F, sunny, wind 8-10 mph	ST/AB	No QCB observed
5	04/04/02	1335/1525	Start: Temp 67° F, clean and sunny, wind 10-12 mph End: Temp 66° F, clear and sunny, wind 7-12 mph	ST/RD	No QCB observed

[1] Refer to field notes in Appendix C for specific survey information.
[2] All temperatures were taken near ground level in the shade.
[3] ST=Sally Trnka; RD=Roger Ditrick; AB=Amy Bridgeman

RESULTS

Most of the survey area is still recovering from a large fire that swept through the area approximately five years ago. Because of this fire, and low levels of rainfall since the fire, the site largely consists of open to sparsely vegetated coastal sage scrub and non-native grassland. The site supports four main vegetation communities: Diegan coastal sage scrub (including disturbed), non-native grassland, mule fat scrub, and disturbed habitat (HELIX 2000). Numerous dirt roads (many of which are used by off-road vehicles and dirt-bikes) occur throughout the site.

Although the entire project site was surveyed, its location at the base of the foothills of the San Ysidro Mountains suggests that it is less likely to support QCB than some of the surrounding slopes, ridgelines and hilltops where this species has been observed in the past few years.

The QCB was not observed within the project site or the access road during the survey period. Due to the low rainfall levels in the 2001-02 winter season, the habitat on site was very dry. Few flowering annual plants were observed and larval host plant species of the QCB were not present, though host plants (*Plantago erecta*) had previously been observed in the northwest corner of the survey area (HELIX 2000). Potential nectar sources that were noted include deerweed (*Lotus scoparius*), San Diego viguiera (*Viguiera laciniata*), and flat-top buckwheat (*Eriogonum fasciculatum*). Very few individuals of any of these species were flowering during the survey period. A complete list of flowering species observed is presented in Appendix B.

CONCLUSION

The project site is located at the base of the San Ysidro foothills, near several known locations of the QCB. The closest reported sightings were on slopes located just southeast and northeast of the project area. Despite the presence of QCB in the project vicinity within the past few years, no QCB were observed within the surveyed area.

The lack of the QCB within the survey area may be due to the low elevation of the site, disturbed nature of much of the habitat present, and/or this year's dry habitat conditions. No QCB host plants and few nectar sources were observed on site in 2002, though host plants were previously observed within the survey area. Most of the site is within a transitional zone between high quality habitat located on the surrounding hills and disturbed agricultural land to the west. While portions of the site have recovered post-fire to support moderate quality coastal sage scrub habitat, much of the site is currently dominated by non-native grasses.

Due to the low elevation of the site as compared to surrounding areas where QCB were previously observed, the large proportion of non-native grassland habitat, and negative results for QCB from the 2000 survey season, the site is considered to have a moderate to low potential for supporting the QCB.

REFERENCES CITED

HELIX Environmental Planning, Inc. 2000. 2000 Annual Report, U.S. Fish and Wildlife Service Protocol Level Presence/Absence Surveys for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). June 9.

U.S. Fish and Wildlife Service (USFWS). 2002. Quino Checkerspot Butterfly (*Euphydryas editha quino*) Year 2002 Survey Protocol. U.S. Fish and Wildlife Service Ecological Services Carlsbad Field Office, Carlsbad, California. February.

APPENDIX A

LIST OF ALL BUTTERFLY SPECIES OBSERVED

lies Observed (larvae or adults)	Number	Comments
le Swallowtail (*Papilio eurymedon*)		
Swallowtail (*P. zelicaon*)	✓	
iger Swallowtail (*P. rutulus*)		
ra Orangetip (*Anthocharis sara*)	✓	
s Orangetip (*A. cethura*)		
bbage White (*Artogeia rapae*)		
Orange (*Eurema nicippe*)		
mmon White (*Pontia protodice*)		
nia Dogface (*Zerene eurydice*)		
Butterfly (*Colias eurytheme*)		
rford's Sulfur (*C. harfordi*)		
nia Ringlet (*Coenonympha californica*)	✓	
onarch (*Danaus plexippus*)		
(*D. gilippus*)		
's Checkerspot (*Euphydryas chalcedona hennei*)		
lcedon Checkerspot (*E. chalcedona chalcedona*)		
Checkerspot (*E. editha quino*)		
bb's Checkerspot (*Charidryas gabbii*)		
Checkerspot (*Thessalia leanira wrighti*)		
Cresent (*Phyciodes mylitta*)		
inted Lady (*Vanessa cardui*)		
Coast Lady (*V. annabella*)		
irginia Lady (*V. virginiensis*)		
dmiral (*V. atalanta*)		
Eye (*Junonia coenia*)		
ming Cloak (*Nymphalis antiopa*)		
rnia Sister (*Adelpha bredowii californica*)		
styx Anglewing (*Polygonia satyrus*)		
in's Admiral (*Basilarchia lorquini*)		
estern Tailed Blue (*Everes amyntula*)		
em Blue (*Glaucopsyche lygdamus australis*)	✓	
Blue (*Celastrina ladon echo*)		
onoran Blue (*Philotes sonorensis*)		
e Blue (*Leptotes marina*)		
mon Blue (*Icaricia acmon*)		
y Blue (*Brephidium exilis*)		
Hairstreak (*Strymon melinus*)		
rown Elfin (*Incisalia augustinus*)	✓	
xing Hairstreak (*Callophrys perplexa*)		
rt Purple Hairstreak (*Atlides halesus*)		
s Metalmark (*Apodemia mormo virgulti*)	✓	
ght's Metalmark (*Calephelis wrighti*)		
Funereal Dusky wing	✓	

APPENDIX A - LIST OF ALL BUTTERFLY SPECIES OBSERVED

APPENDIX B

POTENTIAL NECTAR SOURCES

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trinka

HELIX permit no. TE778195-5

Subconsultant permit no. _____

Survey date 03/08/02 Site visit no. 1

Site name ~~East Otay Mtntng~~ Otay Hills Project

Locality Otay Mesa

Total site acres ~50 Total acres surveyed 25

Total hours of field survey 1h 45min Average acres surveyed per hour 14

Time	Sky	Wind	Temperature F
Start 12:45pm	(Clear) Patch Overcast/Cloudy Drizzle Shower & Sunny	<1 (1-3) 4-7 8-12 12-15 >15	65° F
End 2:30pm	(Clear) Patch Overcast/Cloudy Drizzle Shower & Sunny	<1 (1-3) (4-7) 8-12 12-15 >15	67° F
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments Survey area contains some burned Coastal sage scrub habitat where larval host plants have been previously observed. No host or nectaring plants were observed. Southern blues in CSS; ringlets in grassland portions.

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

...rflies Observed (larvae or adults)	Number	Comments
...Swallowtail (*Papilio eurymedon*)		
...e Swallowtail (*P. zelicaon*)		
...Tiger Swallowtail (*P. rutulus*)		
...Orangetip (*Anthocharis sara*)		
...er's Orangetip (*A. cethura*)		
...sage White (*Artogeia rapae*)		
...py Orange (*Eurema nicippe*)		
...mon White (*Pontia protodice*)		
...fornia Dogface (*Zerene eurydice*)		
...lfa Butterfly (*Colias eurytheme*)		
...ford's Sulfur (*C. harfordi*)		
...fornia Ringlet (*Coenonympha californica*)	27	
...narch (*Danaus plexippus*)		
...en (*D. gilippus*)		
...ine's Checkerspot (*Euphydryas chalcedona hennei*)		
...cedon Checkerspot (*E. chalcedona chalcedona*)		
...no Checkerspot (*E. editha quino*)		
...bb's Checkerspot (*Charidryas gabbii*)		
...untra Checkerspot (*Thessalia leanira wrighti*)		
...litta Crescent (*Phyciodes mylitta*)		
...nted Lady (*Vanessa cardui*)		
...st Coast Lady (*V. annabella*)		
...rginia Lady (*V. virginiensis*)		
...d Admiral (*V. atalanta*)		
...ckeye (*Junonia coenia*)		
...urning Cloak (*Nymphalis antiopa*)		
...lifornia Sister (*Adelpha bredowii californica*)		
...yr Anglewing (*Polygonia satyrus*)		
...rquin's Admiral (*Basilarchia lorquini*)		
...estern Tailed Blue (*Everes amyntula*)		
...outhern Blue (*Glaucopsyche lygdamus australis*)	5	
...cho Blue (*Celastrina ladon echo*)		
...onoran Blue (*Philotes sonorensis*)		
...Marine Blue (*Leptotes marina*)		
...emon Blue (*Icaricia acmon*)		
...ygmy Blue (*Brephidium exilis*)		
...ray Hairstreak (*Strymon melinus*)		
...rown Elfin (*Incisalia augustinus*)		
...erplexing Hairstreak (*Callophrys perplexa*)		
...rt Purple Hairstreak (*Atlides halesus*)		
...ehr's Metalmark (*Apodemia mormo virgulti*)		
...Wright's Metalmark (*Calephelis wrighti*)		

Salk Trnka 03/08/02 East Otay Mesa Survey #1

SRM-01 03/08/02

Quino Survey #1 Sally Trinka

road + batch plant Roger Dittrick

Start: 12:45pm

Sunny / clear

0-3 mph

65° in shade

animals

mourning dove

west. meadowlark

CA nightjar |||| |||| |||| |||| |||| ||

raven

So. blue |||| |

side blotched lizard

sparrow

CA towhee

1:30pm winds increased 2-8mph

end 2:30pm

Sunny / clear

2-8 mph

67° F

QUINO CHECKERSPOT GENERAL FORM

Biologist name Roger DiTrick

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 3-8-02 Site visit no. 1

Site name ~~East Otay Mining~~ Otay Hills Project

Locality Otay Mesa

Total site acres 50 Total acres surveyed 25

Total hours of field survey 1hr 45min. Average acres surveyed per hour 14

Time	Sky	Wind	Temperature F
Start 12:45	(Clear) Patch Overcast/Cloudy Drizzle Shower — Clear & Sunny	<1 (1-3) 4-7 8-12 12-15 >15	65
End 2:30	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	67
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments _____

Attached
- ☑ List of butterflies observed
- ☐ List of larval host plants, nectar plants, and plant communities observed on the site
- ☐ Field maps
- ☑ Copy of original field notes
- ☐ Photographs
- ☐ Other _____

Observed (larvae or adults)		
wtail (*Papilio eurymedon*)		
lowtail (*P. zelicaon*)		
Swallowtail (*P. rutulus*)		
cop (*Anthocharis sara*)	1	
rangetip (*A. cethura*)		
White (*Artogeia rapae*)		
nge (*Eurema nicippe*)		
White (*Pontia protodice*)		
Dogface (*Zerene eurydice*)		
tterfly (*Colias eurytheme*)		
Sulfur (*C. harfordi*)		
Ringlet (*Coenonympha california*)	28	
(*Danaus plexippus*)		
). *gilippus*)		
Checkerspot (*Euphydryas chalcedona hennei*)		
Checkerspot (*E. chalcedona chalcedona*)		
heckerspot (*E. editha quino*)		
Checkerspot (*Charidryas gabbii*)		
Checkerspot (*Thessalia leanira wrighti*)		
Cresent (*Phyciodes mylitta*)		
Lady (*Vanessa cardui*)		
oast Lady (*V. annabella*)		
a Lady (*V. virginiensis*)		
dmiral (*V. atalanta*)		
e (*Junonia coenia*)		
ing Cloak (*Nymphalis antiopa*)		
mia Sister (*Adelpha bredowii californica*)		
Anglewing (*Polygonia satyrus*)		
in's Admiral (*Basilarchia lorquini*)		
m Tailed Blue (*Everes amyntula*)		
em Blue (*Glaucopsyche lygdamus australis*)	5	
Blue (*Celastrina ladon echo*)		
an Blue (*Philotes sonorensis*)		
ne Blue (*Leptotes marina*)		
on Blue (*Icaricia acmon*)		
ny Blue (*Brephidium exilis*)		
Hairstreak (*Strymon melinus*)		
wn Elfin (*Incisalia augustinus*)		
lexing Hairstreak (*Callophrys perplexa*)		
Purple Hairstreak (*Atlides halesus*)		
r's Metalmark (*Apodemia mormo virgulti*)		
ight's Metalmark (*Calephelis wrighti*)		

D N L C Xtra M... 7 F A9 S... #1

Roger Ditrick

3-8-02 Otay - Jally Trnka
Mining

IIII IIII ringlet IIII IIII IIII III
I Sara Orangetip
II S. Blue
Habitat ass. 1st 15 min
Start: 12:45 Temp: 65 W-1-4
Finish: 2:30 67° LAL-07 4-7mph

3-8-02 Otay 2 ~~IIIII~~ I
Ringlet 1 Mesa Project
2:45-4 Tech Area

Clear & Sunny
67°F @ start & wind 2-8mph

Finish @ 4pm clear & sunny
wind - 2-8 mph Temp - 61°F

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. _____

Survey date 03/16/02 Site visit no. 2

Site name ~~East Otay Mining~~ Otay Hills Project

Locality Otay Mesa

Total site acres 50 Total acres surveyed NA

Total hours of field survey NA Average acres surveyed per hour _____

Time	Sky	Wind	Temperature F
Start 10:15am	Clear Patch (Overcast/Cloudy) Drizzle Shower	<1 1-3 4-7 8-12 (12-15) >15 with gusts to 22mph	54°
End 10:45am	Clear Patch Overcast/Cloudy (Drizzle) Shower	<1 1-3 4-7 8-12 (12-15) >15	54°
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Survey cancelled due to bad weather.

Attached
- ☐ List of butterflies observed
- ☐ List of larval host plants, nectar plants, and plant communities observed on the site
- ☐ Field maps
- ☐ Copy of original field notes
- ☐ Photographs
- ☐ Other _____

SRM-01 / LAL-03 03/16/02

Quino Survey #2
cancelled due to weather conditions on site

cloudy; occasional drizzles;
54°F ; winds 12-15mph
with gusts to 22mph
10:15 → 10:45

QUINO CHECKERSPOT GENERAL FORM

Biologist name Roger DiTrick

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 3-16-02 Site visit no. 2

Site name ~~East Otay Mining~~ Otay Hills Project

Locality East Otay Mesa

Total site acres 50 Total acres surveyed —

Total hours of field survey _____ Average acres surveyed per hour _____

Time	Sky	Wind	Temperature F
Start 10:15	Clear Patch (Overcast/Cloudy) Drizzle Shower	<1 1-3 4-7 8-12 (12-15) >15	54
End 10:45	Clear Patch Overcast/Cloudy (Drizzle) Shower	<1 1-3 4-7 8-12 (12-15) >15	54
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Conditions not favorable for survey protocol.

Attached
- ☐ List of butterflies observed
- ☐ List of larval host plants, nectar plants, and plant communities observed on the site
- ☐ Field maps
- ☐ Copy of original field notes
- ☐ Photographs
- ☐ Other _____

OTay 3-16-02
Wind 12 - 15 mph gusts 22 mph
Temp. 54
M. Cloudy drizzle

10:15 - 10:45 Roger Dittrick
Sally Tunka

9:45 - 11:30 Total time o/ traveling

OTay Mileage 380 - 407 -
3-19-02

QUINO CHECKERSPOT GENERAL FORM

Biologist name SALLY TRNKA

HELIX permit no. TE778195-5

Subconsultant permit no. _____

Survey date 03/19/02 Site visit no. 2

Site name ~~East Otay Mining~~ Otay Hills Project

Locality Otay Mesa

Total site acres 50 Total acres surveyed 50

Total hours of field survey 3hrs. 20 min. Average acres surveyed per hour 15

Time	Sky	Wind	Temperature F
Start 11:45am	Clear Patch Overcast/Cloudy Drizzle Shower & Sunny	<1 1-3 4-7 8-12 12-15 >15 gusts to 12 mph	66°F
End 3:05pm	Clear Patch Overcast/Cloudy Drizzle Shower & Sunny	<1 1-3 4-7 8-12 12-15 >15	64°F
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

very few flowering plants

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

utterflies Observed (larvae or adults)	Number	Comments
le Swallowtail (*Papilio eurymedon*)		
nise Swallowtail (*P. zelicaon*)	1	
'est Tiger Swallowtail (*P. rutulus*)		
ara Orangetip (*Anthocharis sara*)		
elder's Orangetip (*A. cethura*)		
abbage White (*Artogeia rapae*)		
leepy Orange (*Eurema nicippe*)		
ommon White (*Pontia protodice*)		
alifornia Dogface (*Zerene eurydice*)		
lfalfa Butterfly (*Colias eurytheme*)		
arford's Sulfur (*C. harfordi*)		
alifornia Ringlet (*Coenonympha californica*)	39	
lonarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
lenne's Checkerspot (*Euphydryas chalcedona hennei*)		
alcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
West Coast Lady (*V. annabella*)		
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	unknown blue 4	
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)	2	
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	5	
Wright's Metalmark (*Calephelis wrighti*)		

Salt. Tunka SRM-01 03/19/02 Survey # 2

SRM-01 03/19/02

Quino Survey #2

start: 11:45 am 5-10 mph gusts to 12 mph
clear/sunny 66°F

animals:

CA ringlet	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	loggerhead shrike	
Anise swallowtail	1	western fence lizard	
blue	11	swallow (wht rear)	
mourning dove		Western meadowlark	
Behr's hairstreak	𝍸	house finch	
grasshopper			
desert cottontail			
So. blue	111	12:30 winds 3-8 mph	
raven			
CA towhee			
sparrow			

flowering plants:

Lot sco
Vig lac
Lup lat

end: 3:05 pm 5-10 mph
clear/sunny 64°F

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. _____

Survey date 03/22/02 Site visit no. 3

Site name ~~East Otay Mining~~ Otay Hills Project

Locality Otay Mesa

Total site acres 50 Total acres surveyed 25

Total hours of field survey 1h.50min. Average acres surveyed per hour 13.6

Time	Sky	Wind	Temperature F
Start 12:25pm	(Clear) / Patch Overcast/Cloudy Drizzle Shower — sunny, with scattered light clouds	<1 1-3 4-7 8-12 12-15 >15	68°F
End 2:15pm	(Clear) / Patch Overcast/Cloudy Drizzle Shower — sunny, a few scattered clouds	<1 (1-3) 4-7 (8-12) 12-15 >15	68°F
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments _____

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

ies Observed (larvae or adults)	Number	Comments
allowtail (*Papilio eurymedon*)		
wallowtail (*P. zelicaon*)	1	
ger Swallowtail (*P. rutulus*)		
angetip (*Anthocharis sara*)	1	
s Orangetip (*A. cethura*)		
e White (*Artogeia rapae*)		
Orange (*Eurema nicippe*)		
en White (*Pontia protodice*)		
nia Dogface (*Zerene eurydice*)		
Butterfly (*Colias eurytheme*)		
d's Sulfur (*C. harfordi*)		
nia Ringlet (*Coenonympha californica*)	26	
ch (*Danaus plexippus*)		
(*D. gilippus*)		
's Checkerspot (*Euphydryas chalcedona hennei*)		
lon Checkerspot (*E. chalcedona chalcedona*)		
Checkerspot (*E. editha quino*)		
s Checkerspot (*Charidryas gabbii*)		
ra Checkerspot (*Thessalia leanira wrighti*)		
a Cresent (*Phyciodes mylitta*)		
d Lady (*Vanessa cardui*)		
Coast Lady (*V. annabella*)		
nia Lady (*V. virginiensis*)		
Admiral (*V. atalanta*)		
eye (*Junonia coenia*)		
ming Cloak (*Nymphalis antiopa*)		
ornia Sister (*Adelpha bredowii californica*)		
Anglewing (*Polygonia satyrus*)		
uin's Admiral (*Basilarchia lorquini*)		
tem Tailed Blue (*Everes amyntula*)		
hern Blue (*Glaucopsyche lygdamus australis*)	4	
Blue (*Celastrina ladon echo*)		
oran Blue (*Philotes sonorensis*)		
ine Blue (*Leptotes marina*)		
ion Blue (*Icaricia acmon*)		
my Blue (*Brephidium exilis*)		
y Hairstreak (*Strymon melinus*)		
wn Elfin (*Incisalia augustinus*)		
plexing Hairstreak (*Callophrys perplexa*)		
Purple Hairstreak (*Atlides halesus*)		
r's Metalmark (*Apodemia mormo virgulti*)	2	
ight's Metalmark (*Calephelis wrighti*)		
-Funereal duskywing	2	

C.00 T. L. SRM-01 03/22/02 Survey #3

SRM-01 03/22/02

Sally, Trinka
Roger Ditrick

start: 12:25pm, 68°F
3-8mph, sunny w/ scattered light clouds

animals:
CA ringlet |||| |||| |||| ||| west. mead lark
CA gnatcatcher mocking bird
western fence lizard ladybug
raven rufous-sided towhee
mourning dove
Sara's o-tip |
So blue ||||
Anise swallowtail |
CA towhee
Behr's metalmark |
moth
wasp
funereal duskywing ||

flowering plants:
Vig lac
Lot sco
Eri fas

end: 2:15pm
20-10mph, 68°F
Sunny, scattered clouds

QUINO CHECKERSPOT GENERAL FORM

Biologist name Roger Ditrict

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 3-22-02 Site visit no. 3

Site name ~~East Otay Mining~~ Otay Hills Project

Locality Otay Mesa

Total site acres 50 Total acres surveyed 25

Total hours of field survey 1 hr. 50 min Average acres surveyed per hour 13.6

Time	Sky	Wind	Temperature F
Start 12:25	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	65
End 2:15	(Clear) Patch Overcast/Cloudy Drizzle Shower scattered light clouds	<1 (1-3) (4-7) 8-12 12-15 >15	68
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments _____

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

Observed (larvae or adults)		
...tail (*Papilio eurymedon*)		
...owtail (*P. zelicaon*)		
Swallowtail (*P. rutulus*)		
...tip (*Anthocharis sara*)	2	
...angetip (*A. cethura*)		
...hite (*Artogeia rapae*)		
...nge (*Eurema nicippe*)		
...White (*Pontia protodice*)		
...Dogface (*Zerene eurydice*)		
...tterfly (*Colias eurytheme*)		
...Sulfur (*C. harfordi*)		
...Ringlet (*Coenonympha californica*)	24	
...(*Danaus plexippus*)		
...*gilippus*)		
...Checkerspot (*Euphydryas chalcedona hennei*)		
...Checkerspot (*E. chalcedona chalcedona*)		
...heckerspot (*E. editha quino*)		
...Checkerspot (*Charidryas gabbii*)		
...Checkerspot (*Thessalia leanira wrighti*)		
...Cresent (*Phyciodes mylitta*)		
...Lady (*Vannessa cardui*)		
...oast Lady (*V. annabella*)		
...a Lady (*V. virginiensis*)		
...dmiral (*V. atalanta*)		
...e (*Junonia coenia*)		
...ing Cloak (*Nymphalis antiopa*)		
...nia Sister (*Adelpha bredowii californica*)		
...Anglewing (*Polygonia satyrus*)		
...in's Admiral (*Basilarchia lorquini*)		
...m Tailed Blue (*Everes amyntula*)		
...em Blue (*Glaucopsyche lygdamus australis*)	6	
...Blue (*Celastrina ladon echo*)		
...an Blue (*Philotes sonorensis*)		
...e Blue (*Leptotes marina*)		
...on Blue (*Icaricia acmon*)		
...y Blue (*Brephidium exilis*)		
...Hairstreak (*Strymon melinus*)		
...vn Elfin (*Incisalia augustinus*)	1	
...lexing Hairstreak (*Callophrys perplexa*)		
...Purple Hairstreak (*Atlides halesus*)		
...r's Metalmark (*Apodemia mormo virgulti*)	1	
...ght's Metalmark (*Calephelis wrighti*)		
Funereal Duskywing	1	

...n... ...t... ...S... ...n... ... Summer #3 2-22-02

E. O'Tay Mining #~~3~~ 3-22-02
wind 3-8 Temp 65°
Scattered clouds Start: 12:25

Behrs Metalmark 1
Southern Blue
ringlet 𝍸 𝍸 𝍸

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. _____

Survey date 03/30/02 Site visit no. 4

Site name East Otay Mining Otay Hills Project

Locality Otay Mesa

Total site acres 50 Total acres surveyed 25

Total hours of field survey 1h. 45 min. Average acres surveyed per hour 14.3

Time	Sky	Wind	Temperature F
Start 1:45pm	Clear Patch Overcast/Cloudy Drizzle Shower (Sunny with haze)	<1 1-3 4-7 (8-12) 12-15 >15	67° F
End 3:30pm	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 (8-12) 12-15 >15	64° F
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Dirt bikers (>5) were on site during portions of the survey.

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

ertites Observed (larvae or adults)	Number	Comments
Swallowtail (*Papilio eurymedon*)		
e Swallowtail (*P. zelicaon*)		
Tiger Swallowtail (*P. rutulus*)		
Orangetip (*Anthocharis sara*)	1	
er's Orangetip (*A. cethura*)		
sage White (*Artogeia rapae*)		
py Orange (*Eurema nicippe*)		
mon White (*Pontia protodice*)		
fornia Dogface (*Zerene eurydice*)		
lfa Butterfly (*Colias eurytheme*)		
ford's Sulfur (*C. harfordi*)		
fornia Ringlet (*Coenonympha californica*)	13	
narch (*Danaus plexippus*)		
en (*D. gilippus*)		
ne's Checkerspot (*Euphydryas chalcedona hennei*)		
cedon Checkerspot (*E. chalcedona chalcedona*)		
no Checkerspot (*E. editha quino*)		
b's Checkerspot (*Charidryas gabbii*)		
mira Checkerspot (*Thessalia leanira wrighti*)		
litta Cresent (*Phyciodes mylitta*)		
ated Lady (*Vanessa cardui*)		
st Coast Lady (*V. annabella*)		
ginia Lady (*V. virginiensis*)		
l Admiral (*V. atalanta*)		
ckeye (*Junonia coenia*)		
uming Cloak (*Nymphalis antiopa*)		
lifornia Sister (*Adelpha bredowii californica*)		
yr Anglewing (*Polygonia satyrus*)		
rquin's Admiral (*Basilarchia lorquini*)		
stern Tailed Blue (*Everes amyntula*)		
uthern Blue (*Glaucopsyche lygdamus australis*)		
ho Blue (*Celastrina ladon echo*)		
noran Blue (*Philotes sonorensis*)		
arine Blue (*Leptotes marina*)		
mon Blue (*Icaricia acmon*)		
gmy Blue (*Brephidium exilis*)		
ay Hairstreak (*Strymon melinus*)		
own Elfin (*Incisalia augustinus*)		
mplexing Hairstreak (*Callophrys perplexa*)		
nt Purple Hairstreak (*Atlides halesus*)		
ehr's Metalmark (*Apodemia mormo virgulti*)		
right's Metalmark (*Calephelis wrighti*)		

Salb. Truka East Otay Mtns 03/30/02 Survey #4

SRM-01 03/30/02
Survey #4 Amy B.
Sally T.

start: 1:45pm / sunny with haze /
8-12mph / 67° F

animals:
Sàvi: 0-tip 1
CA ringlet 1111 1111 111
white-crowned sparrow
desert cottontail
Western mead. lark
mourning dove
dirt bikers on site >5
No harrier

flowering
plants:
~~Eri fas~~
Vig lac
Lot sco

end: 8-10mph / sunny / 3:30pm / 64° F

QUINO CHECKERSPOT GENERAL FORM

Biologist name AMY BRIDERMAN

HELIX permit no. TE778195

Subconsultant permit no. _____

Survey date SIT 3/30/02 Site visit no. 4

Site name ~~[illegible] SITE~~ (SRM-01) Otay Hills Project

Locality OTAY MESA

Total site acres 50 Total acres surveyed 25

Total hours of field survey 1.75 Average acres surveyed per hour 14.3

Time	Sky	Wind	Temperature F
Start 1:45	Clear Patch Overcast/Cloudy Drizzle Shower (Hazy Sun)	<1 1-3 4-7 (8-12) 12-15 >15	67°F
End 3:30	Clear Patch Overcast/Cloudy Drizzle Shower (Sunny)	<1 1-3 4-7 8-12 12-15 >15 (5-7)	69°F
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments _____

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

SAT 3/30/02 QCB SURVEY #4 Amy Bridgeman
SRCM-01 East Otay Mining Sally Tonka
Start 1:45 pm wind 5-12, hazy sun, 60°F

butterflies

funereal dusky wing |||| (5)
blue - |||| (4)
Sara Orangetip - || (2)
PaCA rosylet |||| |||| | (11)
Behris metalmark ||| (3)
~~Caterpillar~~ |||| |||| (10)

flowering plant

Eriog fasc
Lot SCO
~~Eriotica~~ Lig luc
Bacch sal
Bacch sar
Brassica
Epilobium
Blue eyed grass
Rhus int.
Isomeris arborea - bladderpod

Also not flowering —
Selag cinf Fern Vir.

End 3:30 pm 8-10, sunny, 64°F

terflies Observed (larvae or adults)	Number	Comments
ale Swallowtail (*Papilio eurymedon*)		
se Swallowtail (*P. zelicaon*)		
est Tiger Swallowtail (*P. rutulus*)		
a Orangetip (*Anthocharis sara*)	(2)	
der's Orangetip (*A. cethura*)		
abbage White (*Artogeia rapae*)		
epy Orange (*Eurema nicippe*)		
ommon White (*Pontia protodice*)		
ifornia Dogface (*Zerene eurydice*)		
lfalfa Butterfly (*Colias eurytheme*)		
rford's Sulfur (*C. harfordi*)		
lifornia Ringlet (*Coenonympha californica*)	(11)	
Monarch (*Danaus plexippus*)		
een (*D. gilippus*)		
enne's Checkerspot (*Euphydryas chalcedona hennei*)		
lcedon Checkerspot (*E. chalcedona chalcedona*)		
ino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
anira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
inted Lady (*Vannessa cardui*)		
est Coast Lady (*V. annabella*)		
Virginia Lady (*V. virginiensis*)		
d Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
alifornia Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
orquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
outhern Blue (*Glaucopsyche lygdamus australis*)		
cho Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
larine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
ygmy Blue (*Brephidium exilis*)		
ray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
erplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	(3)	
Wright's Metalmark (*Calephelis wrighti*)	(1)	
Other: Emerald Skipping	(5)	

SAT 3/23/02 Foothill Meadow Site Sandhill A... Pl... SEN-01

QUINO CHECKERSPOT GENERAL FORM

Biologist name Sally Trnka

HELIX permit no. TE778195-5

Subconsultant permit no. _____

Survey date 04/04/02 Site visit no. 5

Site name ~~East Otay Mtns~~ Otay Hills Project

Locality Otay Mesa

Total site acres 50 Total acres surveyed 25

Total hours of field survey 1h. 50min. Average acres surveyed per hour 13.6

Time	Sky	Wind	Temperature F
Start 1:35pm	(Clear) Patch Overcast/Cloudy Drizzle Shower & sunny	<1 1-3 4-7 (8-12) 12-15 >15	67°F
End 3:25pm	(Clear) Patch Overcast/Cloudy Drizzle Shower & sunny	<1 1-3 4-7 (8-12) 12-15 >15	66°F
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

No host plants or nectaring resources present.

Attached
- [X] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [X] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

ies Observed (larvae or adults)	Number	Comments
allowtail (*Papilio eurymedon*)		
wallowtail (*P. zelicaon*)		
ger Swallowtail (*P. rutulus*)		
angetip (*Anthocharis sara*)		
Orangetip (*A. cethura*)		
White (*Artogeia rapae*)		
Orange (*Eurema nicippe*)		
n White (*Pontia protodice*)		
nia Dogface (*Zerene eurydice*)		
Butterfly (*Colias eurytheme*)		
d's Sulfur (*C. harfordi*)		
nia Ringlet (*Coenonympha californica*)	4	
ch (*Danaus plexippus*)		
(*D. gilippus*)		
's Checkerspot (*Euphydryas chalcedona hennei*)		
lon Checkerspot (*E. chalcedona chalcedona*)		
Checkerspot (*E. editha quino*)		
s Checkerspot (*Charidryas gabbii*)		
a Checkerspot (*Thessalia leanira wrighti*)		
a Cresent (*Phyciodes mylitta*)		
d Lady (*Vanessa cardui*)		
Coast Lady (*V. annabella*)		
nia Lady (*V. viginiensis*)		
Admiral (*V. atalanta*)		
eye (*Junonia coenia*)		
ning Cloak (*Nymphalis antiopa*)		
ornia Sister (*Adelpha bredowli californica*)		
Anglewing (*Polygonia satyrus*)		
uin's Admiral (*Basilarchia lorquini*)		
tern Tailed Blue (*Everes amyntula*)		
hern Blue (*Glaucopsyche lygdamus australis*)		
Blue (*Celastrina ladon echo*)		
oran Blue (*Philotes sonorensis*)		
ine Blue (*Leptotes marina*)		
ion Blue (*Icaricia acmon*)		
my Blue (*Brephidium exilis*)		
y Hairstreak (*Strymon melinus*)		
wn Elfin (*Incisalia augustinus*)		
plexing Hairstreak (*Callophrys perplexa*)		
Purple Hairstreak (*Atlides halesus*)		
r's Metalmark (*Apodemia mormo virgulti*)	1	
ght's Metalmark (*Calephelis wrighti*)		
-Uneveal Dusky wing	1	

11 Tanka East Otay Mining 04/04/02 Server #5

SRM-01

04/04/02
Sally Trinka
Roger Ditrick

QUAD SURVEY #5

start: 1:35pm / clear & sunny /
67°F / 10-12 mph

animals:
Bewis wMonk 1
Funereal duskywing 1
moth
quail
rufous-sided towhee
lark sparrow
CA towhee
mockingbird
CA ringlet 1111
Western meadowlark

end: 66°F / 7-12 mph
clear, sunny
3:25pm

flowering plants:
~~Eri fas~~
Lot sco
Vig lac

QUINO CHECKERSPOT GENERAL FORM

Biologist name Roger Ditrick

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 4-4-02 Site visit no. 5

Site name East Otay Mining Otay Hills Project

Locality Otay Mesa

Total site acres 50 Total acres surveyed 25

Total hours of field survey 1hr 50min Average acres surveyed per hour 13.6

Time	Sky	Wind	Temperature F
Start 1:35	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 (8-12) 12-15 >15	67
End 3:25	(Clear) Patch Overcast/Cloudy Drizzle Shower Sunny	<1 1-3 4-7 (8-12) 12-15 >15	66
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments

Observed Lark Sparrow

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

s Observed (larvae or adults)	Number	Comments
llowtail (*Papilio eurymedon*)		
allowtail (*P. zelicaon*)		
er Swallowtail (*P. rutulus*)		
ngetip (*Anthocharis sara*)		
Orangetip (*A. cethura*)		
White (*Artogeia rapae*)		
Orange (*Eurema nicippe*)		
n White (*Pontia protodice*)		
ia Dogface (*Zerene eurydice*)		
Butterfly (*Colias eurytheme*)		
l's Sulfur (*C. harfordi*)		
nia Ringlet (*Coenonympha californica*)	10	
:h (*Danaus plexippus*)		
(*D. gilippus*)		
's Checkerspot (*Euphydryas chalcedona hennei*)		
on Checkerspot (*E. chalcedona chalcedona*)		
Checkerspot (*E. editha quino*)		
s Checkerspot (*Charidryas gabbii*)		
a Checkerspot (*Thessalia leanira wrighti*)		
a Cresent (*Phyciodes mylitta*)		
d Lady (*Vanessa cardui*)		
Coast Lady (*V. annabella*)		
nia Lady (*V. viginiensis*)		
Admiral (*V. atalanta*)		
eye (*Junonia coenia*)		
ming Cloak (*Nymphalis antiopa*)		
fornia Sister (*Adelpha bredowii californica*)		
r Anglewing (*Polygonia satyrus*)		
quin's Admiral (*Basilarchia lorquini*)		
tern Tailed Blue (*Everes amyntula*)		
thern Blue (*Glaucopsyche lygdamus australis*)		
o Blue (*Celastrina ladon echo*)		
oran Blue (*Philotes sonorensis*)		
rine Blue (*Leptotes marina*)		
mon Blue (*Icaricia acmon*)		
gmy Blue (*Brephidium exilis*)		
ay Hairstreak (*Strymon melinus*)		
own Elfin (*Incisalia augustinus*)		
rplexing Hairstreak (*Callophrys perplexa*)		
n Purple Hairstreak (*Atlides halesus*)		
hr's Metalmark (*Apodemia mormo virgulti*)		
right's Metalmark (*Calephelis wrighti*)		
Funereal Dusky Wing	1	

East Otay 4-4-02

Wind- 10-12mph Temp- 69 Roger Dittrick

Sunny, clear Time: 11:25 Sally Trinka

Anise Swallowtail 1

Finish Time 1:30 Temp: 67

Wind- 10-12mph Sunny clear

East Otay Mining

Start 1:35 Temp: 67

Sunny, clear Wind- 10-12

ringlet IIII

Funereal Duskywing 1

~~Cactus Wren~~ lark ~~sp~~ sparrow

Finish 3:25 Wind 7-10

Temp 66 Sunny

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Appendix B-4

2003 QUINO CHECKERSPOT BUTTERFLY SURVEY REPORT (42-ACRE PROJECT SITE)

APPENDIX B-4

2003 QUINO CHECKERSPOT BUTTERFLY SURVEY REPORT

(42-acre project site)

2003 Report
U.S. Fish and Wildlife Service Protocol Level Presence/Absence Surveys for the Quino Checkerspot Butterfly (*Euphydryas editha quino*)

Prepared for:

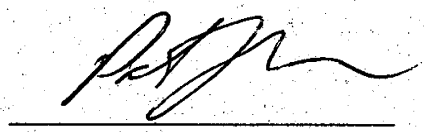
The Otay Hills Project Site

Prepared by:

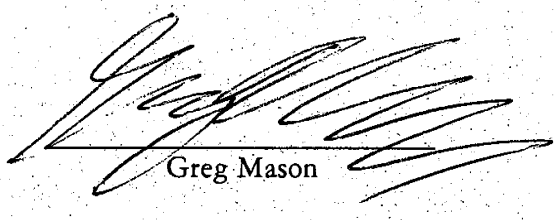
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8100 La Mesa Blvd., Suite 150
La Mesa, California 91941-6476
(Threatened/Endangered Species Permit: TE778195)

June 4, 2003

Surveys performed by:



Patrick McNicholas



Greg Mason

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INTRODUCTION

This report documents the results of HELIX Environmental Planning, Inc.'s (HELIX's) year 2003 quino checkerspot butterfly (QCB; *Euphydryas editha quino*) presence/absence surveys on the Otay Hills project site. All surveys were performed under HELIX's endangered/threatened species permit (TE778195).

The approximately 42-acre Otay Hills project site and associated access road are located in the southwest corner of San Diego County, in the southwestern foothills of the San Ysidro Mountains (Figure 1) within the U.S. Fish and Wildlife Service (USFWS) QCB Adult Focused Survey Area 1. The project area is situated east of Brown Field Airport, northeast of the end of Otay Mesa Road. The Baja California, Mexico border is located less than one mile south of the property. All of the surrounding lands are currently undeveloped.

The project site was previously surveyed for QCB in 2002 (HELIX). On-site elevations range from approximately 670 feet to 800 feet above mean sea level. Native vegetation communities, namely Diegan coastal sage scrub, dominate the project site. Land located to the west of the project site has been previously disturbed while that located to the east, north and south is mainly undeveloped land dominated by Diegan coastal sage scrub. The proposed access road is situated in an area that has been disturbed in the past by agriculture activities and is currently dominated by non-native grassland.

The following text describes survey methods, results, conclusions, field notes, maps, and species lists.

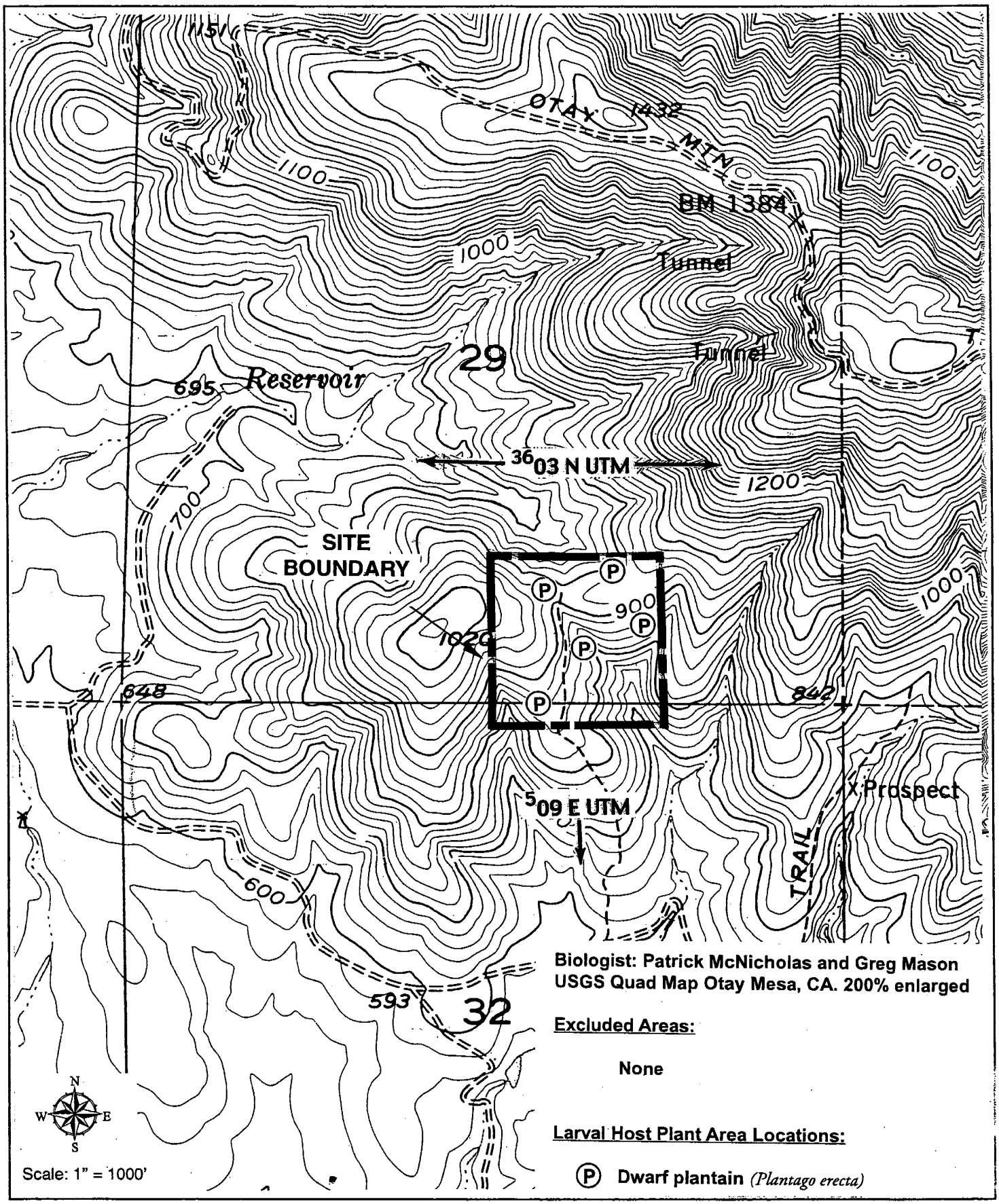
METHODS

The methods employed during the site assessment and presence/absence surveys for the QCB followed the USFWS Year 2002 Survey Protocol for the QCB (USFWS 2002). All 42 acres of the project site were assessed for potential QCB habitat (Figure 1). No significant quantities of habitat on site qualified for any of the survey exclusion categories; therefore, the entire site was surveyed.

Every effort was made to perform the presence/absence surveys during the most favorable weather conditions for QCB. Twelve presence/absence surveys were conducted between February 17 and April 29, 2003. All surveys were within the weather-condition parameters identified in the 2003 protocol. The 2003 QCB survey area was mapped on a U.S. Geological Survey quad (Figure 1). Dates, times, and weather conditions at the beginning and ending of each survey are presented in Appendix A. Copies of field notes from each survey are provided in Appendix B. Lists of butterflies observed during each survey are included in Appendix C.

RESULTS

Most of the survey area is still recovering from a large fire that swept through the area approximately six years ago. Because of this fire, and low levels of rainfall since the fire, the site largely consists of open to moderately vegetated coastal sage scrub and non-native grassland. The site supports four main vegetation communities: Diegan coastal sage scrub (including disturbed), non-native grassland,



Site Assessment and Host Plant Location Map

OTAY HILLS PROJECT

Figure 1

HELIX

mule fat scrub, and disturbed habitat (HELIX 2000). Numerous dirt roads (many of which are used by off-road vehicles and dirt-bikes) occur throughout the site.

The QCB was not observed within the project site or the access road during the survey period. Although the area received average rainfall for the first time in several years, flowering annual plants were sparse and present in small patches. QCB host plant species dwarf plantain (*Plantago erecta*) was present but in sparse small patches. Potential nectar sources that were noted include deerweed (*Lotus scoparius*), San Diego viguiera (*Viguiera laciniata*), Cryptantha (*Cryptantha* sp.), goldfields (*Lasthenia californica*) and flat-top buckwheat (*Eriogonum fasciculatum*).

CONCLUSION

The project site is located at the base of the San Ysidro foothills, near several known locations of the QCB. The closest reported sightings were on slopes located just southeast and northwest of the site. Despite the presence of QCB in the project vicinity within the past few years, no QCB were observed within the site.

The lack of the QCB within the survey area may be due to the disturbed nature of much of the habitat present. Few QCB host plants and nectar sources were observed on site in 2003. Most of the site is within a transitional zone between high quality habitat located on the surrounding hills and disturbed agricultural land to the west. While portions of the site have recovered post-fire to support moderate quality coastal sage scrub habitat, portions of the site are currently dominated by non-native grasses.

Due to the sparse patches of host plants and nectar resources, and negative results for QCB from the 2002 survey season, the site is considered to have a low to moderate potential for supporting the QCB.

REFERENCES CITED

HELIX Environmental Planning, Inc. (HELIX). 2002. Annual Report, U.S. Fish and Wildlife Service Protocol Level Presence/Absence Surveys for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). May 13.

2000. Annual Report, U.S. Fish and Wildlife Service Protocol Level Presence/Absence Surveys for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). June 9.

U.S. Fish and Wildlife Service (USFWS). 2002. Quino Checkerspot Butterfly (*Euphydryas editha quino*) 2002 Survey Protocol Information. February.

Appendix A
SUMMARY OF FIELD SURVEY CONDITIONS AND RESULTS

Site Visit #	Survey Date	Survey Time (start/end)	Weather Conditions (start /end)[1, 2]	Biologist[3]	Results
1	02/17/03	1030/1400	72° F, partly cloudy, wind gusty 72° F, Partly cloudy, wind 0-5 gusty	GM	No QCB observed
2	02/21/03	1130/1500	83° F, sunny and clear, wind 0-5 mph 74° F, sunny, wind 0-5 mph	GM	No QCB observed
3	03/05/03	1310/1630	72° F, clear and sunny, wind 3-5 mph 71° F, clear and sunny, wind 3-5 mph	GM	No QCB observed
4	03/08/03	1340/1545	72° F, clear, wind 3-7 mph 70° F, clear, wind 2-5 mph	GM/PM	No QCB observed
5	03/14/03	1330/1630	70° F, clear, wind 0-3 mph 68° F, clear, wind 0-3 mph	PM	No QCB observed
6	03/20/03	1300/1600	75° F, partly cloudy, wind 2-5 mph 68° F, partly cloudy, wind 3-5 mph	PM	No QCB observed
7	03/27/03	1130/1430	81° F, partly cloudy, wind 2-5 mph 75° F, partly cloudy, wind 0-2 mph	PM	No QCB observed
8	04/07/03	1115/1415	78° F, clear, wind 4-7 mph 86° F, clear, wind 4-7 mph	PM	No QCB observed
9	04/09/03	1015/1315	78° F, clear, wind 0-2 mph 86° F, clear, wind 2-5 mph	PM	No QCB observed
10	04/24/03	1145/1500	80° F, sparse clouds, wind 0-2 mph 82° F, sparse clouds, wind 2-5 mph	PM	No QCB observed
11	04/26/03	1130/1430	84° F, clear, wind 2-5 mph 80° F, clear, wind 5-10 mph	PM	No QCB observed
12	04/29/03	1230/1515	79° F, partly cloudy, wind 4-8 mph 74° F, clear, wind 4-8 mph	PM	No QCB observed

[1]Refer to field notes in Appendix C for specific survey information.
[2]All temperatures were taken near ground level in the shade.
[3]GM=Greg Mason; PM=Patrick McNicholas

Appendix B
COPIES OF FIELD NOTES

QUINO CHECKERSPOT GENERAL FORM

Biologist name Greg Mason

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 2/17/03 Site visit no. 1

Site name Otay Hills Project

Locality Otay Mesa

Total site acres 40 Total acres surveyed 40

Total hours of field survey 3.5 Average acres surveyed per hour 11.4

Time	Sky	Wind	Temperature F
Start 1030	Clear (Patch) Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) (8-12) 12-15 >15	72
End 1400	Clear (Patch) Overcast/Cloudy Drizzle Shower	~~<1~~ 1-3 (4-7) 8-12 12-15 >15	72
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments _____

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

#2 (1st start)

SRM-01 QCD 2/17/03 mileage

1030 / 72°F gnd / Fair / PHy / Gusty

1400 / 74°F gnd / 69°F air / PHy / 0-5 gusts

Plants ☆ in flower

Cred☆ Anscitis☆

LoMi☆ Bicorn☆

EuEs☆ ViLa☆

AsCa BuNi☆

FiCa Amelc

m-clay☆ fern

SeCi cryptomeria☆

MiAu S.O.☆

MaLa AuFa☆

LoSc☆ chamaedis

SyAp Chamech☆

FeVi · SyBe☆

DiOc☆

Lupine

PIEr☆

DiCa☆

Pinthera☆

CaCo☆

Ar☆

Alliu☆

CeMe

Birds ☆ if seen

s-ataipu

Bdwsl

WCladql

Animals other

m-Lark

Mdo

Anna's

moth

Towhee

Solitary bee

Cricket

grasshopper

Raven

coyote

bee mimic

w-F lizard

Trapdoor spider

whiptail

Most of survey area shielded from winds from west.

QUINO CHECKERSPOT GENERAL FORM

Biologist name Greg Mason

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 2/21/03 Site visit no. 2

Site name Otay Hills Project

Locality Otay Mesa

Total site acres 40 Total acres surveyed 40

Total hours of field survey 3.5 Average acres surveyed per hour 11.4

Time	Sky	Wind	Temperature F
Start 1130	(Clear) Patch Overcast/Cloudy Drizzle Shower	(<1) 1-3 4-7 8-12 12-15 >15	83
End 1500	(Clear) Patch Overcast/Cloudy Drizzle Shower	(<1) 1-3 4-7 8-12 12-15 >15	74
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments _____

Attached
- [x] List of butterflies observed
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- [ ] Field maps
- [x] Copy of original field notes
- [ ] Photographs
- [ ] Other _____

2/21/03 SRM-1 QC8 #2 mileage

Start / 1130 / 0-SMph / Sunny & clear / 85°F ground / 82° Air
End / 1500 / 0-S / Sunny / 84° ground / 72° air

Plants		Bees	Other Animals
Mammals	FiCa	S-Chip IIII	Grasshopper
Songbirds	Catch	Anize I	moth
MaLa	Jepsen's	Pale II	Ant
Pea	hardhead	S. Blue IIII	Solitary bee
Oreg	AnFa	VC Lady II	wasp/bee
CrCa	Zigadenus	Behr's IIIIII	CiCa ♂
SaAp	I. fail/bush	Can Whi Hr II	velvet beetle
ArCa	L. M	P. Lady IIII	Fly
ErFa	LuAr		Raven
HEr	SyBr		L-Bug
Prunus	Pharelia		Ca Towhee
clarus	CrMe		Dragonfly
FiCa	DeFa		M-Lark
SeCi	Angelshair		Brow
LuSe	J-Jacti		carpenter ants
DiCa	Arnica		
Prunus	Cheeseblossom		
Vi La	Salt		
Eriophyllum	Wild Cuc.		
Fr Vi			
Snowberry			

QUINO CHECKERSPOT GENERAL FORM

Biologist name Greg Mason

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 3/5/03 Site visit no. 3

Site name Otay Hills Project

Locality Otay Mesa

Total site acres 40 Total acres surveyed 40

Total hours of field survey 3.3 Average acres surveyed per hour 12.1

Time	Sky	Wind	Temperature F
Start 1310	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	72
End 1630	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 (1-3) (4-7) 8-12 12-15 >15	71
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments _____

Attached
- ☒ List of butterflies observed
- ☐ List of larval host plants, nectar plants, and plant communities observed on the site
- ☐ Field maps
- ☒ Copy of original field notes
- ☐ Photographs
- ☐ Other _____

#3

3/5/03 SRM-01 QCB

Start 1310/Sunny/70°F air/72°F grnd/3-5mph
End 1630/sunny/70°Air/71°grnd/3-5

BFlies	Plants *inflorescence	Other Animals
WC Lady III	MaLa MaMa	Raven
Comwht I	ErFa* ChaeRhiza*	hamster
B-Mark I	ArCa Chloroplia*	ApMe
P-Aud+ III	M-glory* S_Tr	solitary bee
	erod* NaPu	Crickets
	RedBrome* Mirabilis	Ca Towhee
	Zigadenus Lupine	
	Brambles Painthrush*	
	ViLa* SeAp	
	LoSc* DiCa*	
	CrCo DaPu	
	FiCa mushrooms	
	Popcorn* Allium?	
	Lepidium* Amsinkia*	
	SeCi LaCa*	
	IIEI* J-Ash*	
	Jepsonia	
	BrNi*	
	FeVi	
	CeMe	

QUINO CHECKERSPOT GENERAL FORM

Biologist name Greg Mason

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 3/8/03 Site visit no. 4

Site name Otay Hills Project

Locality Otay Mesa

Total site acres 40 Total acres surveyed 20

Total hours of field survey 2 Average acres surveyed per hour 10

Time	Sky	Wind	Temperature F
Start 1340	Clear (Patch) Overcast/Cloudy Drizzle Shower	<1 (1-3) (4-7) 8-12 12-15 >15	72
End 1545	Clear (Patch) Overcast/Cloudy Drizzle Shower	<1 (1-3) (4-7) 8-12 12-15 >15	70
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments _____

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- ☑ List of butterflies observed
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- ☐ Field maps
- ☒ Copy of original field notes
- ☐ Photographs
- ☐ Other _____

#4

3/8/03 SRM-01 QCB GM/PM

Start/1340/72° and/70° Air/3-7 (hazy) occasional busts
End/1545/70°g/70°Air/clear/2-5 occasional gusts

Bflies
Behr III
Bland's II
5-0tip)

Plants in Flower
Cryptantha Solanum
FrAr FeVi
MaLa CrCo
De SeBi
Zigadenus Grindelia
ViLa Calochortus
Lepidium SaTr
Jungle Jepsonia
evod Amole
AnFa wildpea
LaSc
Paintbrush
ScAp
FiCa
Broomrape
M-glory
PfEr
DiCa
mirabilis
Phacelia

Other Animals:
raven
harrier ♀♂
Cricket
towhee
M-lark
dragonfly
W-whiptail
WF lizard

QUINO CHECKERSPOT GENERAL FORM

Biologist name Patrick McNicholas

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 3/8/03 Site visit no. 4

Site name ~~East Otay Mining Site~~ Otay Hills Project

Locality Otay Mesa

Total site acres 40 Total acres surveyed 20

Total hours of field survey 2 Average acres surveyed per hour 10/hr

Time	Sky	Wind	Temperature F
Start 1:40	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 (1-3) (4-7) 8-12 12-15 >15	72°F
End 3:45	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 (1-3) (4-7) 8-12 12-15 >15	70°F
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments CSS

Attached
- ☑ List of butterflies observed
- ☐ List of larval host plants, nectar plants, and plant communities observed on the site
- ☐ Field maps
- ☑ Copy of original field notes
- ☐ Photographs
- ☐ Other _____

#9

Quad Sumo 6m pm 3/8/03

Start	1340	725 gud	70° am	3-7 mi/hr gusts
End	1545	705	74° am	clear 2-5 mi/hr gusts

Habitats	Plants	Animals
Burned hill	Eriodictyon sp.	Silvery sp. on flowers
Burned woodland	Eri Fas	Lizards
Unburned slope	mod loss of big	
Burned ridge	AA and Quercus	Feather grass
	Virgin Crypt sp.	Hedgehog
	Lepto sp.	
	Zeja	
	Bromus sp.	
	Fra	
	Lotus sp.	
	mod sp.	
	mod woody	
	AA and	
	open area	
	Rhus sp.	
	Rhus trilobata	
	Ber pumi (Wilcox)	
	Hyp sp.	
	Blue sage	
	Ivesia sp.	
	Mimulus guttatus	
	Plantago sp.	

QUINO CHECKERSPOT GENERAL FORM

Biologist name Patrick McNicholas

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 3/14/03 Site visit no. 5

Site name Otay Hills Project

Locality Otay Mesa

Total site acres 40 Total acres surveyed 40

Total hours of field survey 3 Average acres surveyed per hour 13.3

Time	Sky	Wind	Temperature F
Start 1:30	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 (1-3) 4-7 8-12 12-15 >15	70
End 4:30	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 (1-3) 4-7 8-12 12-15 >15	> 68
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments CSS

Attached
- [x] List of butterflies observed
- [ ] List of larval host plants, nectar plants, and plant communities observed on the site
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- [x] Copy of original field notes
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QCB #5 3/14/03 SR (M-O)

70°F clear / 0-3 mph / 1:30 pm

68°F clear 0-3 mph 4:30 pm

Birds Flocks	Plants	Animals
Common raven 1111	Red osier 4 Lupine 4	Grey tree
Song Sparrow 1111	Grasses & herbs	squirrel
Yellow-rumped warbler 1111	Evil Fire Weed 4	Long tailed
Golden crowned sparrow 111	Cow parsnip 3	rabbit
Red winged blackbird	Ferns, spruce	
Pine siskin 111	moss, lichen	
	Hypochaeris	
	Cow parsnip 3	
	Willow herb	
	horsetail	
	Cleavers 4	
	Arnica 2	
	Aster sp.	
	Violet sp. 4	
	Bluegrass sp. 5	
	Cinquefoil sp. 4	
	Fireweed	
	Blue daisy	
	Salal sp.	
	Indian paint brush	
	Groundsel	
	Dandelion sp.	

Large Plane pulled adult & trash pulled Cessna type

QUINO CHECKERSPOT GENERAL FORM

Biologist name Patrick McNicholas

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 3/20/03 Site visit no. 6

Site name Otay Hills Project

Locality Otay Mesa

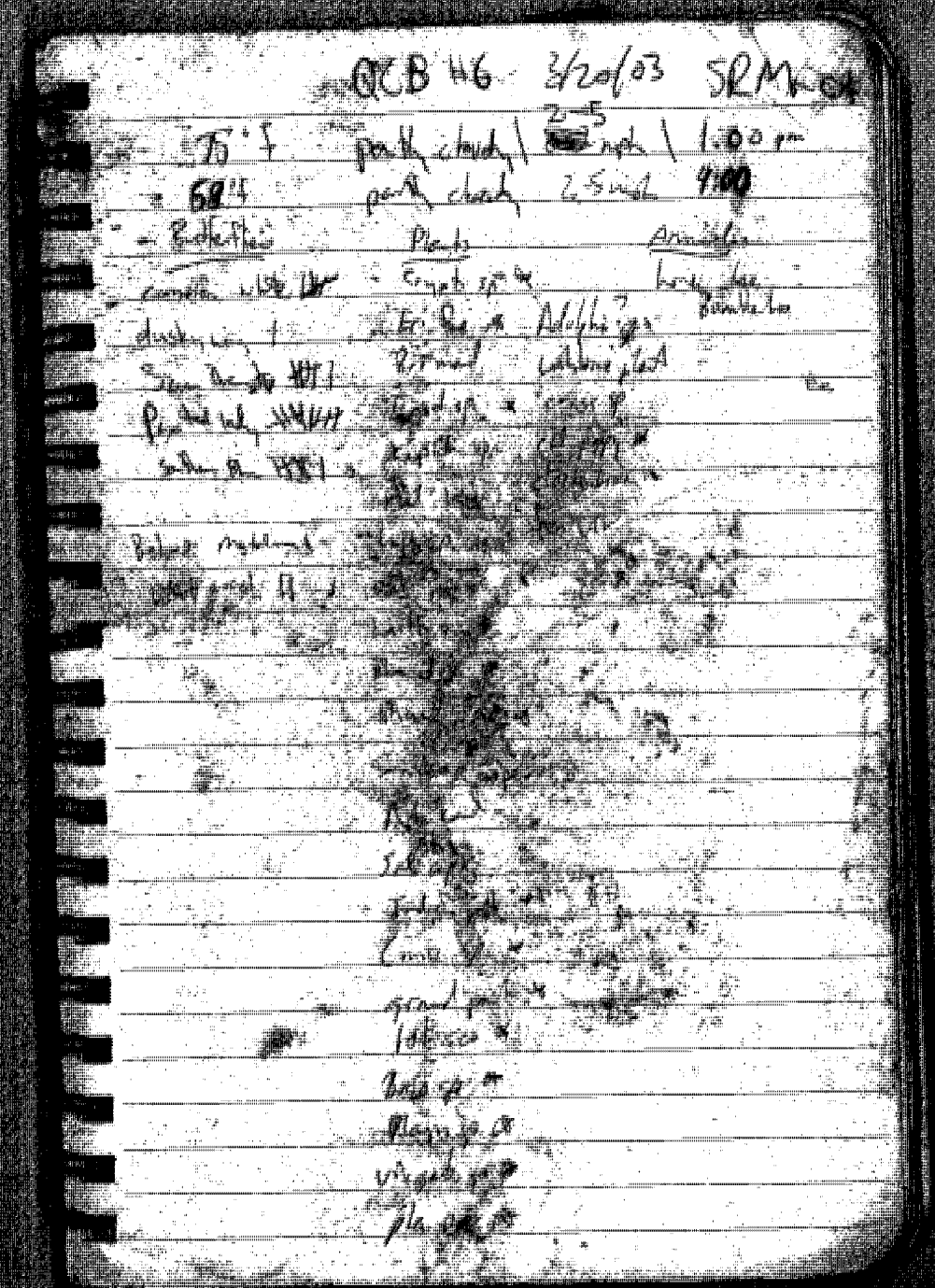
Total site acres 40 Total acres surveyed 40

Total hours of field survey 3 Average acres surveyed per hour 13.3

Time	Sky	Wind	Temperature F
Start 1:00	Clear (Patch) Overcast/Cloudy Drizzle Shower	<1 (1-3) (4-7) 8-12 12-15 >15	75
End 4:00	Clear (Patch) Overcast/Cloudy Drizzle Shower	<1 (1-3) (4-7) 8-12 12-15 >15	68
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments CSS

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- [x] List of butterflies observed
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- [ ] Field maps
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QCB 46 3/20/03 SRM

QUINO CHECKERSPOT GENERAL FORM

Biologist name Patrick McNicholas

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 3/27/03 Site visit no. 1

Site name Otay Hills Project

Locality Otay Mesa

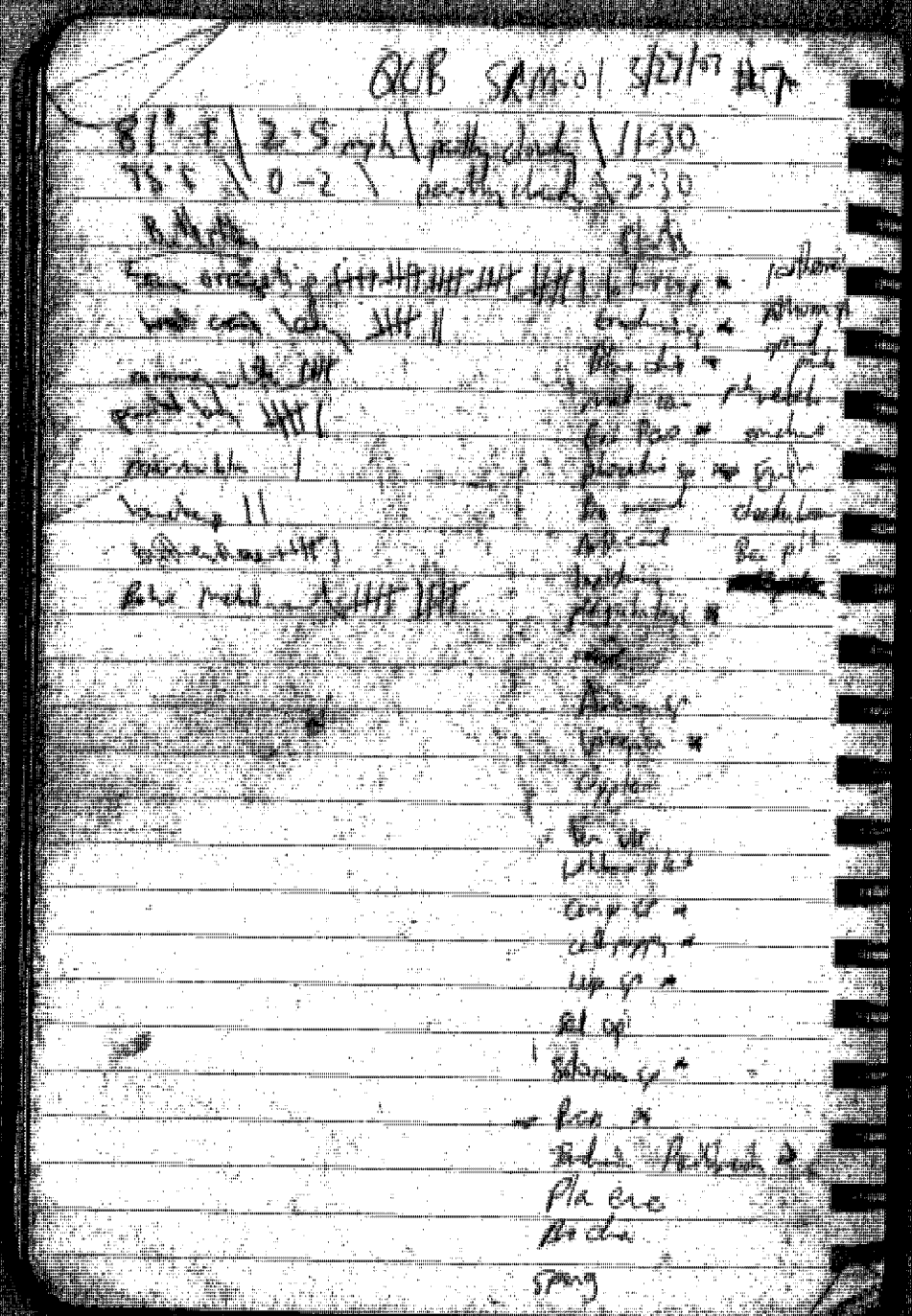
Total site acres 40 Total acres surveyed 40

Total hours of field survey 3 Average acres surveyed per hour 13.3

Time	Sky	Wind	Temperature F
Start 11:30	Clear (Patch) Overcast/Cloudy Drizzle Shower	<1 (1-3) 4-7 8-12 12-15 >15	81
End 2:30	Clear (Patch) Overcast/Cloudy Drizzle Shower	<1 (1-3) 4-7 8-12 12-15 >15	75
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

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QUINO CHECKERSPOT GENERAL FORM

Biologist name Patrick McNicholas

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 4/7/03 Site visit no. 8

Site name Otay Hills Project

Locality Otay Mesa

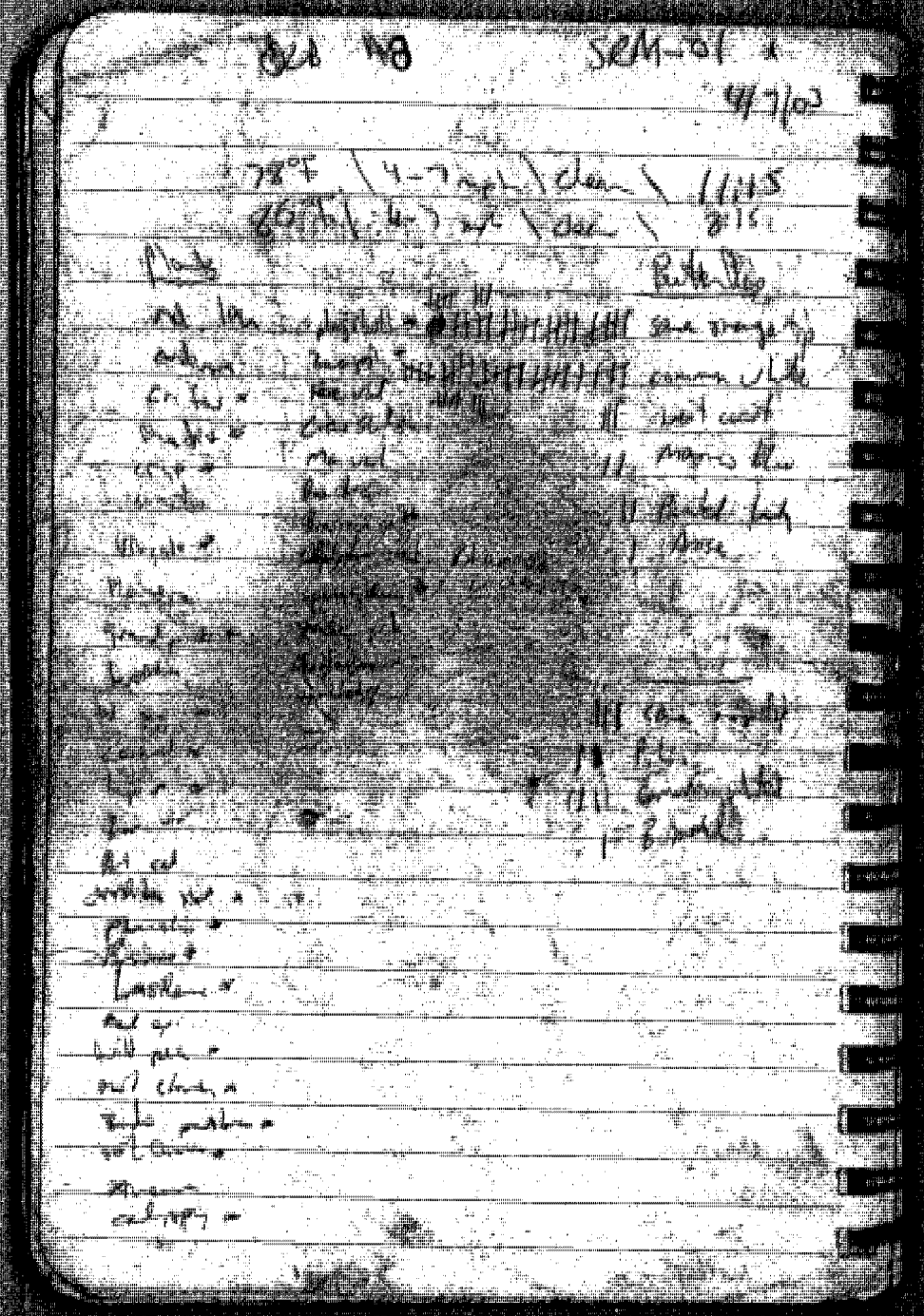
Total site acres 40 Total acres surveyed 40

Total hours of field survey 3 Average acres surveyed per hour 13.3

Time	Sky	Wind	Temperature F
Start 11:15	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	78
End 2:15	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	86
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments C55

Attached
- [X] List of butterflies observed
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- [ ] Field maps
- [X] Copy of original field notes
- [ ] Photographs
- [ ] Other _____



QUINO CHECKERSPOT GENERAL FORM

Biologist name Patrick McNicholas

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 4/9/03 Site visit no. 9

Site name Otay Hills Project

Locality Otay Mesa

Total site acres 40 Total acres surveyed 40

Total hours of field survey 3 Average acres surveyed per hour 13.3

Time	Sky	Wind	Temperature F
Start 10:15	(Clear) Patch Overcast/Cloudy Drizzle Shower	(<1) 1-3 4-7 8-12 12-15 >15	78
End 1:15	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 (1-3) (4-7) 8-12 12-15 >15	86
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

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- [x] List of butterflies observed
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QCB #9
5'2" m=01
7/9/03
787 | 0-2 mph | clear | 10:15 am
665 | 2-5 mph | clear | 1:15 pm

QUINO CHECKERSPOT GENERAL FORM

Biologist name Patrick McNicholas

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 4/24/03 Site visit no. 10

Site name Otay Hills Project

Locality Otay Mesa

Total site acres 40 Total acres surveyed 40

Total hours of field survey 3.25 Average acres surveyed per hour 12.3

Time	Sky	Wind	Temperature F
Start 1145	Clear (Patch) Overcast/Cloudy Drizzle Shower	(<1) 1-3 4-7 8-12 12-15 >15	80
End 1500	Clear (Patch) Overcast/Cloudy Drizzle Shower	<1 (1-3) (4-7) 8-12 12-15 >15	82
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments _____

Attached
- ☒ List of butterflies observed
- ☐ List of larval host plants, nectar plants, and plant communities observed on the site
- ☐ Field maps
- ☒ Copy of original field notes
- ☐ Photographs
- ☐ Other _____

OAB SRM-01 #10 4/24/03
Eastbay mtn. site

11:45 am / sparse clouds / 0-2 mph / 80°F
2:00 pm / 2-5 mph / 82°F

Plants

Lupine sp.
Brodiaea
Clarkia breweri
Solanum sp.
Arctostaphylos sp.
Wild pea
Wild cucumber
Sedum sp.
Thistle
Bunchgrass
Lomatium sp.
Phacelia sp.
Arenaria sp.
Gilia sp.
California poppy
Brassica sp. (mustard)
Mirabilis sp.
Fescue sp.
Clover
Soapplant
Oak sp.
Ceanothus sp.
Plantago sp.
Wild pink
Sedum sp.

Butterflies

Common white
Sara orangetip
Western pygmy blue
Painted lady
Anise swallowtail
Mourning cloak
Buckeye

Top copper

Erebia pawnia sp.

Erebia pawnia sp.

Chlosyne gabbii

Colias sp.

Gary's Toyota binoculars

QUINO CHECKERSPOT GENERAL FORM

Biologist name Patrick McNicholas

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 4/26/03 Site visit no. 11

Site name Otay Hills Project

Locality Otay Mesa

Total site acres 40 Total acres surveyed 40

Total hours of field survey 3 Average acres surveyed per hour 13.3

Time	Sky	Wind	Temperature F
Start 1130	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	84
End 1430	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	80
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments _____

Attached
- ☒ List of butterflies observed
- ☐ List of larval host plants, nectar plants, and plant communities observed on the site
- ☐ Field maps
- ☒ Copy of original field notes
- ☐ Photographs
- ☐ Other _____

SRM-2 QZB #11 4/26/03

84°F	clear	2-5 mph	11:30 am
60°F	clear	5-10	2:30pm

Plants

Pantheon Plain

Oak Forb
Evening Primrose
Blue Dicks
Lupine sp.
Clover sp.
Mint family
[redacted]
Ash sp.
Coast live oak
Deer Grass
Bee weed
Ceanothus sp.
Arroyo Willow
Rose sp.
Coyote bush
Golden Yarrow
California poppy sp.
Lemon mint
Fescue
Brome sp.
Cal poppy
mint sp.
Sage sp.
Phacelia sp.
Wild pea
Pitcher sage
Bee plant
Tarweed family

Pantheon Plain
common white
Red Ld
III Sea Onion
III wild cucumber
II Red maid

QUINO CHECKERSPOT GENERAL FORM

Biologist name Patrick McNicholas

HELIX permit no. TE778195[redacted]

Subconsultant permit no. _____

Survey date 4/29/03 Site visit no. 12

Site name Otay Hills Project

Locality Otay Mesa

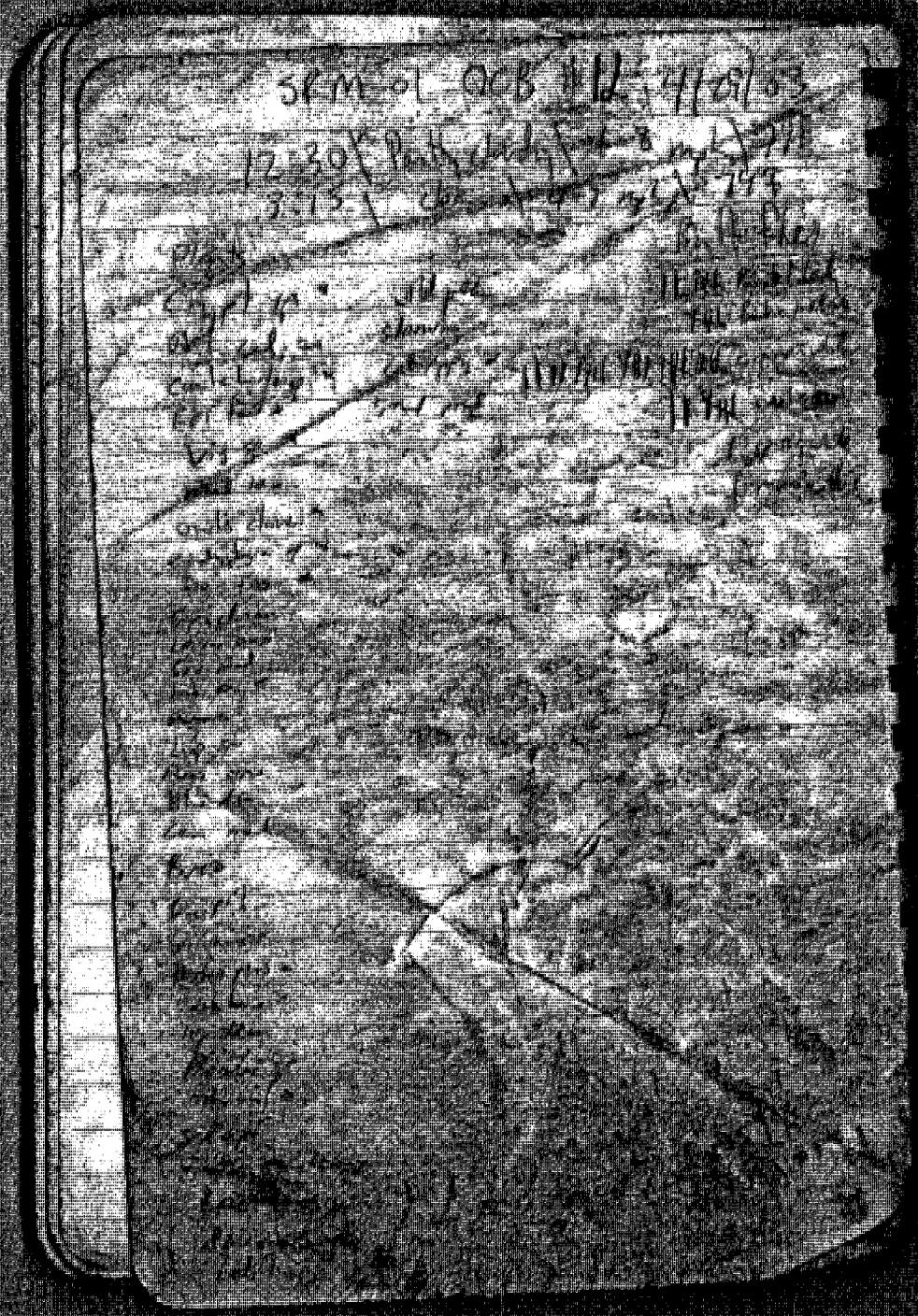
Total site acres 40 Total acres surveyed 40

Total hours of field survey 2.75 Average acres surveyed per hour 14.5

Time	Sky	Wind	Temperature F
Start 1230	Clear (Patchy) Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	79
End 1515	(Clear) Patch Overcast/Cloudy Drizzle Shower	<1 1-3 (4-7) 8-12 12-15 >15	74
Start	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	
End	Clear Patch Overcast/Cloudy Drizzle Shower	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed/commments _____

Attached
- ☑ List of butterflies observed
- ☐ List of larval host plants, nectar plants, and plant communities observed on the site
- ☐ Field maps
- ☑ Copy of original field notes
- ☐ Photographs
- ☐ Other _____



Appendix C
LISTS OF BUTTERFLIES OBSERVED DURING EACH SURVEY

Butterflies Observed (larvae or adults) SRM-01 Butterfly Summary	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)	✓	
Anise Swallowtail (*P. zelicaon*)	✓	
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	✓	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Ponila protodice*)	✓	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	✓	
West Coast Lady (*V. annabella*)	✓	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)	✓	
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	✓	
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)	✓	
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	✓	
Wright's Metalmark (*Calephelis wrighti*)		

Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	3	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)		
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
West Coast Lady (*V. annabella*)	1	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	1	
Wright's Metalmark (*Calephelis wrighti*)		

Butterflies Observed (larvae or adults) SRM-01 #2 2/21/03	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)	2	
Anise Swallowtail (*P. zelicaon*)	1	
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	8	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Ponila protodice*)	2	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	4	
West Coast Lady (*V. annabella*)	2	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	4	
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Gri Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	8	
Wright's Metalmark (*Calephelis wrightii*)		

Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	1	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vanessa cardui*)	3	
West Coast Lady (*V. annabella*)	3	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Gri Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	1	
Wright's Metalmark (*Calephelis wrighti*)		

Butterflies Observed (larvae or adults) SRM-01 #4 3/8/03	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	3	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	1	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylina Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	4	
West Coast Lady (*V. annabella*)		
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	5	
Wright's Metalmark (*Calephelis wrighti*)		

Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	11	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogcia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	18	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	3	
West Coast Lady (*V. annabella*)	1	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	4	
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	4	
Wright's Metalmark (*Calephelis wrighti*)		
Dusk wing	1	

Butterflies Observed (larvae or adults) SRM-01 F/O 3/20/03	Number	Comments
Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	6	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	5	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vanessa cardui*)	10	
West Coast Lady (*V. annabella*)	2	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	6	
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	1	
Wright's Metalmark (*Calephelis wrighti*)		
Dusky Wing	1	

Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	21	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	5	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylina Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	6	
West Coast Lady (*V. annabella*)	7	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)	2	
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	6	
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)	1	
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairsreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	10	
Wright's Metalmark (*Calephelis wrighti*)		

Butterflies Observed (larvae or adults) SRM-01 #8 4/7/03	Number	Comments
Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	1	
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	28	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	33	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Crescent (*Phyciodes mylitta*)		
Painted Lady (*Vanessa cardui*)	2	
West Coast Lady (*V. annabella*)	3	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)	2	
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)		
Wright's Metalmark (*Calephelis wrighti*)		

Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	9	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	50+	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)		
West Coast Lady (*V. annabella*)		
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)	1	
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Gri Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	9	
Wright's Metalmark (*Calephelis wrighti*)		

Butterflies Observed (larvae or adults) SRM-01 #10 4/24/03	Number	Comments
Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)	3	
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	13	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	18	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	17	
West Coast Lady (*V. annabella*)	12	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)	1	
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)	1	
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)		
Wright's Metalmark (*Calephelis wrightii*)		

Butterflies Observed (larvae or adults) DKMV-01 n 11 4/24/05	Number	Comments
Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	3	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	33	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	8	
West Coast Lady (*V. annabella*)	4	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Grt Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	2	
Wright's Metalmark (*Calephelis wrightii*)		

Butterflies Observed (larvae or adults) SRM-01 #12 4/29/03	Number	Comments
Pale Swallowtail (*Papilio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)		
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	24	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)		
Gabb's Checkerspot (*Charidryas gabbii*)		
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	7	
West Coast Lady (*V. annabella*)	7	
Virginia Lady (*V. virginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)		
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)	1	
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)		
Gri Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	5	
Wright's Metalmark (*Calephelis wrighti*)		

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Appendix B-5

2003 QUINO CHECKERSPOT BUTTERFLY SURVEY REPORT (269-ACRE MITIGATION PARCEL)

APPENDIX B-5

2003 QUINO CHECKERSPOT BUTTERFLY SURVEY REPORT

(269-acre mitigation parcel)

2003 Report
U.S. Fish and Wildlife Service Protocol Level
Habitat Assessment Surveys for the
Quino Checkerspot Butterfly
(*Euphydryas editha quino*)

Prepared for:

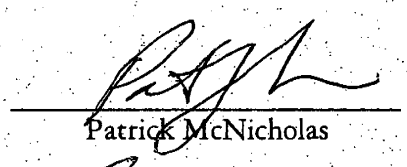
The Otay Hills Mitigation Parcel

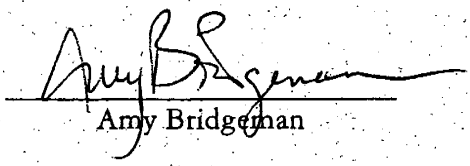
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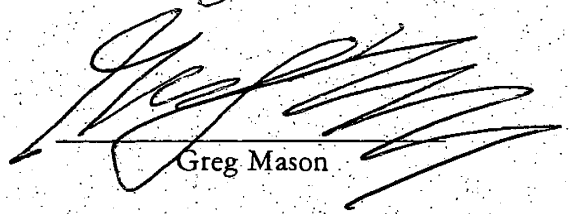
HELIX Environmental Planning, Inc.
8100 La Mesa Blvd., Suite 150
La Mesa, California 91941-6476
(Threatened/Endangered Species Permit: TE778195)

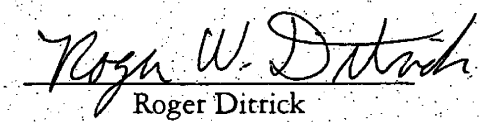
June 4, 2003

Surveys performed by:


Patrick McNicholas


Amy Bridgeman


Greg Mason


Roger Ditrick

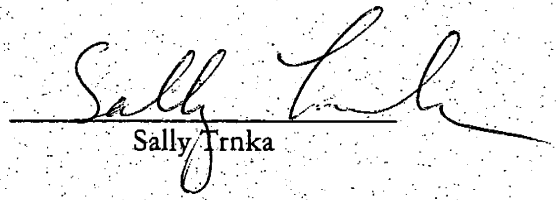

Sally Trnka

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Letter	Title
A	Summary of Field Survey Conditions and Results
B	Copies of Field Notes
C	List of Butterflies Observed During Surveys

FIGURE

Number	Title	Follows Page
1	Quino Checkerspot and Host Plant Location Map	1

INTRODUCTION

This report documents the results of HELIX Environmental Planning, Inc.'s (HELIX's) year 2003 quino checkerspot butterfly (QCB; *Euphydryas editha quino*) habitat assessment surveys on the Otay Hills mitigation parcel. All surveys were performed under HELIX's endangered/threatened species permit (TE778195).

The approximately 269-acre Otay Hills mitigation parcel is located in the southwest corner of San Diego County in the southwestern foothills of the San Ysidro Mountains within the U.S. Fish and Wildlife Service (USFWS) QCB Adult Focused Survey Area 1 (Figure 1). The Baja, California Mexico border is located less than one mile south of the project site.

The project site was previously surveyed for QCB in 2001 (HELIX 2001). On-site elevations range from approximately 670 feet to 800 feet above mean sea level. Native vegetation communities, namely Diegan coastal sage scrub, dominate the site. All of the surrounding lands are currently undeveloped, although the land to the west of the project site was previously disturbed. The mitigation survey site consists of two parcels: east (166.92 acres) and west (101.61 acres).

METHODS

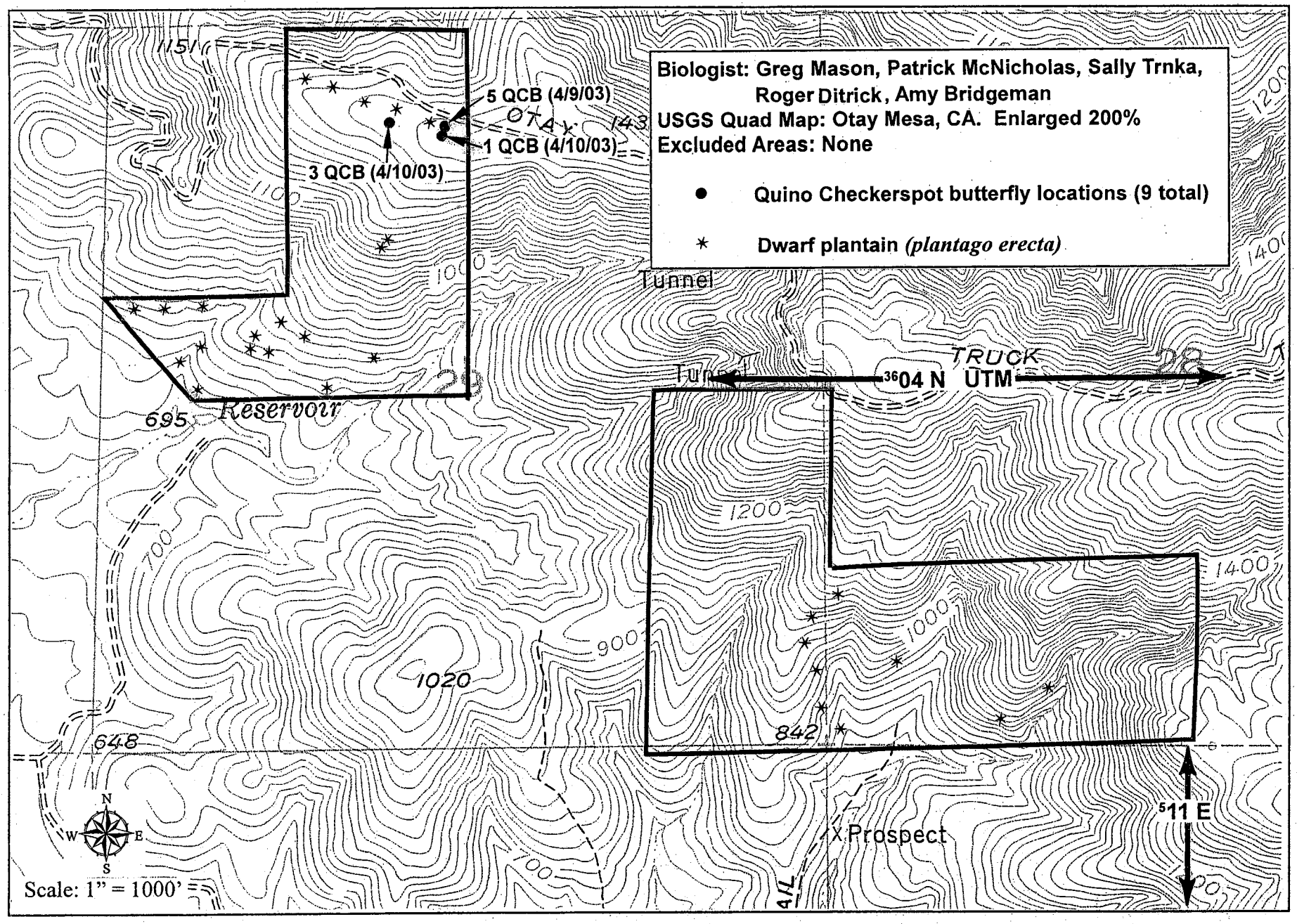
The methods employed during the habitat assessment surveys for the QCB did not follow the USFWS Year 2002 Survey Protocol for the QCB; rather, the amount of time spent surveying areas within the mitigation survey site was based on the quality of potential habitat and site accessibility. All 269 acres of the project site were assessed for potential QCB habitat. No habitat on site qualified for any of the survey exclusion categories; therefore, the entire site was surveyed.

Three presence/absence surveys for the QCB were conducted on April 7, 9, and 10, 2003. All surveys were within the weather-condition parameters identified in the 2002 protocol (USFWS 2002). The 2003 QCB habitat assessment survey area was mapped on a U.S. Geological Survey quad (Figure 1). Survey biologists, dates, and weather conditions during each survey are presented in Appendix A. Copies of field notes from each survey are provided in Appendix B. A list of all butterflies observed is included in Appendix C.

RESULTS

The site largely consists of open to moderately vegetated Diegan coastal sage scrub and non-native grassland and supports five main vegetation communities: Diegan coastal sage scrub (including disturbed), non-native grassland, mule fat scrub, chaparral, and disturbed habitat (HELIX 2000). Numerous dirt roads (many of which are used by off-road vehicles and dirt bikes) occur throughout the site.

Nine QCB were observed within the western parcel along a dirt road just south of the Otay Mountain Truck Trail (Figure 1). The sightings occurred within sparse chaparral containing dwarf plantain (*Plantago erecta*) and popcorn flower (*Cryptantha* sp.).



Quino Checkerspot and Host Plant Location Map

OTAY HILLS MITIGATION PARCEL

HELIX

Figure 1

Despite receiving average rainfall for the first time in several years, flowering annual plants were sparse and present only in small patches. QCB host plant species dwarf plantain was present but in sparse small patches. Potential nectar sources that were noted include deerweed (*Lotus scoparius*), San Diego viguiera (*Viguiera laciniata*), popcorn flower, and ground pink (*Linanthus dianthiflorus*).

CONCLUSION

The project site is located near several known QCB locations. Nine QCB were observed within the western parcel of the mitigation survey site. In 2001 surveys, five QCB were observed in this same area (HELIX 2001). Although no QCB were observed within the eastern parcel during this year's surveys, six QCB were observed in 2001, and other reported sightings have occurred just south of the eastern parcel in the past (HELIX 2001).

The northern portion of the western parcel is considered to have high potential for QCB due to the observation of fifteen QCB and availability of host plants and nectar resources. The western portion of the eastern parcel is considered to have moderate to high potential for supporting QCB due to past observations of QCB in the area and the availability of nectar sources and host plant patches. The southern portion of the western parcel and the eastern portion of the eastern parcel have a moderate potential because they contain steep slopes and limited nectar sources.

REFERENCES CITED

HELIX Environmental Planning, Inc. (HELIX). 2001. Quino Checkerspot Butterfly (*Euphydryas editha quino*) Survey Report for The East Otay Project Potential Mitigation Site. May 31.

2000. Annual Report, U.S. Fish and Wildlife Service Protocol Level Presence/Absence Surveys for the Quino Checkerspot Butterfly (*Euphydryas editha quino*). June 9.

U.S. Fish and Wildlife Service (USFWS). 2002. Quino Checkerspot Butterfly (*Euphydryas editha quino*) 2002 Survey Protocol Information. February.

Appendix A
SUMMARY OF FIELD SURVEY CONDITIONS AND RESULTS

Site Visit #	Survey Date	Biologist	Results
1	04/07/03	Greg Mason Patrick McNicholas Amy Bridgeman	No QCB observed
2	04/09/03	Roger Ditrick	5 QCB observed
3	04/10/03	Sally Trnka Roger Ditrick Amy Bridgeman	4 QCB observed

Appendix B
COPIES OF FIELD NOTES

4/7/03 QCB, Mining mitigation site

start: 1130/clear/0-5/

end:

B flies	Plants *in Flower	other Animals
Cabbage |||||	Avena ✓ EsCa* SeCi ✓	Ca Quail
P. swallow	DiCa* EsCa* Matricaria ✓	m-lark
O-Tip |||||	MaLa* Asplen* MaMa ✓	wraith
P-tail |||	BiNi* SaMu ✓ TeatleCharms ✓	Raven
M-mark ||||||	Lomatium LuBi* HeAr ✓	coyote scat
Pearl crescent		R-brome Lotus sp* Fern	fly
S-blue ||||	EuCa* Cryptantha* MaVu	Ant
F-dusky |||	ArCa Desp fountain	Swallowtail
VC lady ||||	EuFa* SeBi Paintbrush	bee mimic
P lady ||||	Cone* DuPu CaEx*	Danaus sp.
	LuPe PIE* GnCa*	Ladybug
	daddy MaPa Allium*	Tarantula hawk
	Peg* NaPu AnAr*	dragonfly
	CrCa Pharelia* Chia	moth
	SiGa* G-plant* FeVi*	sphinx moth?
	Yucca* Stilcattail* Aruda	W. Fence
	erod* AdFa FiCa*	
	SaTr Matchbrush Rosaria Weed Chas	
	HyGl EuAp Solanum	
	LoSc* PhCr	
	LeNi* Ceanothus* purple	
	ViLa* Oxalis*	
	Mirabilis* Manzanita	

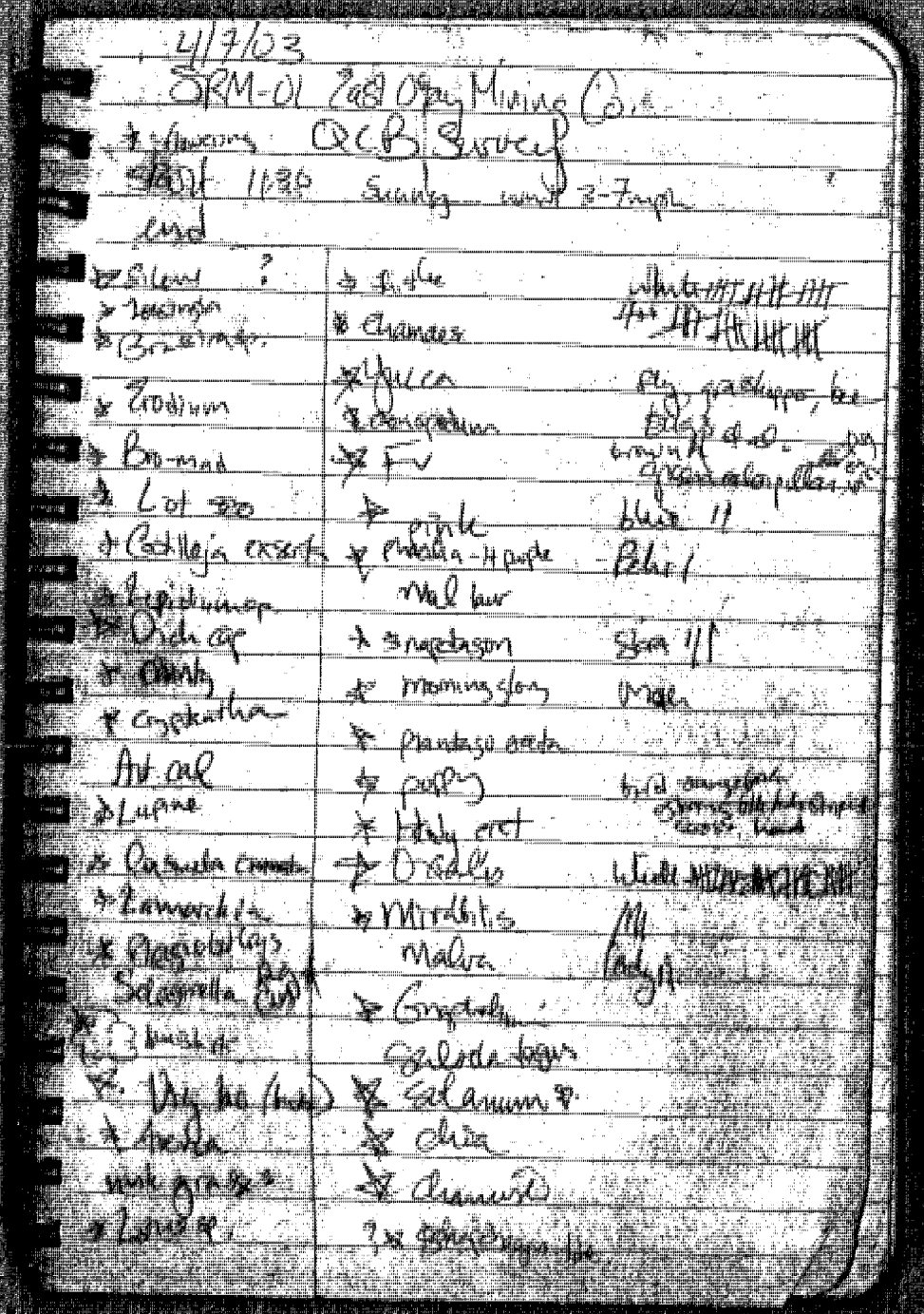
BCA HB / H/A SEM-01

4/7/20

78°F | 4-7 mph | clear | 1/1.5 @15:

Body | Butterflies

All | Wings | Size range typ
Antennae | Length | common white
Eyes | Color | Wing count
Head | Color | Margin color
Thorax | Color | Forewing length
Abdomen | Color | Hindwing length
Wings | Pattern | Flight
Forewings | Color | Behavior
Hindwings | Pattern | Nectaring
Legs | Color | Host plant
Tarsi | Color | Egg color
Claws | Shape | Egg count
Proboscis | Length | Egg location
Coiled | Color | Larval color
Uncoiled | Pattern | Larval length
Palps | Color | Pupa color
Fuzz | Color | Pupa location
Body | Color | Pupa shape
Abdomen | Color | Chrysalis color
Segments | Color | Chrysalis length



4/7/03
SRM-01 2nd Org Mining Class
Flowering QCB Survey
Start 11:30 Sunny wind 3-7mph
end

Clover ?
Lespedeza
Bermuda
Zoysia
Bermuda
Lot 30
Centipede except
Dichondra
Chloris
Cynodon
Ant Col
Lupine
Crotalaria
Lamarckia
Plantago
Salsola
Vicia
Avena
wild grass
Lolium

Thistle
Amaranth
Yucca
Eriogonum
Fw
pink
Phacelia - H purple
Mal bur
Sphaeralcea
Morning glory
Plantago erecta
poppy
Htchy ect
Oxalis
Mirabilis
Malva
Gnaphalium
Salsola tragus
Salanum sp.
chia
Amaranth
? Eriodictyon

white
Apr
Blue
Yellow
Blue
Yellow
Blue
Yellow

4/7/03 cont.

- yellow flowers
- Cornflower
- yarrow
- Fuzzy grass-like flowers / leaves
- Lamb's ear
- Scabious
- Scabious mid
- Lady's mantle with flowers

Sara III
Wh ~~IIII IIII IIII~~
IIII
Lady IIII

Yarrow
Sara ~~IIII IIII~~ IIII

pendulous III
Honeysuckle
England

220
W part of Mid Survey Area 3:00 – 3:45
Sow Fly + Cast ex low, bad
Pink/Cyclamen/Lg pk
Magnolia
Pelargoniums (leaves)

White IIII IIII IIII
11
Honeysuckle
Sara IIII
Rose II
Lily
Mallow
Osmocote mix II
ZBT
Exotics + Fuchs
Sara IIII

Roger W. Dittrick

4-9-03 East Otay.

Top of Ridge Start: 10:05 End. 4:00 pm

Temp St 63°F End Temp: 70 wind: 0-5

QCB |||| 5-8 end

Behrs Metalmark |||| |||| ||

Common White |||| |||| |||| |

Barrel Cactus |||| |||

Sara's O.T. |||| |||| |||| |||| |

Anise S.T. |||| |||

Pale S.T. |||| ||||

West. Tiger S.T. ||||

Gabbs: ||

Sphinx Moth

Painted Lady |||| |

Roger W. Ditrick

4-10-03 East Otay

Top of Area

Time: 9:30 End: 3:10

Temp: 62°F Wind - 0-5 End 5-7

End Temp: 72°

Saras OT	𝍸 𝍸 𝍸 𝍸 𝍸
Painted Lady	𝍸 ||
X Quino	|
Common White	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸
W. C. Lady	𝍸 |||
Behr's Metalmark	𝍸 |
● Barrell Cactus	𝍸 𝍸 |||

East Otay Mitigation Areas

04/10/03

Sally Trnka

rare plants to watch for:

barrel cactus

Dudleya variegata

start: 9:30am / 62° F in shade / clear & sunny / 0-2 mph

end: 2:45pm / clear & sunny / 2-7 mph / 76° F

common wht |||||	lark sparrow (red/wht "silk head")	rufous-sided towhee
W coast lady ||||	raven	kangaroo rat (photo)
side-blotched lizard		Bell's sparrow |||||	wht crwn sparrow
honeybee		sphinx moth	coyote scat
Sara's o-tip |||||	CA towhee	golden eagle
Anna's hum		lady 1	
Painted lady ||	horned liz.	

Cup sp.	Uro lin	Yucca whi	Vig lac
Bras. sp.	Erod cic	woolly blue-curls	(hem sp. present - not in flow yet)
Sal lev	Cry sp * 2	Cal sp1	
Lot sco	Dic cap	Eri fas	Ant. sp.
Hel sco	Cean oli (purple)	Caly mac	Esch. cal
	Mal fas	Ade fas	Cean white thyrsus
Matilija poppy (not in bloom)		Silene sp.	
~~grass~~ ground pl. (few senescing)		~~little light pink~~ Sol. sp	Acna. oli.
	Ortha pur	Pha cic	Pla ere
Sisy bel			

9/10/03 Stream at Basalt Mining Co. DMH

QCB

Stn 1 GOLD Sunny 3-5 62°F Open

End Siding " " 74°F

Barnacle	Dryptantha	aniso /
Gladiolus	Sm mint green	white
Lilac	Phlox	
Lupine	mallow	grass hopper
Red maple	poppy	bucking III
Cornel	bldg CQ	
Erica, fine	Plagiobothrys	Lady bug
Pacific CQ	Y-plant	
Hemlock	white dendrite - blue/green	Lupine flying wasp
Lupine		Moth 2 GJ
Hot SCD	Bur clover on sheet	orange cup
Cocklebur		
Thistle	Mimulus	Bees /
Calypso	purple aster	ladybug
Hot CQ	Lotus sp.	Pacific Fir Fossil
Crane comm	Hemple phacelia	Elk plant (running)
Sol Cain / Gr	Skunkweed	Primrose
Ranunculus	Monkeyflower	blue
Lupine sp	Chamaesyce	
Juncus sp		
Hairy lia / sol		NOTE - Elevation in yellow
Digtac		Rusty patches

4/10/03 SRM-01 OCB, cont.

- Sissy Boll
- Lollium – [illegible]
- Rumex crisp
- Brachiaria
- Asteraceae
- Medicago-gelb
- Vicia
- Trifolium cont
- Salsify
- Sonchus asper
- Leguminosae

Wiese ||||
Acker ||||
Beleg

Lady ||

Sara ||||
Dandelion |||
Cottontail ||
Dragonfly
Blue
Schmetterling Eggs
Raupennest (Zelt)
Caddisfly on Acer
Beetle on Salix
W. meadowlark
funeral

OCB III = (3)

- Chamise
- Melilotus
- Medicago
- Juncus
- Quercus?
- Clarkia
- Lotus purshianus
- Goldenrod

Artemisia ||
cattle ||||
Zelt
perplexing
Lady ||
orange fly ||
parted lady

4/10/03 SRM-01 OCB, cont. ||

- Clarkia
- Lupinus polyphyllus (5 petals)
- Salvia
- Centaurea

White ||||

Sara ||

Lady ||
parted lady

Appendix C
LIST OF BUTTERFLIES OBSERVED DURING SURVEYS

OTAY HILLS MITIGATION PARCEL

Butterflies Observed (larvae or adults)	Number	Comments
Pale Swallowtail (*Paplio eurymedon*)	1	
Anise Swallowtail (*P. zelicaon*)	6	
West Tiger Swallowtail (*P. rutulus*)		
Sara Orangetip (*Anthocharis sara*)	173	
Elder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)		
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	307	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)		
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Chalcedon Checkerspot (*E. chalcedona chalcedona*)		
Quino Checkerspot (*E. editha quino*)	15	
Gabb's Checkerspot (*Charidryas gabbii*)	1	
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)		
Painted Lady (*Vannessa cardui*)	24	
West Coast Lady (*V. annabella*)	34	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)	3	
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	7	
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)	6	
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)		
Perplexing Hairstreak (*Callophrys perplexa*)	4	
Grt Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	25	
Wright's Metalmark (*Calephelis wrighti*)		

Appendix B-6

2008 QUINO CHECKERSPOT BUTTERFLY SURVEY REPORT

APPENDIX B-6

2008 QUINO CHECKERSPOT BUTTERFLY SURVEY REPORT

2008 Report
U.S. Fish and Wildlife Service Protocol Level
Presence/Absence Surveys for the
Quino Checkerspot Butterfly
(*Euphydryas editha quino*)

Prepared for:

Otay Hills
(HELIX Job No. SRM-01)

Prepared by:

HELIX Environmental Planning, Inc.
7578 El Cajon Blvd., Ste. 200
La Mesa, CA 91941
(Threatened/Endangered Species Permit: TE778195)

June 5, 2008

Surveys performed by:

Doug Allen

Robert Hogenauer

Greg Mason

Amy Mattson

Stacy Nigro

Brian Parker

Kathy Pettigrew

Dale Ritenour

Sally Trnka

Alison Varner

Jasmine Watts

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INTRODUCTION

HELIX Environmental Planning, Inc. (HELIX) performed presence/absence surveys for the federally listed endangered quino checkerspot butterfly (*Euphydryas editha quino*; QCB) on the Otay Hills site. The approximately 687.7-acre study area is located in southwestern San Diego County at the edge of Otay Mesa approximately 1 mile north of the United States/Mexico border, 1 mile east of the Otay Mesa border crossing, and east of the intersection of Otay Mesa and Alta roads. It is located in Township 18 South, Range 1 East, Sections 19, 28, 29, and 32 on the San Bernardino Meridian U.S. Geological Survey 7.5-minute Otay Mesa quadrangle map (Figure 1). The study area includes the proposed mining areas (Parcels A and E and land west of Parcel A) and five mitigation parcels (Parcels B, C, D, F, and G; Figure 2).

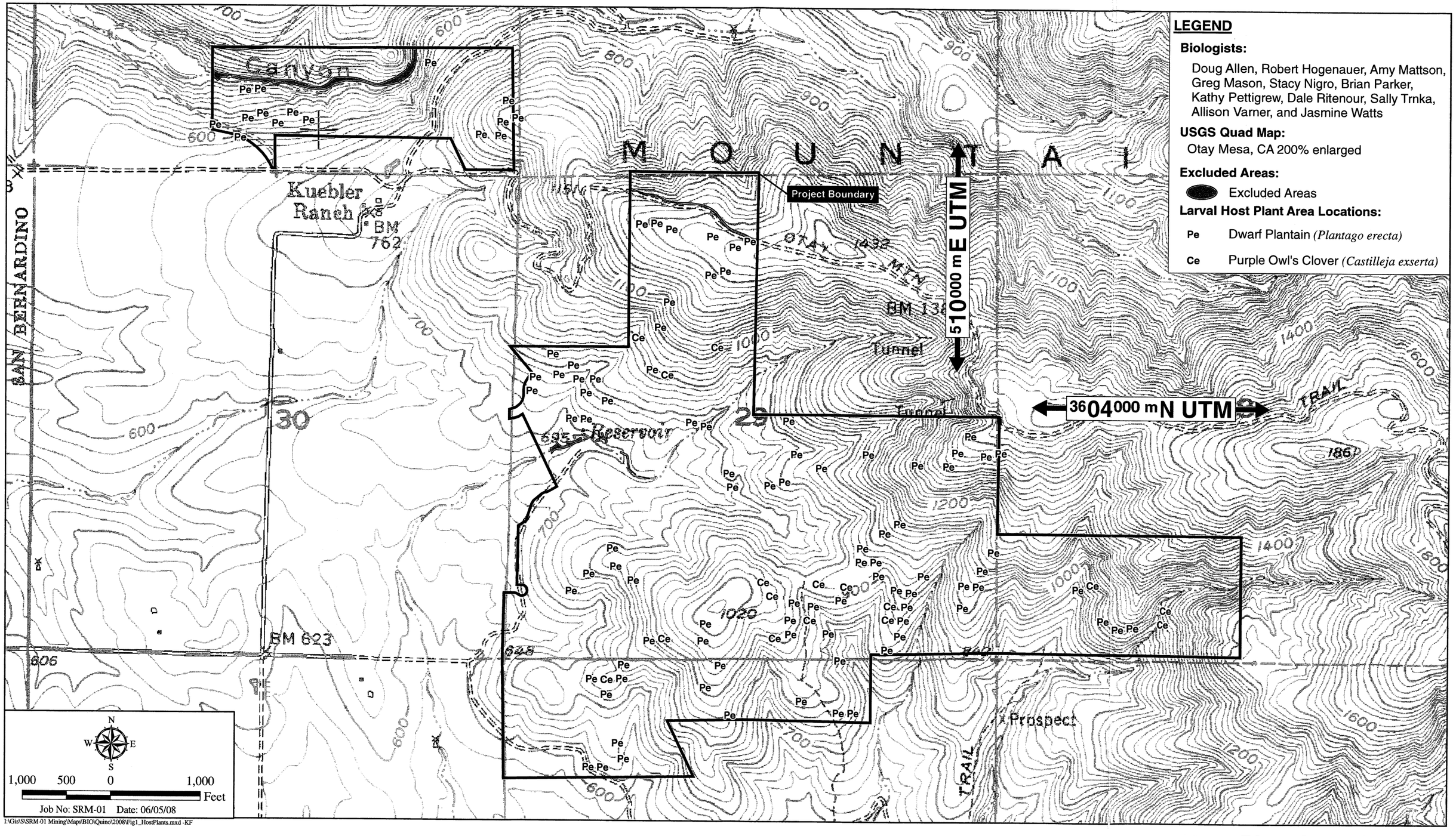
Elevation within the study area varies, but generally ranges from approximately 400 to 1,300 feet above mean sea level, with lower elevations occurring in the southwestern portion of the site and higher elevations occurring in the north and northeast. Soils within the study area consist almost entirely of San Miguel-Exchequer rocky silt loam (9 to 70 percent slopes), which is typically found in mountainous uplands and consist of silt loams with a clay subsoil. A small portion of the site contains Huerhuero loam (9 to 70 percent slopes), which typically consists of loams with a clay subsoil and developed from sandy marine sediments (Bowman 1973).

The study area was burned during a fire that swept through the area in 1997; however, vegetation shows little sign of fire and has recovered, and most of the site has moderate to high shrub cover. As a general characterization of the study area, the south-facing slopes support thinner soils and are more sparsely vegetated. The north-facing slopes have deeper, heavier soils, support more vegetation, and support the majority of the sensitive annual plant species. Openings in the vegetative canopy are common, especially on the south-facing slopes. The study area was not burned during the October 2007 Witch Creek or Harris fires.

In addition to natural habitat, numerous dirt roads cross the property. These roads are frequently used legally by Border Patrol vehicles and illegally by off-highway vehicles (OHVs), especially dirt bikes. Border Patrol trucks and OHVs regularly cross the site during daily patrols, and dozens of illegal dirt bikes and OHVs have been observed within the study area during site visits. In addition, San Diego Gas & Electric maintains access roads and transmission facilities within the study area. These activities degrade the biological resources within the study area, but not to an extent that appreciably decreases their value.

METHODS

The presence/absence surveys were performed under HELIX's Threatened/ Endangered species permit (TE778195) and generally followed the guidelines outlined in the U.S. Fish and Wildlife Service (USFWS) Year 2002 Survey Protocol for the QCB (USFWS 2002a) and QCB Survey Recommendations (USFWS 2002b). Numerous biological surveys of the entire 687.7-acre site have been conducted since 2000, and protocol QCB surveys were conducted on portions of the site in 2000, 2001, 2002, and 2003. Because the site has been frequently surveyed, an updated habitat assessment was not deemed necessary. The only areas that were excluded from the survey area were wetland/riparian vegetation communities (mule fat scrub, cismontane alkali marsh, southern willow

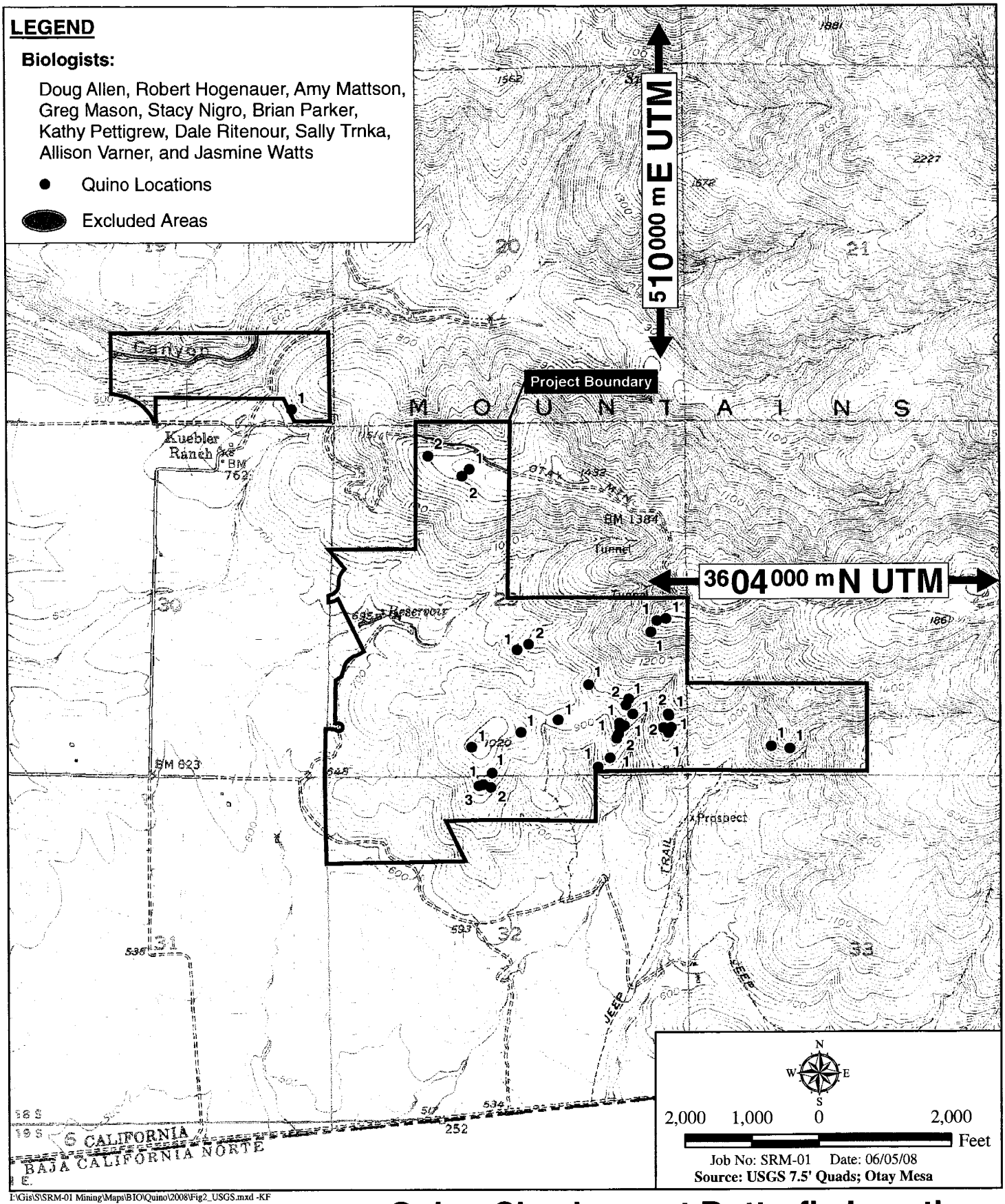


Host Plant Location Map

OTAY HILLS

Figure 1

HELIX



I:\Gis\S\SRM-01 Mining\Maps\BIO\Quino\2008\Fig2_USGS.mxd -KF

Quino Checkerspot Butterfly Locations

OTAY HILLS

HELIX

Figure 2

scrub, and tamarisk scrub) and developed areas; in total, 683.1 acres were surveyed, while the remaining 4.6 acres were excluded from the survey area (Figure 1).

The Otay Hills site contains 22 locations that the USFWS has identified as survey plots. The survey plots represent 50 meter radius circles (approximately 1.9 acres), centered on locations where the QCB has been reported since it was listed as an endangered species on January 16, 1997. The center, north, south, east, and west points on each circle were identified using a global positioning satellite (GPS) receiver and marked with stakes or flagging. All markers were removed following the final site visit.

Survey plots were visited at least once and no more than twice per week between the hours of 0930 and 1430. Each survey plot was surveyed for 15 minutes. Surveyors recorded the number of adult QCB observed on the plot and the quadrant in which each was observed. The percent bare ground (having no vegetative debris or litter), percent shrub cover, and percent of the plot that was recently burned were visually estimated and recorded. Butterflies, dominant shrubs, and nectar resources were noted. All data collected for the survey plots were recorded on data sheets provided by the USFWS.

The entire Otay Hills site, including all 21 survey plots, was surveyed three times during the QCB flight season between March 19 and April 11, 2008 according to the schedule in Appendix A. Because of the large survey area and variable weather conditions, each survey was spread over several days. Given the large number of adult QCB observed during the first three weeks, it was determined that additional surveys of the entire site were unnecessary and could harm the habitat. Following coordination with Alison Anderson of the USFWS, only the survey plots were surveyed during subsequent visits, such that each survey plot was surveyed five times.

Nomenclature for this report is taken from Holland (1986) for vegetation communities, Hickman (1993) for plants, and field guides by Emmel and Emmel (1973), Glassberg (2001), Opler and Wright (1999), and Pyle (1995) for butterflies.

RESULTS

Vegetation within the approximately 683.1-acre survey area is predominated by Diegan coastal sage scrub, which covers approximately 59 percent of the study area. Other vegetation communities within the study area include southern interior cypress forest, native grassland, maritime succulent scrub, coastal sage-chaparral scrub, chamise chaparral, southern mixed chaparral, scrub oak chaparral, non-native grassland, and disturbed habitat. In general, the habitat at the top of hills, along ridgelines, and adjacent to dirt trails is more open than that along the hillsides and lowlands.

Two QCB host plant species, dwarf plantain (*Plantago erecta*) and purple owl's-clover (*Castilleja exserta*), were mapped within the survey area. Dwarf plantain was abundant during the survey period, and was observed in much of the open sage scrub and chaparral on site, particularly on hilltops and adjacent to roads. Purple owl's clover was less abundant and was observed commonly on the hillsides in the central and eastern portions of the site.

Potential QCB nectar sources were abundant on site. California buckwheat (*Eriogonum fasciculatum*), popcorn flower (*Cryptantha* sp. and *Plagiobothrys* sp.), and bluedicks (*Dichelostemma capitatum*) occurred throughout much of the site. Goldfields (*Lasthenia* sp.) and ground pink (*Linanthus dianthiflorus*) were abundant in sage scrub openings and on hilltops in the early portion of the survey period, but declined

during later weeks. Additionally, scattered patches of onion (*Allium* sp.) and goldenstar (*Muilla* sp.) occurred in several areas on site.

A total of 4,981 butterfly observations were made during the three surveys of the entire project site, representing at least 28 species. A total of 78 adult QCB observations were made, of which it is estimated 45 were unique individuals (Figures 2 and 3)

Copies of QCB survey forms and field notes are included in Appendix B, and copies of USFWS survey plot data sheets are included in Appendix C. Because so many QCB were observed on site (often multiple butterflies at the same time), not all could be photographed. As a result, this report includes representative photos of the QCB observed rather than photos of each observed QCB (Appendix D).

DISCUSSION

Year-to-year variation in the QCB population on the site is high. Although survey areas have differed each year, the number of QCB observed in repeat-survey areas has varied greatly. Only one QCB was observed during HELIX surveys of Parcel A and the area west of Parcel A in 2000; 13 QCB were observed during HELIX surveys of Parcels B through E in 2001; approximately 51 QCB were observed within the current study area by EDAW surveys of most of the site (excluding Parcels B through D) in 2001; and nine QCB were observed during HELIX surveys of Parcels B through E and part of Parcel A in 2003.

During the current year, Parcel A supported fewer individuals (and those found were located in a smaller area) than in 2001 and no individuals were observed in the western half of the parcel or in the area west of Parcel A. A far greater number of QCB were observed in Parcel B than during previous years. This may be a result of heavy use by Border Patrol vehicles in Parcel A as opposed to Parcel B (there are fewer and less used roads in Parcel B, and the habitat along the roads in Parcel B appears to be less disturbed). Additionally, during the current year's surveys, two QCB were observed in Parcel D, an area where none had previously been detected.



Quino and Host Plant Locations

OTAY HILLS

HELIX

Figure 3

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2002b. Quino Checkerspot Butterfly 2002 Survey Recommendations. February 12.

Appendix A
SURVEY INFORMATION

Survey 1 Information					
DATE	BIOLOGIST	TIME* (start/end)	WEATHER CONDITIONS		RESULTS†
			Start	end	
March 19, 2008	Doug Allen	1110/1630	high haze, 66.7°F, wind 0-2 mph	20% clouds, 71°F, wind 2-3 mph	22 QCB‡
	Robert Hogenauer	1045/1520	5% clouds, 69°F, wind 2 mph	10% clouds, 74°F, wind 7-13 mph	2 QCB
	Amy Mattson	1130/1535	0% clouds, 68°F, wind 0-3 mph	0% clouds, 63°F, wind 0-3 mph	8 QCB
	Stacy Nigro	1130/1605	0% clouds, 68°F, wind 0-3 mph	0% clouds, 68°F, wind 2-5 mph	3 QCB
	Brian Parker	1100/1630	0% clouds, 67°F, wind 0-2 mph	20% clouds, 70°F, wind 2-3 mph	7 QCB
	Kathy Pettigrew	1300/1600	0% clouds, 68°F, wind 2-10 mph	0% clouds, 65°F, wind 2-7 mph	No QCB Observed
	Sally Trnka	1130/1540	0% clouds, 68°F, wind 0-3 mph	5% clouds, 65°F, wind 2-7 mph	8 QCB
	Alison Varner	1100/1600	0% clouds, 67°F, wind 0-3 mph	slight haze, 73°F, wind 3-6 mph	8 QCB
	Jasmine Watts	1110/1630	0% clouds, 66.7°F, wind 0-2 mph	0% clouds, 71°F, wind 3-6 mph	8 QCB
March 21, 2008	Doug Allen	1230/1700	0% clouds, 74.5°F, wind 3-5 mph	0% clouds, 67.0°F, wind 4-6 mph	4 QCB
	Robert Hogenauer	1045/1530	0% clouds, 72°F, wind 2-4 mph	0% clouds, 84°F, wind 6-8 mph	1 QCB
	Brian Parker	1230/1700	0% clouds, 75°F, wind 1-3 mph	0% clouds, 67°F, wind 4-5 mph	3 QCB
	Kathy Pettigrew	1535/1700	0% clouds, 74°F, wind 2-5 mph	0% clouds, 78°F, wind 1-4 mph	3 QCB
	Sally Trnka	1545/1655	0% clouds, 74°F, wind 2-5 mph	0% clouds, 75°F, wind 0-3 mph	2 QCB
	Jasmine Watts	1210/1700	0% clouds, 75°F, wind 1-3 mph	0% clouds, 67°F, wind 4-5 mph	No QCB Observed
March 22, 2008	Greg Mason	0930/1400	0% clouds, 78°F, wind 0-1 mph	0% clouds, 84°F, wind 0-5 mph	No QCB Observed

*Total survey time = 66.5 hours; survey rate = 10.31 acres per hour

†A total of 74 QCB were observed during this survey

‡QCB=Quino checkerspot butterfly

Appendix A (cont.)
SURVEY INFORMATION

Survey 2 Information					
DATE	BIOLOGIST	TIME* (start/end)	WEATHER CONDITIONS		RESULTS†
			Start	end	
March 26, 2008	Doug Allen	1030/1545	5% clouds, 80°F, wind 0-2 mph	20% clouds, 78°F, wind 6-8 mph	No QCB‡ Observed
	Robert Hogenauer	1030/1545	5% clouds, 80°F, wind 1-3 mph	0% clouds, 78°F, wind 8-12 mph	No QCB Observed
	Brian Parker	1100/1620	0% clouds, 73°F, wind 3-6 mph	0% clouds, 74°F, wind 3-7 mph	No QCB Observed
	Dale Ritenour	1100/1620	0% clouds, 73°F, wind 3-6 mph	0% clouds, 74°F, wind 3-7 mph	No QCB Observed
March 27, 2008	Doug Allen	0955/1455	5% clouds, 66°F, wind 0-3 mph	20% clouds, 82°F, wind 3-7 mph	1 QCB
	Robert Hogenauer	0955/1455	5% clouds, 66°F, wind 1-3 mph	0% clouds, 82°F, wind 4-7 mph	1 QCB
	Amy Mattson	0955/1455	0% clouds, 62°F, wind 0-4 mph	0% clouds, 69°F, wind 0-4 mph	1 QCB
	Stacy Nigro	0955/1455	0% clouds, 62°F, wind 0-4 mph	slight haze, 69°F, wind 0-6 mph	1 QCB
	Brian Parker	1015/1530	0% clouds, 63°F, wind 2-5 mph	0% clouds, 68°F, wind 3-5 mph	No QCB Observed
	Dale Ritenour	1100/1500	0% clouds, 69°F, wind 0-3 mph	0% clouds, 75°F, wind 0-6 mph	No QCB Observed
	Sally Trnka	1015/1530	0% clouds, 63°F, wind 0-2 mph	0% clouds, 68°F, wind 3-5 mph	No QCB Observed
	Alison Varner	1100/1500	0% clouds, 69°F, wind 0-3 mph	0% clouds, 75°F, wind 0-6 mph	No QCB Observed

*Total survey time = 57.4 hours; survey rate = 11.90 acres per hour
†A total of 4 QCB were observed during this survey
‡QCB=Quino checkerspot butterfly

Appendix A (cont.)
SURVEY INFORMATION

Survey 3 Information					
DATE	BIOLOGIST	TIME* (start/end)	WEATHER CONDITIONS		RESULTS†
			Start	end	
April 4, 2008	Amy Mattson	1455/1630	0% clouds, 70°F, wind 0-3 mph	20% clouds, 70°F, wind 0-3 mph	No QCB‡ Observed
	Stacy Nigro	1420/1535	% clouds, 71°F, wind 4-7 mph	0% clouds, 67°F, wind 4-7 mph	No QCB Observed
	Brian Parker	1420/1535	0% clouds, 71°F, wind 5-7 mph	0% clouds, 67°F, wind 5-7 mph	No QCB Observed
	Dale Ritenour	1500/1635	5% clouds, 70°F, wind 2-5 mph	0% clouds, 78°F, wind 0-4 mph	No QCB Observed
	Sally Trnka	1420/1535	0% clouds, 71°F, wind 5-7 mph	0% clouds, 67°F, wind 2-7 mph	No QCB Observed
	Alison Varner	1420/1535	0% clouds, 71°F, wind 5-7 mph	0% clouds, 67°F, wind 3-5 mph	No QCB Observed
	Jasmine Watts	1455/1630	0% clouds, 70°F, wind 1-3 mph	conditions not available	No QCB Observed
April 7, 2008	Amy Mattson	1230/1500	20% clouds, 73°F, wind 6-10 mph	0% clouds, 69.8°F, wind 2-6 mph	No QCB Observed
		1530/1635	5% clouds, 68°F, wind 7-11 mph	30% clouds, 65°F, wind 6-8 mph	No QCB Observed
	Brian Parker	1235/1645	30% clouds, 65°F, wind 7-10 mph	30% clouds, 65°F, wind 6-8 mph	No QCB Observed
	Dale Ritenour	1230/1515	15% clouds, 70°F, wind 6-10 mph	0% clouds, 68°F, wind 2-4 mph	No QCB Observed
		1530/1645	0% clouds, 68°F, wind 7-11 mph	0% clouds, 68°F, wind 6-8 mph	No QCB Observed
	Sally Trnka	1235/1645	30% clouds, 65°F, wind 7-10 mph	30% clouds, 65°F, wind 6-8 mph	No QCB Observed
April 10, 2008	Stacy Nigro	1045/1445	0% clouds, 67°F, wind 1-4 mph	0% clouds, 77°F, wind 3-4 mph	No QCB Observed
	Brian Parker	1045/1445	0% clouds, 67°F, wind 1-4 mph	0% clouds, 77°F, wind 2-4 mph	No QCB Observed
	Sally Trnka	1045/1445	0% clouds, 67°F, wind 1-4 mph	0% clouds, 77°F, wind 2-4 mph	No QCB Observed
April 11, 2008	Robert Hogenauer	1000/1145	0% clouds, 78°F, wind 1-5 mph	0% clouds, 86°F, wind 12-15 mph	No QCB Observed
		1220/1525	0% clouds, 86°F, wind 7-12 mph	0% clouds, 90°F, wind 4-7 mph	No QCB Observed
	Brian Parker	1030/1500	0% clouds, 78°F, wind 6-8 mph	0% clouds, 88°F, wind 3-5 mph	No QCB Observed
	Dale Ritenour	1000/1145	0% clouds, 78°F, wind 1-5 mph	0% clouds, 85°F, wind 12-15 mph	No QCB Observed
		1220/1525	0% clouds, 86°F, wind 7-13 mph	0% clouds, 86°F, wind 4-7 mph	No QCB Observed
	Sally Trnka	1030/1500	0% clouds, 78°F, wind 6-8 mph	0% clouds, 88°F, wind 3-5 mph	No QCB Observed
	Alison Varner	1250/1525	0% clouds, 86°F, wind 3-12 mph	0% clouds, 86°F, wind 4-7 mph	No QCB Observed
	Jasmine Watts	0950/1210	0% clouds, 79°F, wind 0-2 mph	0% clouds, 86°F, wind 4-7 mph	No QCB Observed
		1215/1420	0% clouds, 86°F, wind 3-12 mph	0% clouds, 89F, wind 4-9 mph	No QCB Observed

*Total survey time = 54.3 hours; survey rate = 12.58 acres per hour
†No QCB were observed during this survey
‡QCB=Quino checkerspot butterfly

Appendix B
COPIES OF SURVEY FORMS AND FIELD NOTES

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Doug Allen **Date:** 3/19/08

Site Name: Otay Hills **Site Visit No:** 1

Acres Surveyed _____ **Survey Time:** 5.33 **Acres per Hour:** _____

Other Surveyors Present: Jasmine Watts

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1110	66.7	0-2	High haze
End	1630	71	2-3	20%
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	4	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)	22	bramble (perplexing) hairstreak (*C. dumetorum affinis*)	2
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)	4	west coast lady (*Vanessa annabella*)	5
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	3
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	6	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	3	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	6	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	4
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	14	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**59**	**Column Subtotal**	**14**
		Total	**73**

SRM-01 D Allen
3/29/08 J Watts

START: 1410 66.7°F Clear High Haze 0-2
Stop: 1630 71.°F 20% cc 2-3

QCB = 2 10:20 Survey Plot 37
Slightly faded - wing white
1-Fresh

GPS #9 2 QCB DA WP 24
GPS #10 1 QCB 1159 25
SADT :: WCLA ::
PRMS :: CAFL ::
PALM :: GACH ::
BEMM :: PYBI ::
CAWH ::
FUDW ::
GPS 11 2♂ 1+ HW Fattened 26
GPS 12 1♂ OFF-Site?
GPS 13 2♂
GPS 14 1
GPS 15 1
GPS 16 1
FPS 17 1

3/11 8

Butterflies observed

Cowh MABI

Blue sp ACBJ

ReAd

SAOT

FUDW

PALA

WCLA

Fire Break Flora

Popcan sp

Erodium cic

L. Decolar

Lup. Sp

Brassica sp

Amsinkia

Lotus sp.

Red maids

S. gallica

2006 Quino Checkerspot Butterfly Survey Form

Surveyor: Rob H **Date:** 3/19/08

Site Name: SRM-01 OTAY Hills **Site Visit No:** 1

Acres Surveyed _____ **Survey Time:** 4hr 35min **Acres per Hour:** _____

Other Surveyors Present: 4,58

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover
Start	1045	69	2	5%
End	1520	74	7 avg 13 peak	10%
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (*Plantago erecta*)		popcorn flower (*Cryptantha* / *Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*))		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	X
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	No.	Butterfly Species	No.
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	2	brown elfin (*Callophrys augustinus*)	1
Quino checkerspot (*Euphydryas editha quino*)	2	bramble (perplexing) hairstreak (C. *dumetorum affinis*)	5
chalcedon checkerspot (*E. chalcedona chalcedona*)	2	gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)	1	California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	1
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)	11	painted lady (*V. cardui*)	4
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	3
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	14	pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	2
Sara orangetip (*Anthocharis sara sara*)	12	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	7	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)	1	common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	12	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	13	funereal duskywing (*Erynnis funeralis*)	4
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	6	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	3
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		unidentified moth	30+
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal		**Column Subtotal**	
		Total	

	Name: Rob H	Date: 3/19/08
Butterflies Observed (larvae or adults)	**Number**	**Comments:**
Pale Swallowtail (*Paplio eurymedon*)		
Anise Swallowtail (*P. zelicaon*)		
West Tiger Swallowtail (*P. rutulus*)	11	
Sara Orangetip (*Anthocharis sara*)	𝍸 𝍸 11	
Felder's Orangetip (*A. cethura*)		
Cabbage White (*Artogeia rapae*)	1	
Sleepy Orange (*Eurema nicippe*)		
Common White (*Pontia protodice*)	𝍸 𝍸 11	
California Dogface (*Zerene eurydice*)		
Alfalfa Butterfly (*Colias eurytheme*)		
Harford's Sulfur (*C. harfordi*)		
California Ringlet (*Coenonympha californica*)	𝍸 11	
Monarch (*Danaus plexippus*)		
Queen (*D. gilippus*)		
Henne's Checkerspot (*Euphydryas chalcedona hennei*)		
Calcedon Checkerspot (*E. chalcedona chalcedona*)	11	
Quino Checkerspot (*E. editha quino*)	11	
Gabb's Checkerspot (*Charidryas gabbii*)	11	
Leanira Checkerspot (*Thessalia leanira wrighti*)		
Mylitta Cresent (*Phyciodes mylitta*)	1	
Painted Lady (*Vannessa cardui*)	1111	
West Coast Lady (*V. annabella*)	1	
Virginia Lady (*V. viginiensis*)		
Red Admiral (*V. atalanta*)		
Buckeye (*Junonia coenia*)		
Mourning Cloak (*Nymphalis antiopa*)		
California Sister (*Adelpha bredowii californica*)		
Satyr Anglewing (*Polygonia satyrus*)		
Lorquin's Admiral (*Basilarchia lorquini*)		
Western Tailed Blue (*Everes amyntula*)		
Southern Blue (*Glaucopsyche lygdamus australis*)	𝍸 𝍸 1	
Echo Blue (*Celastrina ladon echo*)		
Sonoran Blue (*Philotes sonorensis*)		
Marine Blue (*Leptotes marina*)		
Acmon Blue (*Icaricia acmon*)		
Pygmy Blue (*Brephidium exilis*)		
Gray Hairstreak (*Strymon melinus*)		
Brown Elfin (*Incisalia augustinus*)	1	
Perplexing Hairstreak (*Callophrys perplexa*)	𝍸	
Grt Purple Hairstreak (*Atlides halesus*)		
Behr's Metalmark (*Apodemia mormo virgulti*)	𝍸 1	
Wright's Metalmark (*Calephelis wrightii*)		
California Patch (*Chlosyne californica*)		
Funereal Duskywing (*Erynnis funeralis*)	1111	
Blue	𝍸 𝍸 1111	
White	𝍸 𝍸 111	
Lady	111	
check skip	111	

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Amy Mattson **Date:** 03/19/2008

Site Name: Otay Hills (SRM-01) **Site Visit No:** 1

Acres Surveyed _____ **Survey Time:** 4.1 hours 4.08 **Acres per Hour:** _____

Other Surveyors Present: Robert Hogenaur, Stacy Nigro, Brian Parker, Kathy Pettigrew, Sally Trnka, Alison Varner

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	11:30	68	0-3	0%
End	15:35	63	0-3	0%
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	√	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	√
purple owl's clover (*Castilleja exserta*)	√	goldfields (*Lasthenia* spp.)	√
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	√
		ground pink (*Linanthus dianthiflorus*)	√

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)	8	bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	5
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)	1	painted lady (*V. cardui*)	1
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	2
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	1	pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	2	anise swallowtail (*P. zelicaon*)	5
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	1	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	9	funereal duskywing (*Erynnis funeralis*)	3
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	23	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**45**	**Column Subtotal**	**16**
		Total	**61**

3.19.08 SRM-01 Otay Hills

~Area 3 AM, ST, SN, RH, BP, AV, RP

Start : 11:30A ; 0-3mph, hazy, 0% clds, 68°F

end : 3:35P , 0-3mph, hazy 0% clds, 65°F

* = fwr

* Eriogo fas / bot / mosc	Malacothamnus Lessingia	wasp, fly moth
* Cryptantha	Crus con	
* Silgal	Lotus sp.	dragonfly
* Mirab calif	* Vis lac	
Pitcairnia mal laur	* Caly mac	SD blue
Chlorogalum	* Bro mat.	lady, long
* Brassica sp.	Fer vir	lady, lg
* Lasgal	Selaginella bis	
Ant cal	* Ese calif	lady
* Eri fas	Filago cal	bumblebee
* Dic capit	Bro hor	BTJR
* Lathyrus	* Clarkia	
* Lu scop	* Indian paintbrush	white
* Avena	* Perezia * Phacelia cosmea	Bee
* Hyp glab	4pm - Lindo Mariposa	QCB
* Plagiobothrys	5 - Lt/ind sun is bare, reflective	1st on Lin dia
* Johnny jump up	6 [illegible]	2nd on Clarkia, Lupin
Mar vulg	8 [illegible]	3rd Lindia - small white swallow
* phacel	* Lupsat.	
* Lindauth	Cham asyl	Sara Otip
* Lepidium	Eriastrum Rhamcor	fun disk
* Solanum parish	* Oxalis	grass hopper
* hyp me	Sid [illegible] * Eriophyllum sp.	Bee
* Gilia	* Caland cili	paint lady
* Cast exs	* Mirab mac * Gonic arg	blue

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Stacy Nigro **Date:** 3/19/08

Site Name: Otay Hills **Site Visit No:** 1

Acres Surveyed 65.7 **Survey Time:** 4.58 hrs **Acres per Hour:** 14.3

Other Surveyors Present: A. Varner, S. Trnka, D. Allen, J. Watts, B. Parker, K. Pettigrew, A. Mattson, R. Hogenauer

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	11:30	68	0-3	0/clear
End	16:05	68	2-5	0/clear
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)DCSS – Art cal, Erio fasc, Vig lac, Mal laur; SMC – Ade fasc, Cean sp.; NNG – Brom di, Dich cap, Avena sp.

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha* / *Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	X
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	No.	Butterfly Species	No.
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	11	brown elfin (*Callophrys augustinus*)	1
Quino checkerspot (*Euphydryas editha quino*)	3	bramble (perplexing) hairstreak (*C. dumetorum affinis*)	2
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)	3	painted lady (*V. cardui*)	
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	6	pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	20	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	6	funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	6	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**55**	**Column Subtotal**	**4**
		Total	**59**

3/19/08 SRM-01 Otay Hills QCB #1

S. NIGRO w/ AV, BP, KP, ST, AM, RH, DA

11:30	16:05
0-3 mph	2-5
68°	68°
clear	clear

Area #8
65.7 ac 4.6 hrs
= 14.3 ac/hr

ANCK MODES: WEME CORA beca OATO WETI BUT, moths GREEN Hitail

orgtip - ⁘⁘ = 20
Gabb's chek - ⁘. = 11
blue - ⁖ = 6
Quino - ⁘ = 3
behr's - ⁖ = 6
silv. blue - ⁘ = 3

~~poporha~~
green hair - ⁘ = 2 (purplxg hairs)
bra elfin - ⁘ = 1
white - ⁖ = 6
fun dusk - ⁘ = 1
59

DCSS - open - Bons - Art col, Eri fas, Vig lac, Mal laur, Viola, Allium,

SMC - open = Ade fas, Cean sp,

NNG = Brom di dom, Dic [illegible] + Avena

-s = scat, * = flowering, + = dom

3/19/08 p2/2 QCB #1 Otay Hills S. NIG

+Cryptanth*	Plagio*	Salvmel*
+Art col	Ade fasc	Clayt. spi*
Mal laur	Soda pariff*	Hazz sq.
Esch col*	Mira laev*	Dode. clev*
+Brod sp*	Cast. aff*	Tauscha? *
lepi. mit	Sil gall	Achil mil
Chamaec*	Eriop conf*	Sid. mal*
Erio fasc	Hesp whip	Sonch sp*
Lot scop*	Camiss sp*	Gnaph sp*
Allium sp*	Lasth col*	Chlor par
Brom mad*	Callind.*	Allium = praecox?
Cent mel	Viola sp*	
+Vig lac*	Salv spi.	
Brass sp*	Pectocarya*	
Dich cap*	Fer vir	
Phac ram*	Lupinus sp	
Avena sp*	Cean [illegible]*	
Calys mac*	Xylo bic	
Plant ere*	Rham Crec	
Lass fil	Eucrypta*	
Lin dian*	Mara mac	
Cast. exs*	Gilia sp*	
Lathrus*	Mim aur*	
Cross cr	Het arb	
Con Fil gel	grenys hairnet	

2008 Quino Checkerspot Butterfly Survey Form

Surveyor:	Brian Parker	**Date:**	3/19/2008
Site Name:	Otay Hills Quarry	**Site Visit No:**	1
Acres Surveyed	**Survey Time:** 4.50	**Acres per Hour:**	0.00
Surveyors Present:	Dale Ritenour Stacy Nigro Doug Allen		
	Sally Trnka Alison Fischer		

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1100	67	0-2	0%
End	1630	70	2-3	20%
Start				%
End				%

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub (Eri fas, Vig lac, Mal lau, and numerous annual flowers)
Areas of non-native grassland (Bromus spp, Avena)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	☒	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	☒
purple owl's clover (*Castilleja exserta*)	☐	goldfields (*Lasthenia* spp.)	☒
snapdragon (*Antirrhinum coulterianum*)	☐	goldenstar (*Muilla* spp.)	☐
birds-beak (*Cordylanthus rigidus*)	☐	fiddleneck (*Amsinckia intermedia*)	☐
woolly plantain (*Plantago patagonica*)	☐	onion (*Allium* spp.)	☐
	☐	buckwheat (*Eriogonum fasciculatum*)	☒
	☐	ground pink (*Linanthus dianthiflorus*)	☒
	☐		☐

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*),		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)	7	bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	2
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)	2	painted lady (*V. cardui*)	1
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	1	anise swallowtail (*P. zelicaon*)	1
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)	1	common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	7	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**18**	**Column Subtotal**	**5**
		Total	**23**

OTAY Hills Quarry
BP, AW

3/19/08

	1100	1630
	67	70
	0%	20%
Eva cil	0-2	2-3

Artcal
Enfas
Aven
· Lun cal
· Lun bist
· Isosco
@ Pla ere
· Lupinus
Bro dia
Bro mad rub
· Cryptanth
· Mir cal
· Vig lac
· Dic cap
Lepidium
Chamaesyce
Mal lac
· Esc cal
Eva bot

Bahr MM LJ
GCB LL
M. Clark ·
Cobb W ·
Anise ST ·
WC Lady ·
P Lady ·
S. Blue ·
Orangetip ·

"Life in the River"

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Kathy Pettigrew **Date:** 3/19/08

Site Name: Otay Mtns **Site Visit No:**

Acres Surveyed **Survey Time:** 3.0 **Acres per Hour:**

Other Surveyors Present: Brian Parker, Stacy Nigro, Sally Trnka, Jasmine Walls, Alison Varner, Doug Allen, Rob Hagenaur

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover
Start	1300	68°	2-10mph	Clear/Sunny
End	1600	65°	2-7mph	Clear/Sunny
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X
		ground pink (*Linanthus dianthiflorus*)	

Butterfly Species	No.	Butterfly Species	No.
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (*C. dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	1
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	5
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	-
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)		anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	3	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	2
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	8	funereal duskywing (*Erynnis funeralis*)	
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	12	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	24	**Column Subtotal**	8
		Total	32

Kathy

Otay Hills SRM-01 3/19

100, L62, 2-10 Clear/Sunny

Quino w/ Brian, Stacy, Sally, Jasmine, Alison, Doug, Rob

Blooming

Blue dicks	Lotus sp	Native weed →	ERTHA CAST
Mustard	S. lone		CERA RSHA
Buckwheat	"Plantago-er		AMIKE SCSP
Lotus scop			WEONE CRSP
Erodium			NOFL ANAC
Brambles			WP rattlesnake
Vigueria			SD horned lizard
Calia			
Cryptantha sp			Sulphur 1
Poppies			
Purple cress clover			Lady HT
Peppergrass			
Lessingia			Anglers III
~~Stanleyas?~~			
~~Gilmegia?~~			Bees HT
Prickly pear			HT II
Blue eyed grass			White HT
Melissa			III
			WC Lady 1

KP

400 Sunny/Clear 5% clouds Blue eye 11
Cloudy 65° 2-7 mph-gusty

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Sally TRNKA **Date:** 03/19/08

Site Name: Otay Hills Quarry (SRM-01) **Site Visit No:**

Acres Surveyed **Survey Time:** 4.17 hrs **Acres per Hour:**

Other Surveyors Present:

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	11:30	68	0-3	0 percent; hazy
End	15:40	65	2-7, gusts to 12	5 percent; sunny
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	X
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	X
		buckwheat (*Eriogonum fasciculatum*)	
		ground pink (*Linanthus dianthiflorus*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)	8	bramble (perplexing) hairstreak (*C. dumetorum affinis*)	2
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	1
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)	1	painted lady (*V. cardui*)	1
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	7
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	1	pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	2	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)	3	common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	5	funereal duskywing (*Erynnis funeralis*)	3
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	7	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**27**	**Column Subtotal**	**14**
		Total	**41**

Otay Hills (SRM-01)

03/19/08

Area 7

Sally T

start: 11:30 a.m.; sunny/hazy, 0% clouds; 0-3 mph; 68°F

flowering plants		animals	
Mir cal	Lot str	blue 1	raven
Erod mos	Lup bic		w meadowlark
Viola ped	Plago sp.		So. blue 1
Lot sco	Chaeny sp.		Tan dusky IIII
Lath vest.	Sal clev		gumo IIII III
Allium sp.	Son asp		whit III
Hyp gla			pimpl hi-stk II
Silene gal			lark sparrow red/wht/blk h buzzing song
Bras sp.			lady IIII
Lasth cal			sidebltch liz
Cry sp. lots			Behr's metlnk IIII II
Linanthus			SDHL CATOwhee
Cast exs	X - fresh kept landing on Cry sp. - photo		
Gilia sp.	XB - fresh slow fly-by, headed down hill		
Caly mac			W coast lady 1
Dic cap			Sara's otip II
Cast aff			cabbage wht III
Pha cic			PH lady 1
Esch cal	XC - very faded, in Pe patch, photo		
Solanum sp.	XD - med. qual. - on bare ground, hilltop		
Bras sp. 2	XE - med. qual. - may be D? bare gnd / hilltop by bulldozer		
Trif wild			
Vic lee			

XF - 1½ gyno ; 1 w/ 3 wings (missing rt rear)
territorial fight ; med. quiet ; photo
by Linant ; Playa ; Cry ; on bare rocks/ground
XG - 1 gyno - fighting w/ F, but sep. areas
photo
all 4 wings fresh ; patch of Linanth, on bare ground
photo (wings closed) rocks,
XH - 4 wing, med worn, rock stick
XI - worn/tattered wings - photo on rock wings part. ope
72

lady III

end : 3:40 pm ; sunny/clear 5% clouds ; 65° F ; 2-7 mph
gusts to 12

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Alison Varner **Date:** March 19, 2008

Site Name: SRM-01 Otay Hills **Site Visit No:** 1

Acres Surveyed _____ **Survey Time:** 5 hrs **Acres per Hour:** _____

Other Surveyors Present: Brian Parker, Amy Mattson, Sally Trnka, Jasmine Watts, Doug Allen, Stacy Nigro, Kathy Pettigrew, Robert Hogenauer

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1100	67	0-3	clear
End	1600	73	3-6	slightly hazy
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
NNG and CSS, dominated by *Artemisia californica, Eriogonum fasciculatum, Viguiera laciniata*, and *Malosma laurina*

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	X
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)	8	bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	1	pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)		anise swallowtail (*P. zelicaon*)	2
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	1
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	2	funereal duskywing (*Erynnis funeralis*)	3
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	8	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**19**	**Column Subtotal**	**6**
		Total	**25**

OTAY Hills Quarry
BP, NW

3/19/08

	1100	1630
	67	70
	0%	20%
Eve cil	0-2	2-3
Artcal		
Eri fas		
hiem		
· Lin cal		
· Lin bal		
· Lit sca		
@ Pla ere		
· Lu pra		
Bro dia	Behr MM U	
Bro mad ob	RCB U	
· Cyp bat	M. Clark ·	
· M.r cal	Cobb W ·	
· Vig lac	Anise ST ·	
· Dic cap	WC Lady ·	
Lep div	P Lady ·	
Chon ecos	S. Bird ·	
Mal lac	Orangetip ·	
· Esc cal		
Eve bot		

"Rain in the Rain"

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Jasmine Watts **Date:** March 19, 2008

Site Name: SRM-01 OTAY HILLS AREAS **Site Visit No:** 1

Acres Surveyed _____ **Survey Time:** 5.33 **Acres per Hour:** _____

Other Surveyors Present: Doug Allen

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1110	66.7	0-2	clear
End	1630	71	3-6	clear
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Open DCSS dominated by *Lotus scoparius* and *Artemisia californica*

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X
		ground pink (*Linanthus dianthiflorus*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	2	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)	8	bramble (perplexing) hairstreak (*C. dumetorum affinis*)	1
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	4
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	1
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	3	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	2	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)	1	common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	9	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**25**	**Column Subtotal**	**7**
		Total	**32**

SRM-01 OTAY HILLS
QCB Survey #1

19 March 2008
JW, DA

AREAS 1 + 2 (58.65 + 60.87 acres)
START: 10:10, 66.7°, clear, 0-2 mph
STOP: 4:30pm, 71°, 20% cl, 2-3 mph

Plant Spp (* = flowering)

Las.cal. *
Lin.olia. *
Lot.sco. *
Ero.cic. *
Art.cal.
Crassula sp.
Dic.cra. *
Cryptantha sp. *
Solanum sp. *
Mir.cal. *
Cas.exs. *
Esc.cal. *
Cal.mac. *
Vig.lac. *
Chamaesyce *
Fervir.
Lup.bic. *
Eri.far.

Oxalis - native *
(O.occ.)
Gilia sp. *
Pha.cic. *
Pla.ere. *
Las.ver. *
Sil.gal. *

Viola sp. *

BUTTERFLIES

*QCB1 (GPS 5-7) @ 10:20 AM
W. Coast Lady IIII
*QCB2 11:38 AM (GPS 8)
Painted Lady I
Sara Orangetip III
QCB6 (GPS) 1:55pm Behr's metalmark IIII
Common White I
QCB7 (GPS) 4:07 pm Blue I, Funereal I, Calif. Ringlet II
QCB8 (GPS) 4:18 pm QCB3 (GPS 16) 1:24 Gabb's Checkerspot II
QCB4, QCB5 (GPS 21) 1:45 pm

Painted Lady I

WILDLIFE

western fence lizard
black-tailed jackrabbit
CORA, AMKE, snake I

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Doug Allen **Date:** 3/21/08

Site Name: Otay Hills **Site Visit No:**

Acres Surveyed **Survey Time:** 4.5 **Acres per Hour:**

Other Surveyors Present: Brian Parker

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1230	74.5	3-5	0%
End	1700	67.0	4-6	0%
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coast sage scrub, southern mixed chaparral, non-native grassland, and disturbed

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha* / *Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)	4 (Sec#1)	bramble (perplexing) hairstreak (C. *dumetorum affinis*)	2
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)	4	west coast lady (*Vanessa annabella*)	7
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	22
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	2	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	9	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	6	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	4
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	10	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**35**	**Column Subtotal**	**35**
		Total	**70**

3/21/08 D Aiken
SRm-01 B. Parker

1230 74.5°F Clear 3-5
1700 67°F Clear 4-6
1310 - 1325
UCLA
cowh
QCG : SW SP 82
PEHS : ect cor fumes in Cut Fields
SAOT :
CARS Fire
SP 74 - 1330 1345
QCB : SW
QCB : NE

SP 77 1330 - 1400
cc / cc otay / cc Torrm / Arcadia

1420 - 1425
SP 71
cc / S. clev

WP 74 - 2 of acg
OFF site

5/21/08

Southern End See 10

E. Sac
A-CAP
L. Sco
Milan
Brubaker
Blackbirds
Eradication
Bumblefoot
Lepidoptera
Avenue
4 o'clock
Vivian
F. Lago
gabeba
Rattlesnake removal
Henry Bond

owl closure
Pierce
Popcorn
BEHM
CART
DALAI

Quino Checkerspot General Form - Adult Survey

Surveyor: Rob H Date: 3/21/08

HELIX permit number: TE778195 Site Visit No: 1 2 3 4 5 6 7 8 9 10

Sub-consultant permit number: _____

Site Name: OTAY Hills Total site acres: _____

Total acres surveyed: 59.6 Total hours surveyed: 4hrs 45min 4.75

Site Location: _____

Time (24 hour)	SKY	Wind (mph)	Temperature °F
Start: 1045	(Clear) Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15 2-4 mph	72°
End: 1530	(Clear) Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15 6-8	84°
Start:	Clear Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15	
End:	Clear Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15	
Start:	Clear Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15	
End:	Clear Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed & comments: _____

Host & Nectar Plants On-site:

- ☒ Dwarf Plantain (*Plantago erecta*)
- ☐ Owl's Clover (*Castilleja exserta*)
- ☐ Chinese Houses (*Collinsia concolor*)
- ☐ Snapdragon (*Antirrhinum coulterianum*)
- ☐ Thread-leaved Bird's Beak (*Cordylanthus rigidus*)
- ☐ Woolly plantain (*Plantago patagonica*)
- ☐ Fiddleneck (*Amsinckia intermedia*)
- ☐ Chia (*Salvia columbariae*)
- ☒ Popcorn Flower (*Cryptantha sp.*)
- ☒ Goldfields (*Lasthenia sp.*)
- ☒ Ground Pink (*Linanthus dianthiflorus*)
- ☒ (*Lotus sp.*)
- ☒ CA Buckwheat (*Eriogonum fasciculatum*)
- ☐ Other: allium

Attached:

- ☐ Observed Butterfly List
- ☐ Copy of Field Notes
- ☐ Other _____
- ☐ Photographs
- ☐ Field Maps

Site: SVCW-01 Area 5

Name: RWB H **Date:** 3/21/08

Butterflies	Number	Comments
Checkerspots		
Quino checkerspot (*Euphydryas editha quino*)	1	
chalcedon checkerspot (*E. chalcedona*	5	
Leanira checkerspot (*Thessalia leanira wrighti*)		
Mylitta cresent (*Phyciodes mylitta*)		
Gabb's checkerspot (*Chlosyne gabbii*)		
California patch (*C. californica*)		
Blues		
western tailed blue (*Everes amyntula*)		
southern blue (*Glaucopsyche lygdamus australis*)	3	
echo blue (*Celastrina ladon echo*)		
Edward's blue (*Hemiargus ceraunus gyas*)		
Sonoran blue (*Philotes sonorensis*)		
marine blue (*Leptotes marina*)		
Acmon blue (*Icaricia acmon acmon*)		
pygmy blue (*Brephidium exilis*)		
unidentified blue		
Whites		
Sara orangetip (*Anthocharis sara sara*)	4	
desert (Felder's) orangetip (*A. cethura*)		
cabbage white (*Artogeia rapae*)	4	
common white (*Pontia protodice*)	25	
spring white (*P. sisymbrii*)		
California ringlet (*Coenonympha californica*)	10	
unidentified white		
Metalmarks		
Behr's metalmark (*Apodemia mormo virgulti*)	21	
Wright's metalmark (*Calephelis wrightii*)		
Swallowtails		
pale swallowtail (*Papilio eurymedon*)		
anise swallowtail (*P. zelicaon*)		
western tiger swallowtail (*P. rutulus*)		
Sulphurs		
sleepy orange (*Eurema nicippe*)		
California dogface (Zerene *eurydice*)		
orange sulphur (*Colias eurytheme*)		
cloudless sulfur (*Phoebus sennae marcellina*)		
Hairstreaks		
gray hairstreak (*Strymon melinus pudica*)		
brown elfin (*Callophrys augustinus*)		
bramble (perplexing) hairstreak (C. *dumetorum*)		
great purple hairstreak (*Atlides halesus corcorani*)		
Ladies/Admirals		
painted lady (*Vanessa cardui*)	14	
west coast lady (*V. annabella*)	77	
Virginia lady (*V. virginiensis*)		
red admiral (*V. atalanta rubria*)		
unidentified lady (*Vanessa* sp.)	10	
California sister (*Adelpha bredowii californica*)		
Lorquin's admiral (*Limenitis lorquini*)		
Miscellaneous		
monarch (*Danaus plexippus*)		
queen *(D. gilippus*)		
satyr anglewing (*Polygonia satyrus*)		
buckeye (*Junonia coenia*)	3	
mourning cloak (*Nymphalis antiopa*)		
Skippers		
common checkered-skipper (*Pyrgus communia*)		
funereal duskywing (*Erynnis funeralis*)	3	
mournful duskywing (*Erynnis tristis*)		

2008 Quino Checkerspot Butterfly Survey Form

Surveyor:	Brian Parker	**Date:**	3/21/2008
Site Name:	Otay Hills Quarry	**Site Visit No:**	3
Acres Surveyed	**Survey Time:** 4.50	**Acres per Hour:**	0.00
Surveyors Present:	Doug Allen		

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1230	75	1-3	0%
End	1700	67	4-5	0%
Start				%
End				%

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub (Eri fas, Vig lac, Mal lau, and numerous annual flowers)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	☒	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	☒
purple owl's clover (*Castilleja exserta*)	☒	goldfields (*Lasthenia* spp.)	☒
snapdragon (*Antirrhinum coulterianum*)	☐	goldenstar (*Muilla* spp.)	☐
birds-beak (*Cordylanthus rigidus*)	☐	fiddleneck (*Amsinckia intermedia*)	☐
woolly plantain (*Plantago patagonica*)	☐	onion (*Allium* spp.)	☐
	☐	buckwheat (*Eriogonum fasciculatum*)	☒
	☐	ground pink (*Linanthus dianthiflorus*)	☒
	☐		☐

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)	3	bramble (perplexing) hairstreak (*C. dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)	2	west coast lady (*Vanessa annabella*)	25
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	57
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)		anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	5	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	4
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	23	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**33**	**Column Subtotal**	**86**
		Total	**119**

Otay Mesa Quad 3/21/08

BP, DA 1230 1100

29 75 67°

1-3 4-5

5° 0° Armed

* Eno cuc	Johnny Jump-up		CALT
Brassica	Cryptantha		CORA
* Esc cal	* Vig lac		WEME
Eno bid	Lepidium		CAGR
Ast cal	Olivere		
* Sib gra	* Last exc	Crotalus ruber	
Eno med	* Les cal		
En Sen	Lotus sp		
* Cen ata	* Sal cle		
* Tec. cyp	Ade fen	Rchr MM ☒☒ :	
Mal lan	Plag-bottlegr	Pl ☒☒☒☒☒	
* Dic cap	Dem. sp	~~Pl ☒☒~~ : Pl ☒☒	
Aven	* Lot sco	CA Pring. 1 :	
☒☒☒	Son ole	QCR ..	
Bro dia	Sel cin	W Cl ☒☒ 1 :	
Cham sya	Sch bar	Pyg Bive :	
* Lin dia	Cen med		
* Sis bel	Mir cal		
	Lamprocken		

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Kathy Pettigrew **Date:** 3/21/08

Site Name: Otay Hills **Site Visit No:**

Acres Surveyed **Survey Time:** 1.42 **Acres per Hour:**

Other Surveyors Present: Sally Tronka (Chris Corises present for safety & help setting up USFWS survey plots)

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1535	74°	2-5 mph	Clear
End	1700	78°	1-4 mph	Clear
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	
		ground pink (*Linanthus dianthiflorus*)	

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)	3	bramble (perplexing) hairstreak (*C. dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	45
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	1	pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)		anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	5
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	7	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	11	**Column Subtotal**	50
		Total	61

Kathy
Otay Hills 3/04/08
Survey Location 13 w/ Sandy
Chris Briscoe
335, Clear, 55-5, 74°

Lady
Fund
Bare
Blue
Windy
Quail
White

Brassica
Bluedicks
Cryptantha
Nemacaulis
Calandrinia
Phacelia
Lotus
Pectocarya
Chaenactis
Plantago

NOPA
WEME
LEGO
HOFI
Raphanus
CORA
RUBR
BCCN

500, 70°, clear, 1-4

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Sally TRNKA **Date:** 03/21/08

Site Name: Otay Hills Quarry (SRM-01) **Site Visit No:**

Acres Surveyed **Survey Time:** 1.17 hrs **Acres per Hour:**

Other Surveyors Present: Kathy Pettigrew

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	15:45	74	2-5	0 percent; sunny
End	16:55	75	0-3	0 percent; sunny
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	X
		buckwheat (*Eriogonum fasciculatum*)	
		ground pink (*Linanthus dianthiflorus*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	1	brown elfin (*Callophrys augustinus*)	1
Quino checkerspot (*Euphydryas editha quino*)	2	bramble (perplexing) hairstreak (*C. dumetorum affinis*)	1
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	3
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	7
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	18
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	4	pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)		anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	2	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	2
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	1	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**10**	**Column Subtotal**	**32**
		Total	**42**

SRM-01 Otay Hills
Area 13

03/21/08
Sally T
co-serv. Kathy F

start: clear/sunny; 0%; 2-5mph; 74°F
3:45pm

flowering plnts
Viola ped
Lot sco
Sanicula sp.
Mim aur
Dodec.
Dic cap
Allium sp. lots!
Bras sp.
Lath vest.
Caly mac
Calitr.
Esch cal
Linanth
Pla ere

animals
Behr's hairstrk 1
Fox dusky ||
6' whiptail snake
blue ||||
w meadowlrk
raven
lady ||||
W coast lady |||
Ptd lady ||
MODO
perplx hairstrk 1
brn elfin 1
quino || (photo of #16 longer)
Gabb's chk 1
CA nyglet ||

end: 4:55pm; sunny/clear/0%
0-3mph; 75°F

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Jasmine Watts **Date:** March 21, 2008

Site Name: SRM-01 OTAY HILLS **Site Visit No:** 1

Acres Surveyed _____ **Survey Time:** 4.83 **Acres per Hour:** _____

Other Surveyors Present: Supervised individual Jason Kurnow

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1210	75	1-3	clear
End	1700	67	4-5	clear
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Open DCSS dominated by *Erigonum fasciculatum* and understory og NNG (*Avena, Bromus*)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	X
		buckwheat (*Eriogonum fasciculatum*)	X
		ground pink (*Linanthus dianthiflorus*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)	3	west coast lady (*Vanessa annabella*)	13
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	49
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	1	pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	3	anise swallowtail (*P. zelicaon*)	1
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	11	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	4	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	8
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	33	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	1
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**55**	**Column Subtotal**	**72**
		Total	**127**

SRM-01 OTAY HILLS
AREA 4

21 March 2008
JW (assisted by J. Kwan)

START: 12:10, 1-3mph, clear, 24°C
STOP: 5:00 pm, 4-5 mph, clear, 67°F

PLANT SPP.

Pla. ere.*	Cal. mar.*
Dic. cap.*	Lotus sp.*
Lop. dun	Plagiobothrys sp.
Lindia.*	Eri. fas.*
Las. cal.*	Vig. lac.*
Lup. bic.*	Art. cal.
Arena sp.	Fer. vir.
Iso. ari. b.*	Sil. gal.
Filago sp.*	Gilia
Cas. exs.	Mir. cal.*
Cal. spl.*	Allium sp.*
Via. ped.*	Lemmatium sp.*
Oxa. oce.*	

BUTTERFLIES

- Behr's metalmark |||| |||| |||
- Fun. dusky wing |||| |||
- Painted Lady |||| |||| |||| ||||
- Cabbage white ||||
- West Coast lady |||| |||| |||
- Calif. Sister/Spot |||| |||| |
- Anise swallowtail |
- Behr's |||| |||| |||| |||
- Blue |
- Painted Lady |||| |||| ||||
- Checkered Skipper |
- Pygmy blue ||
- Sara Orangetip |||
- Painted lady |||| |||| |||

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Greg Mason **Date:** 3/22/2008

Site Name: Otay Hills Quarry **Site Visit No:** 2

Acres Surveyed _____ **Survey Time:** 4.50 **Acres per Hour:** 0.00

Surveyors Present:

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	0930	78	0-1	0%
End	1400	84	0-5	0%
Start				%
End				%

Vegetation Communities Surveyed (inc. dominant spp.)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	☒	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	☒
purple owl's clover (*Castilleja exserta*)	☒	goldfields (*Lasthenia* spp.)	☒
snapdragon (*Antirrhinum coulterianum*)	☐	goldenstar (*Muilla* spp.)	☐
birds-beak (*Cordylanthus rigidus*)	☐	fiddleneck (*Amsinckia intermedia*)	☐
woolly plantain (*Plantago patagonica*)	☐	onion (*Allium* spp.)	☐
	☐	buckwheat (*Eriogonum fasciculatum*)	☒
	☐	ground pink (*Linanthus dianthiflorus*)	☐
	☐		☐

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	1	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)	3	west coast lady (*Vanessa annabella*)	3
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)	3	painted lady (*V. cardui*)	13
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	1
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	8	anise swallowtail (*P. zelicaon*)	1
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	8	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	15	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	25
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur	1		
Column Subtotal	**39**	**Column Subtotal**	**44**
		Total	**83**

3/22/08 QCB survey SRM-01 Area 12

Quino not observed GM survey

Start 0930, sunny & clear, 0-1 mph wind, 78°F

End 1400, sunny & clear, 0-5 occasional gusts, 84°F

Plants ✿ in Flower	Bflies	other
EuFe✿ NaP✿ Lroidea✿	Ringlet |||||	unid mammal
AuBa✿ LoSe✿ lanceolata✿	P.L. |||||	Ladybug, Apis mel
SiBe✿ SaAp mojave	WCL |||	dragonfly, moths
Hirsh✿ Silver Cholla✿ SeBi	S blue |||	raven
BaNi✿ Warden Calyx✿	Cawhite ||||	snake
ArCe PlEr SeCi	S.O. Tip |||||	grasshopper
SaTr Opuntia FeVi	Pygmy blue ||		cottontail
BrMa Mimulus✿ YuBr	Pale Swallow			Solitary bee
Brandegea CrCo Tamarisk	Fdusky			wF lizard
Eriodictyon✿ Phacelia✿ ViLa	Gabbs			human
camote Allium✿ PoEd	Sulphur			Rthawk
CeMe MiAu✿ IsMe	Bchus |||||	wolf bear
FiCa Jumping Cholla✿ IvHa	Anise ST			Points
LoPe✿ Shredding Stick✿ AtAc	45 Pe 3x3	36 Pe 5x5	28 Pe 5x5	
melilotus✿ MaLa	46 Pe, LaCa 20x20	37 Pe 2x6	29 Pe 3x3	
LuBi✿ fern mulefat	47 Cryptantha 20x30	38 Pe 3x30	30 cryptantha 20x10	
fruit RhCr chaparral✿	48 cryptantha 15x5	39 Pe 3x20	31 Pe 6x6	
Chlo✿ Cryptantha✿	49 cryptantha 40	Pe 5x5	32 Pe 3x3	
RuIn Painthorn✿	50 cryptantha 15x10	41 Pe 20x20	33 Pe 10x12	
GnCa✿ SiCh✿	51 cryptantha 20x80	42 Pe 3x3	34 LaCa Cryptantha Pe 20x30	
DiCa✿ Malva✿	52 Phacelia Cottle	43 Pe 15x3	35 Cryptantha 10x3	
LaCa✿ Convolvulus✿	Orange 50x50	44 Pe 6x6	"Rain in the Rain"	

SRM-01 QCB Area 12 3/22/08 GR
Continued

Plants cont.	Point cont
Mammillaria	53 PlEr LaCa
Grandiflora	20x20 mc+ Pr+46
RuCr	54 Pc 6x15
Sclerocactus	55 Pc 12x4
	56 Pc 8x10
	57 Pc 6x6

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Doug Allen **Date:** 3/26/08

Site Name: Otay Hills **Site Visit No:**

Acres Surveyed _____ **Survey Time:** ~~8.0 hr~~ 5.25 **Acres per Hour:** _____

Other Surveyors Present: Robert Hogenauer

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1030	80	0-2	5%
End	1330	82	6-8	0%
Start	1330	82	6-8	0%
End	1545	78	7-10	0%

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coast sage scrub, non-native grassland, and disturbed

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	1	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (*C. dumetorum affinis*)	2
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)	1	west coast lady (*Vanessa annabella*)	3
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	14
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	1	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	1	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	5	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	11	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**20**	**Column Subtotal**	**20**
		Total	**40**

3/26/08 D Allen
SRM-01 Rob H
Sec 4/Sec 5

1030 80°F ϕ Clear 5% cc 0-2
1310 30 82°F Clear 6-8

BEMM :
COWH :
PALM :
FUDW :
GABB :
PYBI :
SAOT :
CARI :
WILA :

Conl SRM-01

Sect 5 3/26/08

1330 82°F Ø clou 6-8

1545 78 Clear 7-10

COUH

CARI

BEMM

PALA

WCLA

SOBL

BUEY

SAOT

CATO

AMKE

COLA

WEME

Quino Checkerspot General Form - Adult Survey

Surveyor: Rob H w/ Doug A. Date: 3/26/08

HELIX permit number: TE778195 Site Visit No: 1 2 3 4 5 6 7 8 9 10

Sub-consultant permit number: _____

Site Name: O Tay Hills Total site acres: _____

Total acres surveyed: ~120 Total hours surveyed: 5hr 15min 5.25

Site Location: Areas 4+5

Time (24 hour)	SKY	Wind (mph)	Temperature °F
Start: 1030	Clear (Patchy) Overcast/Cloudy Drizzle Showers 5% cover	<1 (1-3) 4-7 8-12 12-15 >15	80° F
End: 1545	(Clear) Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 (8-12) 12-15 >15	78° F
Start:	Clear Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15	
End:	Clear Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15	
Start:	Clear Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15	
End:	Clear Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed & comments: Areas 4+5, Hill side sage scrub & sparse chaparral, some grassland on flat areas

Host & Nectar Plants On-site:

- ☒ Dwarf Plantain (*Plantago erecta*)
- ☒ Owl's Clover (*Castilleja exserta*)
- ☐ Chinese Houses (*Collinsia concolor*)
- ☐ Snapdragon (*Antirrhinum coulterianum*)
- ☐ Thread-leaved Bird's Beak (*Cordylanthus rigidus*)
- ☐ Woolly plantain (*Plantago patagonica*)
- ☐ Other: _____
- ☐ Fiddleneck (*Amsinckia intermedia*)
- ☐ Chia (*Salvia columbariae*)
- ☒ Popcorn Flower (*Cryptantha sp.*)
- ☒ Goldfields (*Lasthenia sp.*)
- ☒ Ground Pink (*Linanthus dianthiflorus*)
- ☒ (*Lotus sp.*)
- ☒ CA Buckwheat (*Eriogonum fasciculatum*)

Attached:

- ☐ Observed Butterfly List
- ☐ Copy of Field Notes
- ☐ Other _____
- ☐ Photographs
- ☐ Field Maps

Site: SKM -01 area 4+5

Name: RuB H **Date:** 3/26/08

Butterflies	Number	Comments
Checkerspots		
Quino checkerspot (*Euphydryas editha quino*)		
chalcedon checkerspot (*E. chalcedona*		
Leanira checkerspot (*Thessalia leanira wrighti*)		
Mylitta cresent (*Phyciodes mylitta*)		
Gabb's checkerspot (*Chlosyne gabbii*)		
California patch (*C. californica*)		
Blues		
western tailed blue (*Everes amyntula*)		
southern blue (*Glaucopsyche lygdamus australis*)	1	
echo blue (*Celastrina ladon echo*)		
Edward's blue (*Hemiargus ceraunus gyas*)		
Sonoran blue (*Philotes sonorensis*)		
marine blue (*Leptotes marina*)		
Acmon blue (*Icaricia acmon acmon*)		
pygmy blue (*Brephidium exilis*)	3	
unidentified blue	1	
Whites		
Sara orangetip (*Anthocharis sara sara*)	2	
desert (Felder's) orangetip (*A. cethura*)		
cabbage white (*Artogeia rapae*)	2	
common white (*Pontia protodice*)	8	
spring white (*P. sisymbrii*)		
California ringlet (*Coenonympha californica*)	3	
unidentified white	2	
Metalmarks		
Behr's metalmark (*Apodemia mormo virgulti*)	18	
Wright's metalmark (*Calephelis wrightii*)		
Swallowtails		
pale swallowtail (*Papilio eurymedon*)		
anise swallowtail (*P. zelicaon*)		
western tiger swallowtail (*P. rutulus*)		
Sulphurs		
sleepy orange (*Eurema nicippe*)		
California dogface (Zerene *eurydice*)		
orange sulphur (*Colias eurytheme*)		
cloudless sulfur (*Phoebus sennae marcellina*)		
Hairstreaks		
gray hairstreak (*Strymon melinus pudica*)		
brown elfin (*Callophrys augustinus*)		
bramble (perplexing) hairstreak (C. *dumetorum*)		
great purple hairstreak (*Atlides halesus corcorani*)		
Ladies/Admirals		
painted lady (*Vanessa cardui*)	16	
west coast lady (*V. annabella*)	31	
Virginia lady (*V. virginiensis*)		
red admiral (*V. atalanta rubria*)		
unidentified lady (*Vanessa* sp.)		
California sister (*Adelpha bredowii californica*)		
Lorquin's admiral (*Limenitis lorquini*)		
Miscellaneous		
monarch (*Danaus plexippus*)		
queen *(D. gilippus*)		
satyr anglewing (*Polygonia satyrus*)		
buckeye (*Junonia coenia*)		
mourning cloak (*Nymphalis antiopa*)		
Skippers		
common checkered-skipper (*Pyrgus communia*)		
funereal duskywing (*Erynnis funeralis*)		
mournful duskywing (*Erynnis tristis*)		

3/26/08

SDM-01 RJDH w/ D.A.

StwA 1030 wind 0-2, temp 80° 5% cover

stp 1320 6-8 PZ 0%

Area 4	So. Pac R.S.	
Gopher snake	gr. pink	oxalis clover
Road runner	Chlorogalum	plantago
Blue bird	T.V.	popcorn
Accipiter	mallow	epilac
Erodium	w. meadowlark	lasthenia
B. mm rub	Sal mel	lotsca
toyon	CAGN	allium
Avena	Lep Sqma	
Apis mel	Sisym.	
Pip. grass	chap pra	
ladybird beetle		
opuntia		
S.B. sunflower		
Sal trag		
Side blotch liz.		
Mo. Glo		
Bac. cac.		
Brassica		
esch cal		
tooth brush		

SPM-01 ✓ 3/26/08 RUB H w/D.A.

Area 5

Start 1320 6-8 82 0%

Stop 1545 7-10 78° 0%

Kestrel	salix	papcern
Blackrock	Mic. ual	eri fac
Brassica		lot SCO
Sisymb		plantago
Mirabilis		gallium
Mo Clo		lasthenia
S.D Sunflow		
Utah Stipa		
Chaen. pen		
phacelia		
tagon		
Lisrnyia		
Johnny-jumpups		
Dudleya var.		
grunt pink		
Syl. And		
fennel		
Crassulacean		
Flaxy		
B. dran		
Avena		

2008 Quino Checkerspot Butterfly Survey Form

Surveyor:	Brian Parker	**Date:**	3/26/2008
Site Name:	Otay Hills Quarry	**Site Visit No:**	2
Acres Surveyed	**Survey Time:** 4.33	**Acres per Hour:**	0.00
Surveyors Present:	Dale Ritenour		

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1100	73	3-6	0%
End	1620	74	3-7	0%
Start				%
End				%

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub (Eri fas, Vig lac, Mal lau, and numerous annual flowers)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (*Plantago erecta*)	☒	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	☒
purple owl's clover (*Castilleja exserta*)	☐	goldfields (*Lasthenia* spp.)	☐
snapdragon (*Antirrhinum coulterianum*)	☐	goldenstar (*Muilla* spp.)	☐
birds-beak (*Cordylanthus rigidus*)	☐	fiddleneck (*Amsinckia intermedia*)	☐
woolly plantain (*Plantago patagonica*)	☐	onion (*Allium* spp.)	☐
	☐	buckwheat (*Eriogonum fasciculatum*)	☒
	☐	ground pink (*Linanthus dianthiflorus*)	☒
	☐		☐

Butterfly Species	No.	Butterfly Species	No.
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	2	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	1
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	12
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	65
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	1	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	7	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)	1	common buckeye (*Junonia coenia grisea*)	5
checkered (common) white (*Pontia protodice*)	3	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	13	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**27**	**Column Subtotal**	**83**
		Total	**110**

BP DR Areas 9,10 1100 1620

En fen Foe vul · Lindin 73 74

Bramal · Sns bed Playabolting 3-6 3-7

Lepidium · Hed cre Alle Fen 0% 6%

Lamiaceae Gutierrezia Yuc whi

Plantae Nix hang ? · Chamaesyce Bush NOMO

Cen mal Cl mar · Cas ers SOSP CORM

Myrtac Isa mon Sch bar WEKI MODO

Melinad Nasella · Salcle ulta stanshariana

Bac fac · Zygadenus · Cea Thom bottlee (s)

Stylocline Opu lit Natal Grass AMOR SAVS

Bro dia · Bro ma Oak CALT ANTH

Brassica Tkl Fen Bor gra

Art cas Eno bot Xyl Syc

Dic cap Let Amadia Cha elo.

Arena Mor mac Cataud. Chk W:.

Bac sal Sam nex Cra Grey HS.

Rhaint Mar vul Fen Sarabot

Lat sea Des Sas Cabb W

Cal mac Brickellia Beh MM

Mac cap Fer vir Buckeya

Syn cin · Cyp anthn G. Checkerspot

Chlorogalum · Fec cal Ca Rnglet

Cu lic Ach cor Pl

Eno cic Sel big Wcl dy

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Dale Ritenour **Date:** March 26, 2008

Site Name: Otay Hills **Site Visit No:** 2

Acres Surveyed _____ **Survey Time:** 4:20 4·33 **Acres per Hour:** _____

Other Surveyors Present: Robert Hogenauer, Brian Parker, Doug Allen

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1100	73	3-6	0 percent
End	1620	74	3-7	0 percent
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
NNG- *Avena fatua, Brassica nigra, Erodium bothrys*
DCSS- *Artemisia californica, Vigueria lacinata, Eriogonum fasciculatum*

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	3	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	16
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	1
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	70
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	1	pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	1	anise swallowtail (*P. zelicaon*)	2
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	4	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	4
checkered (common) white (*Pontia protodice*)	6	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	3
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	7	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**22**	**Column Subtotal**	**95**
		Total	**117**

NAV-02.13 3/26/08 GTF FS survey

-all dry D2

SRM-01 Otay Hills QCB survey 2

3/26/08 Dale R +/RH, BP, DA

start 1100 3-6 mph 73°F

Buckeye : F. dusky :

Gabbs : Behrs MM :

Can Wrent : San OT :

W. Coast L. : Uk Blue :

Painted Cady : CA Ringlet :

Anise SP : Red Admiral :

end 1620 3-7 mph 74°F 0% cc

NNG - Melind Aveirt Dacey Erobot Erocc

Chlorogal. Sisbel Brarig Foeval Calmac Ssymph.

Lepnit Bacsar Hedcre Hurmar Plagesp.

Hyp/la Cenmel

Sd backrabbit

SOSP MELA BUSH CORA WREN MOCK

Kingbird SPTO CALQ

Rattlesnake, sylvan. Sperm. bach. horned L2

SRM-01 3/28/08 pg 2 of 2

DCSS - Eriop* Artol Vigle* Mallau
Meli.d Lepsit Lomaur Bromadr Ceanf
Pler* Elocic Fervil Diasp* Gilia
Cracon Selcin Stylcol* Erobil* Silgel
Epilanthe* (white bulbs) Calmac* Micase* Pfagia Chaelb*
Chaenactis Escesc Brodia* Acndia Salbig
Filgel* Nasfep Lesjil Marmac
(Cultivated Poa) Phacelia - light purple)*
Antcot* Lindia* Vulmyu Dudpus
(tiny hairy Lupine)
(Mueve) Sagel Salcle *) Rhacro* Tecate Cypress
Gnacel* (Cast. big rep)* Salvan Erican
Sidmal* Sanarg* (Cirsel*) Yucwhi* Porgra

CCP - Adetas Salcle Cea 8 Mallau
Natal grass. Xylbic Yucwh.
Tecate cypress

VPP - CuAq Plel Psilen Cracon Calcil
Pler Plazca - (+cw)

Bel's nest

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Doug Allen **Date:** 3/27/08

Site Name: Otay Hills **Site Visit No:**

Acres Surveyed **Survey Time:** 5.0 hr **Acres per Hour:**

Other Surveyors Present: Robert Hogenauer

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	0955	66	0-3	5%
End	1455	82	3-7	0%
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coast sage scrub, southern mixed chaparral, non-native grassland, and disturbed

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	2	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)	1 (Sec 11)	bramble (perplexing) hairstreak (*C. dumetorum affinis*)	2
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)	1	west coast lady (*Vanessa annabella*)	10
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)	3	painted lady (*V. cardui*)	13
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	1
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	9	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	6	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	12	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	8	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		Buckeye (*Junonia coenia*)	2
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	42	**Column Subtotal**	29
		Total	71

11, 12, 13, (8)
Ann / Stacy

3/27/08 D Allen

SQM-01 QCB R. H.

START: 0955 66°F 5% clear 0-3

1055 82°F clear 8-7

PASE:
BEMM:
POLA:
WCLA:
QCB:
CALI:
COWH:
GABB:
SAOT:
FUDW
BUGY:

SASP
CORA
WCSR
SPTO
ROWR
Clark
S. and
S. bar
ANHA
Nama
Bush
RTHA

Quino Checkerspot General Form - Adult Survey

Surveyor: Rob H w/ Doug A. Date: 3/27/08

HELIX permit number: TE778195 Site Visit No: 1 2 3 4 5 6 7 8 9 10

Sub-consultant permit number: _____

Site Name: OTAY Hills Total site acres: _____

Total acres surveyed: _____ Total hours surveyed: 5 hrs

Site Location: _____

Time (24 hour)	SKY	Wind (mph)	Temperature °F
Start: 0955	Clear (Patchy) Overcast/Cloudy Drizzle Showers 5% cover	<1 (1-3) 4-7 8-12 12-15 >15	66° F
End: 1455	(Clear) Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 (4-7) 8-12 12-15 >15	82° F
Start:	Clear Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15	
End:	Clear Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15	
Start:	Clear Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15	
End:	Clear Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed & comments: Areas 11, 12, 13 + west end of 8

Host & Nectar Plants On-site:

- ☒ Dwarf Plantain (*Plantago erecta*)
- ☒ Owl's Clover (*Castilleja exserta*)
- ☐ Chinese Houses (*Collinsia concolor*)
- ☐ Snapdragon (*Antirrhinum coulterianum*)
- ☐ Thread-leaved Bird's Beak (*Cordylanthus rigidus*)
- ☐ Woolly plantain (*Plantago patagonica*)
- ☐ Other: _____
- ☐ Fiddleneck (*Amsinckia intermedia*)
- ☐ Chia (*Salvia columbariae*)
- ☒ Popcorn Flower (*Cryptantha sp.*)
- ☒ Goldfields (*Lasthenia sp.*)
- ☒ Ground Pink (*Linanthus dianthiflorus*)
- ☒ (*Lotus sp.*)
- ☒ CA Buckwheat (*Eriogonum fasciculatum*)

Attached:

- ☐ Observed Butterfly List
- ☐ Copy of Field Notes
- ☐ Other _____
- ☐ Photographs
- ☐ Field Maps

Site: SRM-01 11, 12, 13 pts

Name: Robin (Doug A) **Date:** 3/27/08

Butterflies	Number	Comments
Checkerspots		
Quino checkerspot (*Euphydryas editha quino*)	1	observed in point 82
chalcedon checkerspot (*E. chalcedona*		
Leanira checkerspot (*Thessalia leanira wrighti*)		
Mylitta cresent (*Phyciodes mylitta*)		
Gabb's checkerspot (*Chlosyne gabbii*)	1	
California patch (*C. californica*)		
Blues		
western tailed blue (*Everes amyntula*)		
southern blue (*Glaucopsyche lygdamus australis*)	1	
echo blue (*Celastrina ladon echo*)		
Edward's blue (*Hemiargus ceraunus gyas*)		
Sonoran blue (*Philotes sonorensis*)		
marine blue (*Leptotes marina*)		
Acmon blue (*Icaricia acmon acmon*)		
pygmy blue (*Brephidium exilis*)	1	
unidentified blue	1	
Whites		
Sara orangetip (*Anthocharis sara sara*)	5	
desert (Felder's) orangetip (*A. cethura*)	1	
cabbage white (*Artogeia rapae*)		
common white (*Pontia protodice*)	26	
spring white (*P. sisymbrii*)		
California ringlet (*Coenonympha californica*)	28	
unidentified white		
Metalmarks		
Behr's metalmark (*Apodemia mormo virgulti*)	5	
Wright's metalmark (*Calephelis wrightii*)		
Swallowtails		
pale swallowtail (*Papilio eurymedon*)		
anise swallowtail (*P. zelicaon*)	2	
western tiger swallowtail (*P. rutulus*)		
Sulphurs		
sleepy orange (*Eurema nicippe*)		
California dogface (Zerene *eurydice*)		
orange sulphur (*Colias eurytheme*)		
cloudless sulfur (*Phoebus sennae marcellina*)		
Hairstreaks		
gray hairstreak (*Strymon melinus pudica*)		
brown elfin (*Callophrys augustinus*)		
bramble (perplexing) hairstreak (C. *dumetorum*)		
great purple hairstreak (*Atlides halesus corcorani*)		
Ladies/Admirals		
painted lady (*Vanessa cardui*)	13	
west coast lady (*V. annabella*)	47	
Virginia lady (*V. virginiensis*)		
red admiral (*V. atalanta rubria*)		
unidentified lady (*Vanessa* sp.)	2	
California sister (*Adelpha bredowii californica*)		
Lorquin's admiral (*Limenitis lorquini*)		
Miscellaneous		
monarch (*Danaus plexippus*)		
queen (*D. gilippus*)		
satyr anglewing (*Polygonia satyrus*)		
buckeye (*Junonia coenia*)	3	
mourning cloak (*Nymphalis antiopa*)		
Skippers		
common checkered-skipper (*Pyrgus communia*)		
funereal duskywing (*Erynnis funeralis*)		
mournful duskywing (*Erynnis tristis*)		

SRM-01 3/27/08 Pool DA

Start 0955 66° wind 2-4 5% cloud

Stop 1455 82° 3-7 0%

Areas 11, 12, 13, 8(part)

erodium	Gnaphalium	plantago
B. madrub	erifac	pupcorn
chamae	Sal mel	lasthenia
siSymbrium	intrastan	lotus sco
B.G. GNat	Allium	erifar
filago	JohnnyJump	owls clover (area 12)
Blue dick	esch cal	
lessingia	bathbasb	
Avena	clappea	
Blue eyed grass	Indian Paint	
BT. JR.	lomatium bent	
toyon	Ladyfinger Dud	
opuntia	Rhus sp.	
Brassica	sam mex	
Mo Glo	Dud sp.	
mimulus	Chaenanthus spp	
Art cal	RYHA	
toyon	Beewicks	
Vitis		
Rip grape		

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Amy Mattson **Date:** 03/27/2008

Site Name: Otay Hills (SRM-01) **Site Visit No:** 2

Acres Surveyed _____ **Survey Time:** 5.0 hours **Acres per Hour:** _____

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	09:55	62	0-4	0%, hazy
End	14:55	69	0-4	0%, slight haze
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	√	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	√
purple owl's clover (*Castilleja exserta*)	√	goldfields (*Lasthenia* spp.)	√
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	√
		buckwheat (*Eriogonum fasciculatum*)	√
		ground pink (*Linanthus dianthiflorus*)	√

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	26	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)	1	bramble (perplexing) hairstreak (*C. dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	5
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)	1	painted lady (*V. cardui*)	7
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	74
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)		anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	21	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	1
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	18	funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	5	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**72**	**Column Subtotal**	**88**
		Total	**160**

3.27.08 SRM01 QB#2 AM, SN

Start: 09:55, 62°F, 0-4mph 0% clds, hazy

End: 14:55, 69°F, 0-4mph, 0% clouds, slight haze

* = flowering

* Ero cic/baltimos
* Bro mr/d/a/.
* Ran aur
* Avena sp.
* Brassica sp
* Eri fas
Mal laur
* Lot scop
* Lupinus sp
* Vicke
* Dic cap
Delphinium sp
Can med
Solanum sh purple
* Cryptantha
* Lotus sp.
Art cal
* Mirabilis
Ptaso sp
* Phac pus
* Esch calif
* Calyp mac
* Phac cic
* Stor asp
Lessingia sp
Mar mac
* Pla ere
* Lathyrus
* Plagiobothrys sp
* Hyp glab
* Lac ser
* Cast ang

Carum - * fire poppy - mockingbird
* Las ca - * Eucrypta - 94 daisy
* Gnaphalium - * Gnaphalic
* Hedy cret - * mint - lady bug
* Allo rap - lacewing
* Ade fas - * Linaria - spiderwasp, fly
* Cast exs - * Mim - can - WC lady
* Allium sp aur.
* Silene sp. Rhu - goldenrod
* el sco - Dodecatheon
Centromadia
Lepidium sp * Cit - white
Ind conf - fly
Sal api
* Sid mal - Delphinium - orselet
* Salvia - Pinus sp
* Sisyrbel
* Que wis - * Pholistoma
* Sanicula - Quercus - Gabbs
Gal Gil
Lupinus sp. * Apiast - ave
Malacothamnus - Bchr
Pectocarya
* Sen vul
* Schismus - ant - moth
Shepherds purse - metallic brown
Oxalis sp.
Fecia
Cryptantha
* Pinus
* Avena
Thys cur

Quino 1
bucky 1
Lbug

"Life in the

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Stacy Nigro **Date:** 3/27/08

Site Name: Otay Hills **Site Visit No:** 2

Acres Surveyed 59 **Survey Time:** 5 hrs **Acres per Hour:** 11.8

Other Surveyors Present: A. Varner, S. Trnka, D. Allen, B. Parker, D. Ritenour, A. Mattson, R. Hogenauer

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	9:55	62	0-4	0/clear
End	14:55	69	0-6	0/clear
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)DCSS – Art cal, Erio fasc, Vig lac, Crypt sp; CC – Ade fasc, Salv sp, Erodium sp.

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	X
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	X
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	No.	Butterfly Species	No.
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	4	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)	1	bramble (perplexing) hairstreak (*C. dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	27
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	3	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	1	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	32	funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	11	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**52**	**Column Subtotal**	**28**
		Total	**80**

SRM-01 3/27/08 Otay Hills p1/2

S. NIGRO QCC#27

Area #7 59 acres

w/ A. Mattson, D. Allen, R. Hogeraan, B. Porter, S. Trinka, A. Viveros, D. Ritenour

start	end
9:55	14:55
62°	69°
0-4	0-6
clear	clear

total acres surveyed = 470 (areas 7, 8, 3, 6, 1, 2, 11, 12, 13)

11.8 ac/hr

orangetip - :: = 3

lady - ⊠ ⊠ ⊔ = 27

white - ⊠ ⊠ ⊠ : = 32

bolrs - ⊠ • = 11

QCB - • = 1

Gabbs - :: = 4

dusky wing - • = 1

Cen rig lot - • = 1

80

CATH
BTJR
CATO
NOMO
CORA
hoodliz
Uta. st.
RTHA
moths

plants →

SRM-01 QCB#2 3/27/08 p2/2

S. NIGRO

open
OCSS = Open veg comm.

+Erod. sp*	Glia sp*	Mac ro.
+Crypt. sp*	Malacoth sp	Xyl. bic
Salv pur*	Esch cal*	Gnaph cal*
Phac. ram*	Chamacy. sp*	Cler. greg.
Lot scop*	Mim bre*	Cast. eff*
Mal laev	Lupin sp*	Salv. sp
+Art cal	Sals. frag	Lathyrus sp*
Dich cap*	Aden fas*	Leath cal*
+ Eriofasc	Hes. ul sp*	Calli. d. *
Plant ere*	Less fil	Stip sp1*
+ Vig lac*	Urop. lind	Sonchus*
Lepid sp	Lin. dig*	Rham ere
+fl gal	Sanic sp*	Sid. malv*
Brom mad*	Achnatherum? sp*	Viola sp*
Arena sp*	Dauc. pus*	
Plagio sp*	Cean. tom?	
Cast. exs*	Eriogh conf.*	
+Cent mel	Chloro. par	
Mira laev*	Antir. nutt*	
Lot sp*	Salv. col*	
Lamarkia*	~~Salv. mel~~	
Caly. mac*	Allium pra*	
mustard	Crass con.	
	Cam sp*	

* = flowering
+ = dom

Salv. mun. *

2008 Quino Checkerspot Butterfly Survey Form

Surveyor:	Brian Parker	**Date:**	3/27/2008
Site Name:	Otay Hills Quarry	**Site Visit No:**	2
Acres Surveyed	**Survey Time:** 5.25	**Acres per Hour:**	0.00
Surveyors Present:			

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1015	63	2-5	0%
End	1530	68	3-5	0%
Start				%
End				%

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub (Eri fas, Vig lac, Mal lau, and numerous annual flowers)
Areas of non-native grassland (Bromus spp, Avena)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (*Plantago erecta*)	☒	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	☒
purple owl's clover (*Castilleja exserta*)	☐	goldfields (*Lasthenia* spp.)	☒
snapdragon (*Antirrhinum coulterianum*)	☐	goldenstar (*Muilla* spp.)	☐
birds-beak (*Cordylanthus rigidus*)	☐	fiddleneck (*Amsinckia intermedia*)	☐
woolly plantain (*Plantago patagonica*)	☐	onion (*Allium* spp.)	☐
	☐	buckwheat (*Eriogonum fasciculatum*)	☒
	☐	ground pink (*Linanthus dianthiflorus*)	☒
	☐		☐

Butterfly Species	No.	Butterfly Species	No.
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (*C. dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)	18	west coast lady (*Vanessa annabella*)	6
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	6
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	1
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)		anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	5	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	4
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)		fiery skipper (*Hylephila phyleus*)	1
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	1
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)	1		
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**24**	**Column Subtotal**	**19**
		Total	**43**

5/27/08

1015 - 1530

Stellaria	Mir Cal	Mm avr	63°	63°
Dic cap	Chamaesyce	Het arb	2-5	3-5
Lepidium	Phacelia	VR ped	0%	0%
Heal cor	Hyp gla	Delphinium		
Eschscholzia	Esc cal	Styl ocf		
Malacothrix	Conv. arv.			
Bro ste	Brodiaea			
Las cal	Lin dia			
Gilia	Las exs			
Eriophyllum	Lepidus			
Vic lac	Sal tra			
Can mal	Bra cap			
Lot scoparius	Sil gal			
Avena	Ade fas			
Ery cas	Gilia			
Bromus	Salsola			
Dem cas	Rap sat			
Ery cic	Sel big			
Cal mac	Sal api			
Ari cal	Allium			
Vicia	Crassula			
Lomatium	Rha cre			
Fucsia	Hyd mon			
Nasella	Plagio.			

WEMG LASP

Tham. bif. (a)

BT Jackrabbit (3)

Ut a stems.

WREN CACT

NOMO ANTH

Cre

BUSH

Sara OT 1:

Rehr MM QCB

Cabb W 1:

Ringlet 1:

Wc Lady 1

Chk W 1

P. Lady 1

Anise ST 1:

GMCB

Hummingbird

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Dale Ritenour **Date:** March 27, 2008

Site Name: Otay Hills **Site Visit No:**

Acres Surveyed **Survey Time:** 5 hours **Acres per Hour:**

Other Surveyors Present: Alison Varner

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1000	69	0-3	0 percent
End	1500	75	0-6	0 percent
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
DCSS – *Artemisia californica, Vigueria lacinata, Eriogonum fasciculatum*

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	X
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	18	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	7
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	60
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	20	anise swallowtail (*P. zelicaon*)	1
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	9	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	2
checkered (common) white (*Pontia protodice*)	3	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	7	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**39**	**Column Subtotal**	**70**
		Total	**109**

SRM-01 Otay Hills 3/27/08

QCB Survey Dale R w/ AV. Areas

start 1000 69°F 0% cc slight breeze 0 Smpl

Behr's MM ⊔ Gabbs Ck ⊠ ⊡

Painted Lady ⊠⊠⊠⊠⊠ Buckeye ⊠

WC Lady ⊔ Anise ST ⊠

Com. White ⊠

CA Ringlet ⊠

Sara OT ⊠⊠

end 1360 75°F 0-6mph 0% cc

Plants in DCSS include Artcal Eritas* Viella Viglzi* Deitas Lamaur Bromadi Avefat Cenmel Hypgla Cracon Diccap* Daupus Calspi* Cryptantha sp.? Mirlze* Calmac* Lepnit* Lindla* Erocic* Lotsce* Selcin Lascal* Lestil Calcil* Escesc* Achcor Fervir Branig* Phacic* Chaalb* Malfas* Yucwhi Marmac Lasgle* Solxan* Lolmul Brodia Chaenact.s Plagrebth. Vulmyu Schber Cascal* Dicocc Silgal Porgra Sisymbrium Pene Saltra Sonole Alinem Emmantha Stexi Mimgat

Bobcat-t

CALQ CORA SOSP CALT ANHU CANT

W. fence SPBO MEME BRRO WREN "Rain the Rain"

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Sally TRNKA **Date:** 03/27/08

Site Name: Otay Hills Quarry (SRM-01) **Site Visit No:**

Acres Surveyed **Survey Time:** 5.25 hrs **Acres per Hour:**

Other Surveyors Present: Brian Parker

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	10:15	63	0-2	0 percent; sunny
End	15:30	68	3-5	0 percent; sunny
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	X
		buckwheat (*Eriogonum fasciculatum*)	
		ground pink (*Linanthus dianthiflorus*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)	1	west coast lady (*Vanessa annabella*)	10
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	7
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	33
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	1	anise swallowtail (*P. zelicaon*)	1
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	2	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	1	funereal duskywing (*Erynnis funeralis*)	
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	18	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**23**	**Column Subtotal**	**51**
		Total	**74**

SRM-01 Otay Hills 03/27/08

Sally T; Brian T.

start: clear/sunny, 0% clouds, 0-2mph, 63°F, 10:15 a.m.

animals

lady ||||| ||||| ||||| ||||| +5 +5

lark sparrow

sideblotched liz.

white 1

Behr's ||||| ||||| ||||| ||

W coast lady ||||| |||||

raven

Anna's hum

Ptd lady ||||| ||

racer

anise swlwtl 1

mock. bird

red-tail hawk

wht-crowned sparrow

CA towhee

~~checkered~~ ~~skipper~~

W meadowlk

CA ringlet ||

Sayas o-tip 1

pygmy blue 1

flowering plnts

Vig lac

Lot sco

Caly mac

Hyp gla

Hirsch inc

Pha cic

Mir cal

Cry sp.

Lasth cal

Dic cap

Esch col

Linan.

Pla ere - dry

Cast exs.

Lathy vest

Sil gal

Gilia sp.

Calandr sp.

Allium sp.

Viola ped.

Graph cal

end: 15:30pm, clear/sunny 0%, 3-5mph, 68°F

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Alison Varner **Date:** March 27, 2008

Site Name: SRM-01 Otay Hills **Site Visit No:** 2

Acres Surveyed _____ **Survey Time:** 5 hrs **Acres per Hour:** _____

Other Surveyors Present: Brian Parker, Amy Mattson, Sally Trnka, Doug Allen, Stacy Nigro, Robert Hogenauer, Dale Ritenour

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1000	69	0-3	Clear
End	1500	75	0-6	Clear
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
NNG and CSS, dominated by *Artemisia californica, Eriogonum fasciculatum, Viguiera laciniata*, and *Malosma laurina*

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	X
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	2	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (*C. dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	21
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	1	pale swallowtail (*Papilio eurymedon*)	1
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	15	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	8	funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	9	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**35**	**Column Subtotal**	**23**
		Total	**58**

5/21/08 SRM-01 Otay Hills QC3#2
AM/DR

Start: 1000, 0-3mph, clear, sunny, 69F
Habitats: NNG, CSS dom ~~AnAc~~ Mal lan, ~~Eri fas~~, Vig lac

Flowering Plants	Wildlife
Sil gal	White HH III
Hed cre	
Lot sco	Behrs nnn HH III
Dic cap	
~~Erodium~~	WEME
Vig lac	Painted Lady HH
Cal mac	HH HH HH I
Lin dia	AMCR
Cryptantha	Sand-tip HH HH
Mi ~~rabilis~~	HH
Phacelia cic	Gabbs II
Lat ves	
Eri fas	Cottontail
Las cal	F. Dusky wing I
Brassica sp.	
Gil exs	Blue sp I
Mal den	Pale swallowtail I
Esc cal	

"Rite in the Rain"

3/27/08 Otay Hills cont

Flowering Plants
Solanum (light & dark)
Pla ere
paintbrush
Oxalis
Eri con
Gna cal
Pen spl
Allium
Anthirrhinum (light purple)
Yuc whi

End: 1500, sunny, clear, 75F, 0-6 mph

"Rite in the Rain"

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Amy Mattson **Date:** 04/04/2008

Site Name: Otay Hills (SRM-01) **Site Visit No:** 3

Acres Surveyed _____ **Survey Time:** ~~1.6~~ hours 1.5 **Acres per Hour:** _____

Other Surveyors Present: Dale Ritenour, Jasmine Watts

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	14:55	70	0-3	0%
End	16:30	70	0-3	0%
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	√	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	√
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	√
		buckwheat (*Eriogonum fasciculatum*)	√
		ground pink (*Linanthus dianthiflorus*)	

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	1	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	2
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	2
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	6	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	48	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	1	funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)		fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**56**	**Column Subtotal**	**5**
		Total	**61**

4.4.08 SRM 01 Area 12, AM, JW, DR
Start: 14:55, 70°F, 0-3mph, 0% clouds
end: 16:30, 70°F, 0-3mph, 0% clouds

*Mimaur — Eri fas — ringlet
*Iso arb — Sal api — MM MM MM MM MM
*Sisy bel — Baccha sar — Rha cor — Pannelus sp. MOTH
*Calymac — *Sidal mal — lady bug
*Myosot — *Bromus hor
Rhu inf — Lotium — ringlet MM
Lasiagra — prickly pear
*Sanicula — *Lot scop. — Sara MM
Erio sp — *Illium.
Ceanothus — Ana arv — lady M
*Nas pul — *Achill mil
Tox div — Eriod sp
Ast cal — *Johnny jump. — W Clad M
Silene — *Pla. ere — caterpillar
*Lasiorh — *Bloomeria — MOTH
*Melilot — *Dic cap
Cast. aff. — Galium sp. — Sandsky 1
Grindelia — Forest — Gabbs 1
Sambucus — *Calymac — honeybee
Nicotiana — *Tamarix
Het arb — Jun acu
Mirabilis — *Sen vulg
Ast cal — *Vic lac — Mac mac
Sedum — Simm chi — scrissors
Polygonum — *Astragalus
Unk sp. — Typha
*Ferula — Sal sal
*Lamium — mal lan
YZ — *Mesembryan
*Chaenactis

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Stacy Nigro **Date:** 4/4/08

Site Name: Otay Hills **Site Visit No:** 3

Acres Surveyed 60 **Survey Time:** 1.25 HRS **Acres per Hour:** 12

Other Surveyors Present: A. Varner, S. Trnka, B. Parker

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	14:20	71	4-7	0/clear
End	15:35	67	4-7	0/clear
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)DCSS –Erio fasc, Vig lac,; NNG- Avena, Bromus mad.

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)		popcorn flower (*Cryptantha / Plagiobothrys* spp.)	
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	X
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (*C. dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	2
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	4
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	1	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	4	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	3	funereal duskywing (*Erynnis funeralis*)	
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	6	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	14	**Column Subtotal**	6
		Total	20

Area 4 S. NIGRO w/ A. Varner, S. Trake, B. Porter

60ac

1.25 hr = 12 ac/hr

14:20	15:35
71°	67°
4-7	3-7
clear	clear

* - flowers + = dom CSS I dom NNG

CSS + NNG	
+ Erio fasc*	Mira lav*
Dich cap*	Solv sp!
Bac pil	Lat scop*
Art cal	Allium prae.
+ Vig lac*	Oxalis sp*
++ Avena	Sil. malv*
+ Erod sp	Rhus int
Calyp mac*	Fer. vir
Calo. spl*	Bromdi
Brass sp.*	Malaco. *
Salsola	Sil gal*
Bromad*	Sola big
Less fil	Dei Pas*
Bloom croc*	Chlo par
Mal laev	Lep. nit
Gal apa.	Lamarkia
Phac sp*	+ Bromad

behrs - :: = 6
ringlet - ::: = 4
white - :: = 3
lady - ::: = 4
orgtip - : = 1
ptd lady - : = 2
20

WCSP
BTJR
w. fence
moths
Bot pg.
RTHA

2008 Quino Checkerspot Butterfly Survey Form

Surveyor:	Brian Parker	**Date:**	4/4/2008
Site Name:	Otay Hills Quarry	**Site Visit No:**	3
Acres Surveyed	**Survey Time:** 1.25	**Acres per Hour:**	0.00
Surveyors Present:	Stacy Nigro Alison Varner Sally Trnka		

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1420	71	5-7	0%
End	1535	67	5-7	0%
Start				%
End				%

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub (Eri fas, Vig lac, Mal lau, and numerous annual flowers)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	☒	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	☐
purple owl's clover (*Castilleja exserta*)	☐	goldfields (*Lasthenia* spp.)	☐
snapdragon (*Antirrhinum coulterianum*)	☐	goldenstar (*Muilla* spp.)	☐
birds-beak (*Cordylanthus rigidus*)	☐	fiddleneck (*Amsinckia intermedia*)	☐
woolly plantain (*Plantago patagonica*)	☐	onion (*Allium* spp.)	☐
	☐	buckwheat (*Eriogonum fasciculatum*)	☒
	☐	ground pink (*Linanthus dianthiflorus*)	☐
	☐		☐

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (*C. dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	4
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	2	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)	1	common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	1	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	2
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	10	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	1
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		Comstock's fritillary	
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	14	**Column Subtotal**	7
		Total	21

Otay Hills OCB #4 — 4/4/08

BR, SN, AV, ST — 1420 1535

>1 67

*Eri. fas	Lamarckia	5-7	5-7
Erocic	Sel big	02	02
*Cal mac	Opu Int		
Avena	Sel cin	NOMO	WEMO
Ast cal	Cen mel	Jackrabbit	
Sal tra	Atr sem	~~Bare~~ CSBR	
Bro mad rub	Crassula	Coast Horned Lizard	
*Si gal	Mal lav	~~Bare~~ BUSH	
Lolium	Iso men		
Nasella			
*Dic cap			
Bra dis			
*Lot scO			
Lepidium			
Hyp glab			
*Atr inc		Sra OT:	
*Vig lac		Behr MM	
*Cal sp/		Chk W:	
Fer mr		Fun DW:	
*Dau fas		CSBB W:	
*Las cal		P Lady:	
@ Pla ere		Chk Skipper	
Chlorogalum			

Atr in the Rain

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Dale Ritenour **Date:** April 4, 2008

Site Name: Otay Hills **Site Visit No:**

Acres Surveyed **Survey Time:** ~~1:35~~ 1.58 h **Acres per Hour:**

Other Surveyors Present: Jasmine Watts, Amy Mattson

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1500	70	2-5	0 percent
End	1635	70	0-4	0 percent
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
DCSS- *Malosma laurina, Vigueria lacinata*

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	X
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (*C. dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	2	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	31	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	1	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	1	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**35**	**Column Subtotal**	**0**
		Total	**35**

SRM-01 Otay Hills 5.12 4/4/08
Dale Run/JJW + AM
start 1500 70°F 2-5mph 0% cc
CA Ringlet ☒ ☒ ☒
Behr's HM
Orangetip, sara
Cheek White

South slope - N facing - lots of Pler + flower
Sisbel* Naspul Pler* Silgal* Sidmal* Branig*
Ericon* Rhaint Hypyle Artcal Salapi Heteom
Avebar Mimaur Bromadr Blocro P & L Erifas
Brohor Lotsco* Isoarb Vioped* Anaaru* Brodia Rhacro
Cenme/Galapi Erucic Casaff. Simchi Dicsap
Ivahy Junacu Senvul Chzart Phacelia Saltra
Tamarisk Willow spp. Marlac* Clemdis
Colcon Selbig Dudedu Helimp* Marmac

end 1635 70°F 0-4 mph 0% cc

BUSH
ANHU CORA CATO WREN

"Rite in the Rain"

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Sally TRNKA **Date:** 04/04/08

Site Name: Otay Hills Quarry (SRM-01) **Site Visit No:**

Acres Surveyed **Survey Time:** 1.25 hrs **Acres per Hour:**

Other Surveyors Present: Brian Parker; Alison Varner; Stacy Nigro

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	14:20	71	5-7	Sunny; 0% clouds
End	15:35	67	2-7	Sunny; 0% clouds
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X
		ground pink (*Linanthus dianthiflorus*)	

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (*C. dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	2
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	6
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	4
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	2	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	1
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	2	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		Comstock's fritillary (Speyeria callippe comstocki)	
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**4**	**Column Subtotal**	**13**
		Total	**17**

Otay Hills (SRM-01) 04/04/08
survey 3 Sally T
Av; SN; BP

start:
clear/sunny; 0%; 2:20pm;
71°F; 5-7 mph

flowering plnts
Vig lac
Caly mac
Cal spl
Eri fas
Lot sco
Cry sp- (few)
Pla ere (dry)

animals
lady IIII
Pbd lady IIII I
cottontail
windwlk
raven
roadrunner
wht crnd sprw
Sara's o-tip II
CA towhee
Behr's II
~~SI~~ buckeye I
w st lady II
w fence liz.

end: clear/sunny; 15:35 pm;
0%; 67°F; 2-7 mph

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Alison Varner **Date:** April 4, 2008

Site Name: SRM-01 Otay Hills **Site Visit No:**

Acres Surveyed **Survey Time:** 1.08 hrs **Acres per Hour:**

Other Surveyors Present: Sally Trnka, Brian Parker, Stacy Nigro

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1420	71	5-7	Clear
End	1535	67	3-5	Clear
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
NNG and CSS, dominated by *Artemisia californica, Eriogonum fasciculatum, Viguiera laciniata*, and *Malosma laurina*

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)		popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	9
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)	1	unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)		anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	1	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	2	**Column Subtotal**	10
		Total	12

4.7.08 SRM 01 Area 3 AM, DR

Start: 12:30, 23°C, 6 mph, hazy mostly sunny 20's, clouds
end: 15:00, 21°C, 2-6 mph, gust to 8, 5% clouds

Dimorphotheca sp.
Phacelia cil
+Calyptridium mac
+Orthocarpus
+Cryptantha
+Eri fas
+Dau pus
Lot sco
+Stephanomeria
+mustard
+Cal sql
+Osmadenia
Eriophyllum lan
Pse sta
Mal lau
+Lotus sco
+Rafinesquia
+Lasthenia
+Calandrinia
+Phacelia
+Senecio
Polygonum sp.
Cal Cil

+Lin sq
Sal sin/lac
Lessingia
Chlorogalum
Salsola
Amsinckia
(Heliotrope)
+Mal cal
+Plantago (purple)
(+Pla ere)
Ant cal
+Dau pus
Ter ver
Salvia
Sonchus sp.
Lepidium
Erodium sp.
Lupinus sp.
Lomatium
+Bromus
Camel
+Bromus
Crassula
+Silene
(Caryophyllaceae)

bees, wasp, fly
ladybug
spreadwing
woolly bear, moth
white
Sara Orange
lady
Blue
?
painted lady
dessicated bird
moth
ant lion
lizards
raven
fan duster
eight I
Swallows
BT JAY
Sparrow
Finch
43

4.7.08 SRM 01 Area 9, AM, DR, 68°F, ST

Start: 15:30, 7 mph, 20°C, 5% clouds
end: 16:35, 6-8, 65°F, 30% clouds

Flowering

Silene sp.
Erodium sp.
Del lax
Ung lac
Mirabilis/Chaparbid
Cal sql.
Mustard
Pla ere
Ant mut
Eri COM
Lot sco
Dau pus
Phacelia sp.
Esc cal
Cryptantha
Ladybug
Fly
Moth
Bee (
Sara Orange
swallow
Painted Lady (
Grasshopper
Towhee
CAGN - heard/
Squirrel
Buckeye
red diamond rattle
beehive - Api mel

NOT FOR Natal Oaks 2008 map

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2008 Quino Checkerspot Butterfly Survey Form

Surveyor:	Brian Parker	**Date:**	4/7/2008
Site Name:	Otay Hills Quarry	**Site Visit No:**	3
Acres Surveyed	**Survey Time:** 4.17	**Acres per Hour:**	0.00
Surveyors Present:	Amy Mattson Dale Ritenour Sally Trnka		

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1235	65	7-10	30%
End	1645	65	6-8	30%
Start				%
End				%

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub (Eri fas, Vig lac, Mal lau, and numerous annual flowers)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (*Plantago erecta*)	☒	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	☐
purple owl's clover (*Castilleja exserta*)	☐	goldfields (*Lasthenia* spp.)	☐
snapdragon (*Antirrhinum coulterianum*)	☐	goldenstar (*Muilla* spp.)	☒
birds-beak (*Cordylanthus rigidus*)	☐	fiddleneck (*Amsinckia intermedia*)	☐
woolly plantain (*Plantago patagonica*)	☐	onion (*Allium* spp.)	☐
	☐	buckwheat (*Eriogonum fasciculatum*)	☒
	☐	ground pink (*Linanthus dianthiflorus*)	☒
	☐		☐

Butterfly Species	No.	Butterfly Species	No.
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	5	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (*C. dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	4
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	26
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	9	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	16	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	3	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	7	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		Comstock's fritillary	
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**40**	**Column Subtotal**	**31**
		Total	**71**

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Orry Hills @ CB

4/7/08

1235 - 1645

Mal_lav	Crassula		65	65
Avena	Bro hor		7-10	6-8
Lot scb	Bro dia		30%	30
B. mad ssp	Chlorogalum	Eun Dw'		
Bac sar	Allium	NC Lady ::		
Art cal	Cal spl	Sara GT		
Ero cic	Del fas	PLADY		
Eri fas	Calandrinia	CA Rinket		
	Min aur	Behr MM		
Dic cap	Sig bel	Chk W :		
Pha cic		GADB Ckk 1 :		
Sil gal	Nasella	?		
Sal api	Delphinium	Gabb		
Lamarckia	Muilla			
Legidium	Plagiobothrys	crotalus ruber		
Cal mac	Chamaesyce	~~Bt rd / Avena surround~~		
Lin dia	Eriophyllum	~~no rocker w/ 1x 150'~~		
Mir cal	Lessingia	~~Moved upstake to Eri fas t~~		
Brassica	Rumex	BCSP NOMD		Figueroa
Sisymbrium	Pla	CORA WEMB		
Cen mel	er	Scel. occidentalis		
Fer vir	Sel big	Jackrabbit		
Sel cun	Esc cal	Thom. bottae (5)		
Vig lac	Hyp gla	Gopher snake		
		Sper beckeyi		

#58

Not Done

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Dale Ritenour **Date:** 04/07/2008

Site Name: Otay Hills (SRM-01) **Site Visit No:** 3

Acres Surveyed _____ **Survey Time:** 4.00 **Acres per Hour:** _____

Other Surveyors Present: Amy Mattson, Brian Parker, Sally Trnka,

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	12:30	70	6-10	15%
End	1515	68	2-4, G8	0%
Start	1530	68	7-11	0%
End	1645	68	6-8	0%

Vegetation Communities Surveyed (inc. dominant spp.)
DCSS – *Viguiera laciniata, Eriogonum fasciculatum*

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	x	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	x
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	x
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X
		ground pink (*Linanthus dianthiflorus*)	x

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	1	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	5
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	1
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	37
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	7	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	7	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	6	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		Fritillary	1
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**21**	**Column Subtotal**	**44**
		Total	**65**

SRM-01 QCB 4/7/08

Otay Hills Dale R w/ BP, AM, ST

start 1230 mostly sunny 15°cc, 6-10mph

Painted Lady ⊠⊠⊡ Calliope :

Check White ⊔ Fritillary :

Behr's MM : Red Admiral .

Sara OT :

W.C. Lady :.

Gabbs C.S. o

Dess Adefas Viglac* Erifas Erocic Lepnu/ Fervu Mallau Mirlat* Phaceli2 Hypgla Calspl* Silgal* Calmac* Lamaur Plere* Lindic Diccap Broadr Lotsco* Selcin Cryptanthe sp. Osmten* Uro Esccal* Cenmel Daucus Ac Brodia Lathyrus Branig Solxan Lolmul Eucrep* Salap. Meling Erobel Brarop

end 1515 20°C no clouds 2-4GS

HOLA (+nest) Jackrabbit Grnd Sqrl. Cottontail

CORA BCSP CATO ANHU BUSIT WEME

Retrieved

SRM-01 Otay Hills 4/7/08

Dale R w/ AM, BP, ST

start 1530 20°C 7-11mph 0%c.

Painted Lady ⊡

West Coast L. :

Sara OT :

Behr's MM .

end 1645 20°C 6-8mph 0% cc

In Bloom: Viglac* Erifas* Calspl* Diccap Pler* Pelargonium Silgal Erilan Cryptantha* Branig*

CORA Sperm. bor. HOLA

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Sally TRNKA **Date:** 04/07/08

Site Name: Otay Hills Quarry (SRM-01) **Site Visit No:**

Acres Surveyed **Survey Time:** 4.17 hrs **Acres per Hour:**

Other Surveyors Present: Brian Parker

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	12:35	65	7-10	Sunny; 30% clouds
End	16:45	65	6-8	Sunny; 30% clouds
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub; Plantago had dried up; very few nectaring resources; most abundant flowering plant was San Diego sunflower (*Viguiera laciniata*).

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X
		ground pink (*Linanthus dianthiflorus*)	

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	12	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	17
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	22
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	11
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	1	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	22	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	1
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	2	funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	8	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		Comstock's fritillary (Speyeria callippe comstocki)	5
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**45**	**Column Subtotal**	**57**
		Total	**102**

Otay Hills (SRM-01) 04/07/08

Sally T

start: 12:35pm; 65°F; sunny/30%; 7-10 mph w/ B Parker

flowering plants	animals
Lot sco	lady ||||| ||||| 1
Silene gal	raven
Caly mac	wht 11
Dic cap	Cousbdis frit! ||||
Pha cic	SDBTJ
Bras sp.	w fence liz
Vig lac	w mdwlrk
Lath vest. (few)	Sarcs o-dp 1
Calindr. sp (few)	CA ringlet ||||| ||||| ||||| ||||| 11
Mir cal (few)	Behr's ||||| 111
Eri fas (few)	Gabb's ||||| ||||| 11
Erioph con	Pbd lady ||||| ||||| ||||| ||||| 11
Cry sp (few)	w cst bdy ||||| ||||| ||||| 11
Pla ere (present, but very dry)	buckeye 1
	side-blch liz
	baby bunny cottontails
end: 16:45; sunny, 30%; 65°F 6-8 mph	oriole
	wrentit
	mockbird
	SD horned liz!
	forereal dusky 1
coastal CA gnat.	CA towhee
CA quail	rd tld hawk

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Stacy Nigro **Date:** 4/10/08

Site Name: Otay Hills **Site Visit No:** 3

Acres Surveyed 103.9 **Survey Time:** 4 hrs **Acres per Hour:** 8.7

Other Surveyors Present: S. Trnka, B. Parker

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	10:45	67	1-4	0/clear
End	14:45	77	3-4	0/clear
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)DCSS –Vig lac,; SMC – Ade fasc

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	X
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	1	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	1
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	15
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	51
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	1	pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	19	anise swallowtail (*P. zelicaon*)	1
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	1	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	1
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	7	funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	8	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**37**	**Column Subtotal**	**70**
		Total	**107**

4/4/08 SRM-01 Otay Hills QCB #3

Area 4 S. NIGRO w/ A. Varner, S. Trinka, B. Parker

60ac

1.25 hr = 12 ac/hr

14:20	15:35
71°	67°
4-7	3-7
clear	clear

* - flowers + - dom CSS

CSS + NNG

+ Erio fasc*
Dich cap*
Bac pil
Ant cal
+ Vig lac*
+ + Avena
+ Erod sp
Calys mac*
Calo. spl*
Brass sp.*
Salsola
Bromus mad*
Less fil
+ Bloom croc*
Mal laur
Gal apa.
Phac sp*

Mira laev*
Salv spi
Lot scop*
Allium praec.
Oxalis sp*
Sid. malv*
Rhus int
Fer. vir
Bromus
Malacos. *
Sil gal*
Sala. lan
Dei fas*
Chlo par
Lep. nit
Lamarkia
+ Bromus mad

Idom NNG

behrs - = 6
ringlet - = 4
white - = 3
lady - = 4
orgtip - = 1
ptd lady - = 2

20

10 CSP
BTJR
w. fence
moths
Bot
RTHA pg

4/10/08 SRM-01 Otay Hills

QCB #4 Stacy Nigro w/
B. Parker + S.
Areas 13, 11, 10

Start	Stop
10:45	14:45
1-4	3-4
67°	77°
clear	clear

anise swallowtail - = 1
blue - = 1
painted lady - = 15
lady - = 51
buckeye - = 1
white - = 7
CA ringlet - = 1
behrs - = 8
red admiral - = 1
fun. dusk - = 1
orgtip - = 19
Gabbs checker - = 1

LASP
sp?
moths
Lota st
Syl. aud
weme
GRRR

107

+ Ado fasc* Dich cap*
Erio fasc Malacos *
Cen spp Esch ca
Mal laur Calo s
Anti nut*
~~Anti nut*~~ Urtica
Erio. corf.* ~~Lom~~
Cryp/Plag.* Dauc p
Ident ere* Mar v
Fil gal* Osmia. t
Chlor parv Fer vi
Hesp lutiv* Carl, e
Lot scop* All prae*
Art cal Salv mun
Sil gell* Erio fict
Erodium sp Salv spi
Bromus mad Lin dia
Xyla. bic Hoz squ
Calys mac Enoph c
#Vig lac*
mustard * Het ar
Enc. act

2008 Quino Checkerspot Butterfly Survey Form

Surveyor:	Brian Parker	**Date:**	4/10/2008
Site Name:	Otay Hills Quarry	**Site Visit No:**	3
Acres Surveyed	**Survey Time:** 4.00	**Acres per Hour:**	0.00
Surveyors Present:	Sally Trnka Stacy Nigro		

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1045	67	1-4	0%
End	1445	77	2-4	0%
Start				%
End				%

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub (Eri fas, Vig lac, Mal lau, and numerous annual flowers)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	☒	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	☒
purple owl's clover (*Castilleja exserta*)	☒	goldfields (*Lasthenia* spp.)	☒
snapdragon (*Antirrhinum coulterianum*)	☐	goldenstar (*Muilla* spp.)	☐
birds-beak (*Cordylanthus rigidus*)	☐	fiddleneck (*Amsinckia intermedia*)	☐
woolly plantain (*Plantago patagonica*)	☐	onion (*Allium* spp.)	☐
	☐	buckwheat (*Eriogonum fasciculatum*)	☒
	☐	ground pink (*Linanthus dianthiflorus*)	☐
	☐		☐

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	2	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	2
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	68
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	6	anise swallowtail (*P. zelicaon*)	1
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	10	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	8	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	3	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	1
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		Comstock's fritillary	4
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**29**	**Column Subtotal**	**76**
		Total	**105**

VI, VD
5

Army Hills #3 4-10-07

BL, ST, SN 1045 1445
67° 77
1-4 2-4
0% 0%

• Aqu fra	Mal lan	
• Lat sca	• Sal cle	
• Leo cal	• Eno bot	
• Magio	• Em con	CAUT BCSP
Stylidium	Des fas	CORA WREN
Selcin	Fer vir	SPTO RCSP
Eno cic	• Esc cal	CANG WEMS
Yucca whi	Xyl bic	
Asclepias	• Cal spl	
Calandrinia	• Oe cap	
Ch longipes	• Vig lac	
Arb cal	Sal lay	
Bro mad ss	Odon	☐
• Cryptanthe	• Delphinium	P. lady ☒☒☒☒☒☒
Can purp	Streptanthus	Frit. lan :
Can	Lessingia	Chk WHT ☐
xx cane		Sam OT ☐
Cypress		
Sil gal		Anise SP :
Lepidium		Ringlet ☒
Avena		WC lady :
• Brassica		GABB :
• Cas ex s		Behr MIM :
Hyp gla		Chk skip :

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Sally TRNKA **Date:** 04/10/08

Site Name: Otay Hills Quarry (SRM-01) **Site Visit No:** 3

Acres Surveyed _____ **Survey Time:** 4 hours **Acres per Hour:** _____

Other Surveyors Present: Brian Parker; Stacy Nigro

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	10:45	67	1-4	Sunny; 0% clouds
End	14:45	77	2-4	Sunny; 0% clouds
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub; Plantago very dry; some nectaring resources still present, especially *Cryptantha* sp.

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X
		ground pink (*Linanthus dianthiflorus*)	

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	2	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	4
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	21
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	68
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	19	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	20	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	1
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	10	funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	4	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		Comstock's fritillary (Speyeria callippe comstocki)	2
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur	1		
Column Subtotal	**56**	**Column Subtotal**	**97**
		Total	**153**

Otay Hills Quarry (SRM-01)

04/10/08
Sally T.
BP ; SN

start: clear/sonny; 0% clouds; 1-4 mph
10:45 a.m. ; 67°F

Area 11, 13

flowering plants

Hyp gla
Ade fas
Cry sp. ~~fas~~
Lasth cal
Pla ere - dry
Cast exs - few
Silene gal
Yuc whi
Lot scp
Ant ~~sp~~ nut (purple)
Vig lac
Caly mac
Bras sp.
Gnaph sp.
Dic cap
Cal sple
Osmad fen
Esch cal
Cast aff
Viola ped
Sidalcea mal
Stay bel

Lasth vest
Mim aur
Eri fas
Fer vir
Mim sp.

bee swarm
CA coast. gnat
Windwrk

end: 12:45pm;
clear/sonny; 0%
2-4mph; 77°F

animals

spotted towhee (nest PA)
lady ||||| ||||| ||||| |||| +20 +10 +10
wht ||||| |||
Gabbs ||
Comstock frit ||
Sara's o-tip ||||| ||||| ||||| |||
raven
sparrow
Behr's ||||
w cst lady ||||
Ptd lady ||||| ||||| ||||| ||||| |
wht crwnd sprw
sulfur |
||| CA ringlet ||||| ||||| |||||
B. pocket gopher (burrow)
coyote (scat)
fox dusky |
MODO
mockingbird
buckeye |
SDBTJ

11:21 a.m. ; 11:36

Cry sp.	raven
Hyp gle	Constab fit 1
Vac whi	Gabbs 11
Aut (purple)	wht 111
Friday tri	lady ~~1111~~
Salv clar	Sara's o-tip 1
Eriph con	

Quino Checkerspot General Form - Adult Survey

Surveyor: Robin w/ Dale R Date: 4/11/08

HELIX permit number: TE778195 Site Visit No: 1 2 3 4 5 6 7 8 9 10

Sub-consultant permit number: _____

Site Name: OTAY Hills Total site acres: _____

Total acres surveyed: _____ Total hours surveyed: 4hr 50 min

Site Location: 4.83

Time (24 hour)	SKY	Wind (mph)	Temperature °F
Start: 1000	(Clear) Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15 — 1-5	78°F
End: 1145	(Clear) Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 (12-15) >15	86°
Start: 1220	(Clear) Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15 — 7-12	86°
End: 1525	(Clear) Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 (4-7) 8-12 12-15 >15	90°
Start:	Clear Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15	
End:	Clear Patchy Overcast/Cloudy Drizzle Showers	<1 1-3 4-7 8-12 12-15 >15	

Description of areas surveyed & comments: Stopped survey from 1145 → 1220 due to high winds

Host & Nectar Plants On-site:

- ☒ Dwarf Plantain (*Plantago erecta*)
- ☐ Owl's Clover (*Castilleja exserta*)
- ☐ Chinese Houses (*Collinsia concolor*)
- ☐ Snapdragon (*Antirrhinum coulterianum*)
- ☐ Thread-leaved Bird's Beak (*Cordylanthus rigidus*)
- ☐ Woolly plantain (*Plantago patagonica*)
- ☐ Fiddleneck (*Amsinckia intermedia*)
- ☐ Chia (*Salvia columbariae*)
- ☒ Popcorn Flower (*Cryptantha sp.*)
- ☒ Goldfields (*Lasthenia sp.*)
- ☒ Ground Pink (*Linanthus dianthiflorus*)
- ☒ (*Lotus sp.*)
- ☒ CA Buckwheat (*Eriogonum fasciculatum*)
- ☐ Other: _____

Attached:

- ☒ Observed Butterfly List
- ☐ Copy of Field Notes
- ☐ Other _____
- ☐ Photographs
- ☐ Field Maps

Site: SRM-01 7+8

Name: RUB A (Dale) **Date:** 4/11/08

Butterflies	Number	Comments
Checkerspots		
Quino checkerspot (*Euphydryas editha quino*)		
chalcedon checkerspot (*E. chalcedona*	2	
Leanira checkerspot (*Thessalia leanira wrighti*)		
Mylitta cresent (*Phyciodes mylitta*)		
Gabb's checkerspot (*Chlosyne gabbii*)	4	
California patch (*C. californica*)		
Blues		
western tailed blue (*Everes amyntula*)		
southern blue (*Glaucopsyche lygdamus australis*)		
echo blue (*Celastrina ladon echo*)		
Edward's blue (*Hemiargus ceraunus gyas*)		
Sonoran blue (*Philotes sonorensis*)		
marine blue (*Leptotes marina*)		
Acmon blue (*Icaricia acmon acmon*)		
pygmy blue (*Brephidium exilis*)		
unidentified blue		
Whites		
Sara orangetip (*Anthocharis sara sara*)	45	
desert (Felder's) orangetip (*A. cethura*)		
cabbage white (*Artogeia rapae*)	1	
common white (*Pontia protodice*)	52	
spring white (*P. sisymbrii*)		
California ringlet (*Coenonympha californica*)	5	
unidentified white		
Metalmarks		
Behr's metalmark (*Apodemia mormo virgulti*)	13	
Wright's metalmark (*Calephelis wrightii*)		
Swallowtails		
pale swallowtail (*Papilio eurymedon*)		
anise swallowtail (*P. zelicaon*)	1	
western tiger swallowtail (*P. rutulus*)		
Sulphurs		
sleepy orange (*Eurema nicippe*)		
California dogface (Zerene *eurydice*)		
orange sulphur (*Colias eurytheme*)		
cloudless sulfur (*Phoebus sennae marcellina*)		
Hairstreaks		
gray hairstreak (*Strymon melinus pudica*)		
brown elfin (*Callophrys augustinus*)		
bramble (perplexing) hairstreak (C. *dumetorum*)		
great purple hairstreak (*Atlides halesus corcorani*)		
Ladies/Admirals		
painted lady (*Vanessa cardui*)	300 +	
west coast lady (*V. annabella*)	100 +	
Virginia lady (*V. virginiensis*)		
red admiral (*V. atalanta rubria*)		
unidentified lady (*Vanessa* sp.)		
California sister (*Adelpha bredowii californica*)		
Lorquin's admiral (*Limenitis lorquini*)		
Miscellaneous		
monarch (*Danaus plexippus*)		
queen (*D. gilippus*)		
satyr anglewing (*Polygonia satyrus*)		
buckeye (*Junonia coenia*)	5	
mourning cloak (*Nymphalis antiopa*)		
Skippers		
common checkered-skipper (*Pyrgus communia*)		
funereal duskywing (*Erynnis funeralis*)		
mournful duskywing (*Erynnis tristis*)		
Fritillary	5	

SBM-01 3/21/08 RoB

Area 5

Start 1045 72 wind 2-4

END 1530 84 wind 6-8

Avena spp.	groundpink
tooth brush	Crassula sp.
B. mat rub	Mariposa lily
Eri Euc	allium
lolium sp.	plantago
Lepid. squa	Barricadus
Brassica	tamarisk
Lactuca	Sisymbrium
Erodium	S.D. sunflower
Salsola	Hordeum
Mini lupin	Lasthenia
purpurea	~~Gorde~~
Nav Glo	Lasthenia
Blue dick	
Apricot	
Pop gmsp	
mirabalis	
Sal mel	
Mar vul	
Esh cal	
Phacelia sp.	

2008 Quino Checkerspot Butterfly Survey Form

Surveyor:	Brian Parker	**Date:**	4/11/2008
Site Name:	Otay Hills Quarry	**Site Visit No:**	3
Acres Surveyed	**Survey Time:** 4.50	**Acres per Hour:**	0.00
Surveyors Present:	Jasmine Watts Dale Ritenour		

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1030	78	6-8	0%
End	1500	88	3-5	0%
Start				%
End				%

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub (Eri fas, Vig lac, Mal lau, and numerous annual flowers)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (*Plantago erecta*)	☒	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	☒
purple owl's clover (*Castilleja exserta*)	☐	goldfields (*Lasthenia* spp.)	☒
snapdragon (*Antirrhinum coulterianum*)	☐	goldenstar (*Muilla* spp.)	☐
birds-beak (*Cordylanthus rigidus*)	☐	fiddleneck (*Amsinckia intermedia*)	☐
woolly plantain (*Plantago patagonica*)	☐	onion (*Allium* spp.)	☐
	☐	buckwheat (*Eriogonum fasciculatum*)	☒
	☐	ground pink (*Linanthus dianthiflorus*)	☐
	☐		☐

Butterfly Species	No.	Butterfly Species	No.
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	129
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	20	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	1	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)	3	common buckeye (*Junonia coenia grisea*)	3
checkered (common) white (*Pontia protodice*)	1	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	1	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	2
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		Comstock's fritillary	
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	26	**Column Subtotal**	135
		Total	161

1.2

Otay Hills #3

4-11-08

Lat	BR, ST	1030	1500
Plot sco	Der Cu	78	88
Mal fak	Pla cra	6-8	3-5
Susp sed	Mul lep	0%	0%
Anem	Bio din		
Ba sand	Bra mig		
Eng pan	Sel bif		
Ant cal	Pan	P. Lady	
Silene	Odora		
Eri con	Silen	Sara Ot.	
Dic cal	Gat cal		
Lepidium	Micrantha	Bakr MM	
Yuc whi	Dud lag ssp cal	Ck Skipper	
Hyp gra	Cha ang	Chle W	
Esc cal	Gnd cal	Eriglot	
Las cal	Dendromecon	Fun DW	
Cal mac	Xyl bic	Buckeye	
Sal apia	Cup dav	Cabb W	
Vig lac	Epi Cin		
Con mul			
Eri fas		Crotalus mitchi	
Lac fil		Cnem tigris	
Eno bat		NOMO CORA CALT	
Lyo mar			
Mor cal			

Kitt in the Rain

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Dale Ritenour **Date:** April 11, 2008

Site Name: Otay Hills **Site Visit No:** 3P

Acres Surveyed _____ **Survey Time:** 4:50 **Acres per Hour:** _____

Other Surveyors Present: Robert Hogenauer, Alison Varner

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1000	78	1-5	none
End	1145	85	12-15 Gusts 28	none
Start	1220	86	7-13	none
End	1525	86	4-7	none

Vegetation Communities Surveyed (inc. dominant spp.)
DCSS- *Vigueria lacinata, Eriogonum fasciculatum*

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	x	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	x
purple owl's clover (*Castilleja exserta*)	x	goldfields (*Lasthenia* spp.)	x
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	x
		buckwheat (*Eriogonum fasciculatum*)	

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	3	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (*C. dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	150+
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	1
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	14	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)	1	common buckeye (*Junonia coenia grisea*)	5
checkered (common) white (*Pontia protodice*)	16	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	5	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		callippe fritillary	15
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**39**	**Column Subtotal**	**167+**
		Total	**206+**

SRM-01 Otay Hills 4/11/08

Dalit w/RH(+AV) & CB

-start 1000 78°F 1-5 0% cc 1:45

-pause 1145 85°F 12-15 G 25-28

Painted Lady ☒☒☒☒☒☒ Fritillary ☒ 1

Check white ☒ 1 Gabbs 2

Sara OT ☒ 1 Behr's MM 1

CA Ringlet 1 Pale ST

Cabbage White Buckeye 1

-restart 1220 86°F ~~0-B~~ 0% 3:05

-end 1523 30°C 4-7 mph 0% cc

DCSS x - Salpi Vylsi Adelo Mallow Eritas

In Bloom Osmlea Stygia Sidmal Lotsco

Silgal Erobot Brasp Lathyl Ericon Daupur

Wallflower Lascal Alimun Cryptantha Plev

Soixan Yucwhi Hedcre Hdsco Lindic Hypgla

Erocic Dicegr Cas__ Celmac Malfas Blocro Mimbne2

Chaelb Phacic Escccal Antmul Calspl Salcle Woolly Blu

Gnatal Casere

Whitetail PEFA CALC BUSH

CORA BCSI COYT RODO CATU WEME CAGN

"Rite in the Rain"

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Sally TRNKA **Date:** 04/11/08

Site Name: Otay Hills Quarry (SRM-01) **Site Visit No:** 3

Acres Surveyed _____ **Survey Time:** 4.5 hours **Acres per Hour:** _____

Other Surveyors Present: Brian Parker

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	10:30	78	6-8	Sunny; 0% clouds
End	15:00	88	3-5	Sunny; 0% clouds
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub.

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)		popcorn flower (*Cryptantha/Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X
		ground pink (*Linanthus dianthiflorus*)	

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	137
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	11	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	2
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	12	funereal duskywing (*Erynnis funeralis*)	2
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	4	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		Comstock's fritillary (Speyeria callippe comstocki)	8
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**27**	**Column Subtotal**	**149**
		Total	**176**

Clay Hills Quarry (SRM-01)

04/11/08
Sally T.; BP

start: 10:30 a.m.; 6-8 mph; clear/sunny
0% clouds; 78°F

flowering plts
Lot sco
Vic lac
Caly mac
Gnaph sp.
Esch cal
Erioph con
Cry sp.
Dic cap (drying up)
Silene gal
Lath vest (few)
Dein fas
Erioq fas
Cal systen
Pha arc
Helia sco

animals
lady +10 +10 +10 +20 +10 +10 +20 +10 +10 +10 +7
S. b-tip
wht crnd sparrow
side-blch liz.
wht
buckeye
Behr's
w fence lizard
Coast brsh
Tur dusky
raven
coastal western whiptail
CA towhee

end: 15:00; clear/sunny; 0% clouds
3-5 mph; 88°F

11:15 a.m. 2-10 gusts to 15

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Alison Varner **Date:** April 11, 2008

Site Name: SRM-01 Otay Hills **Site Visit No:**

Acres Surveyed **Survey Time:** 2.58 hrs **Acres per Hour:**

Other Surveyors Present: Jasmine Watts, Dale Ritenour, Robert Hogenauer, Brian Parker, Sally Trnka

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1250	86	3-12	Clear
End	1525	86	4-7	Clear
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
NNG and CSS, dominated by *Artemisia californica, Eriogonum fasciculatum, Viguiera laciniata,* and *Malosma laurina*

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)		popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	13
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	7	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	6	funereal duskywing (*Erynnis funeralis*)	
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	6	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		Fritillary	16
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**19**	**Column Subtotal**	**29**
		Total	**48**

4/11/18 Otay Hills SRM-01
AV, JW QCB #3

Start: 1250, 30°C, clear, 3-12 mph
~~End: 1420, 89°F, clear, 4-9 mph~~

Flowering Plants
Viglac
Eri fas
Brassica sp
Lot sco
Osmoderia
Bloomeria
Cal spl
Esc cal
Sil gal
Eri con
Sid mal
Dic cap
Pha fim
Cas exs
Cryptantha
Sis bel
Castelja (paintbrush)
Tecate Cypress
Pla ere (dry)
Del fas

Wildlife
Painted Lady ||||
|||
Behrs |||| |
White |||| |
Sara Orip |||| ||
[redacted]
PEFA
Fritillary |||| |||| |||| |

End: 1525, 4-7 mph
clear, 30°C

2008 Quino Checkerspot Butterfly Survey Form

Surveyor: Jasmine Watts **Date:** April 11, 2008

Site Name: SRM-01 OTAY HILLS **Site Visit No:**

Acres Surveyed **Survey Time:** 4.42 **Acres per Hour:**

Other Surveyors Present: (joined by Alison Varner at 1250)

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	0950	26c 79 F	0-2	clear
End	1210	30c 86 F	10-15 (gusts 20)	clear
Start	1215	30 86 F	3-12	clear
End	1420	31.5 89 F	4-9	clear

Vegetation Communities Surveyed (inc. dominant spp.)
DCSS dominated by *Viguiera laciniata*

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha / Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*)		chia (*Salvia columbariae*)	
birds-beak (*Cordylanthus rigidus*)		goldenstar (*Muilla* spp.)	X
woolly plantain (*Plantago patagonica*)		fiddleneck (*Amsinckia intermedia*)	
		onion (*Allium* spp.)	
		buckwheat (*Eriogonum fasciculatum*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	16	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)	1	California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	9
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	71
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)	1	unidentified lady (*Vanessa* sp.)	56
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	3	anise swallowtail (*P. zelicaon*)	
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	14	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	1
checkered (common) white (*Pontia protodice*)	9	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	8	funereal duskywing (*Erynnis funeralis*)	2
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	32	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		Fritillary (*Speyeria* sp.)	10
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	**84**	**Column Subtotal**	**149**
		Total	**233**

SRM-01 OTAY HILLS
Area 5. - 59.6 acres

11 April 2008
JW
(@ 1250 - (AV))

START: 950 am, 26°C, 0-2 mph, clear
END: 1210 am, 30°C, 10-15 mph (gusts 20), clear

Flowering Plant Spp

Eri. fas.	Dei fas.
Vig. lac.	Fez vir.
Brassica sp.	Lot. sco.
Cal. spl.	Pla. ere.
Cal. mar.	E. botrium
Silgal	Dic. cap
Bloomeria/Muilla	Mir. cal.
Eri. con.	Pha. cam.
Cla. pur.	Lot. ves.

BUTTERFLIES

BEHR'S metalmark ||||
LADIES: ||||
Fun. dusky wing |
Mylitta Crescent |
Acmon Blue |
Fritillary ||||

BUTTERFLIES

LADIES: ||||
PAINTED LADY: ||||
WHITES: |||
GABB'S CHECKERSPOT:
BEHR'S METALMARK: ||||
WEST COAST LADY: ||||
CALIF RUGLET: ||||
PAINTED LADY: ||||
CHECKERED WHITE: ||||
SARA ORANGETIP: |||
PAINTED LADY: ||||
GABB'S: ||||
BUCCEYE: |

~~WILDLIFE~~

lizards, lady bugs, moths
ANNA, CORA, grasshoppers
woolly bear caterpillar

START 2 1215 30°C, 3-12 mph, clear
END: 2 1420, 315, 4-9 mph, clear

SRM-01 OTAY HILLS
continued...

11 April 2008
JW

FLOWERING PL SPP

Cryptantha sp.
Dudleya variegata - buds, ~100 indiv.
Osm. ten.

joined by AV @ 1250 pm

WILDLIFE
cottontail, AMKE

Appendix C
U.S. FISH AND WILDLIFE SERVICE SURVEY PLOT DATA SHEETS

Date 3/19/08 Plot number 32 Time start 1207 end 1222

Plot location Otay Hills Area 3 1786529.74 N 6360556.22 E

Surveyor Alison Varner

Temp (°C) 22.2 Wind (km/hr) 3-10 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
1	SW		
2	NE		

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, (100-1000) >1000
Plantago patagonica	(0), 1-20, 20-100, >100
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dom shrub: Erifas, Artcal

Common white
Funereal Duskywing
Behrs metalmark

Nectar: Cryptantha, Lindia, Diccap, Lotsco, Lascal, Esccal, Brassica

Date 3/19/08 Plot number 34 Time start 1415 end 1430

Plot location Otay Hills Area 3 1786787.51 N 6361427.16 E

Surveyor Alison Varner

Temp (°C) 22.2 Wind (km/hr) 5-10 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
NO Quino observed			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 100-1000 (1000)
Plantago patagonica	(0), 1-20, 20-100, >100
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%), 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dom shrub: Erifas, Mal lau

White
Behrs metalmark

Nectar: Dic cap, Brassica, Lindia, Silgal, Lot sco, [redacted], Hed arb, Pha cic, Erifas, Las co Esc cal, sol par, Lat ves

Date 3/19/08 Plot number 38 Time start 1250 end 1305

Plot location Dry Hills Area 3 1787047.74 N 636025.05 E

Surveyor Alison Varner

Temp (°C) 22.2 Wind (km/hr) 5-10 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
1	NE		
1	NE		
1	SE		

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, ~~>100~~ 100-1000 (>1000)
Plantago patagonica	(0), 1-20, 20-100, >100
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dom shrub: Eri fas, Art cal, Ade fas

Nectar: Lin dig, Las cal Cryptantha, Lot sto Phacelia cic, Sil gal, Dic cap

White
Behrs metalmark
Anise swallowtail

Date 3/19/08 Plot number 41 Time start 1327 end 1342

Plot location Otay Hills Area 6 1787603.02 N 6360535.57 E

Surveyor Alison Varner

Temp (°C) 23.3 Wind (km/hr) 6-11 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
NO Rhino observed			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dom shrub: Artcal, Mal laur

Nectar: Lotsco, Dic cap, Brassica Pha cic, [redacted], Allinm, Sol par Viola, Plagio, Las cal, Erocic Cal cil, Lat ves

Spice swallowtail
Behrs metalmark

Date 21 March 2005 Plot number 25 Time start 12:10 end 12:25

Plot location 1785775.32N 6359319.66E

Surveyor Jasmine WATTS (accompanied by J. Kuenen)

Temp (°C) 24 Wind (~~km/hr~~ mph) 0-3 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
0			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, >100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dom. Shrubs

Eri. fas.

Vig lae

Plagiobothrys

Lessingia

Dic cap

Mustard sp.

Eriophyllum

Common White II

West Coast Lady II

Behr's metalmark III

Painted Lady II

Fun. dusky wing I

Date 21 March 2008 Plot number 258 Time start 1230 end 1245

Plot location 1786447.66 N 6359280.79 E

Surveyor Jasmine Watts (+ Jason Kumaw)

Temp (°C) 25 Wind (km/hr) 2-4 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
Ø			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

DOM. SHRUBS

Er. fas.
Vig. Lat.

Lin. dia.
Plagiobothrys
Cryptantha

Painted Lady 5
West Coast Lady 2
Behr's metalmark 3

Date 21 March 2008 Plot number 31 Time start 12:50 end 1:05

Plot location 1786619.50 N 6358581.10 E

Surveyor Jasmine Watts (+ Jason Furnour)

Temp (°C) 25 Wind (km/hr) 2-4 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
1			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Lasical.
Plagiobothrys
Cryptanthasp
D.c.cap.

Dom. shrubs
Eri. fas.

Fun. dusky wing 1
Anse swallowtail 1
Painted Lady 3
West Coast Lady 1
Behr's metalmark 4

Date 03/21/08 Plot number 56 Time start 2:15pm end 2:30pm

Plot location 1789356.51 N 6363403.95 E

Surveyor Sally T.; Brian P.

Temp (°C) 73°F Wind (km/hr) 2-5 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100 (101-1,000)
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75% (a few years ago)
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

other butterflies: Painted lady 4
lady 8
fon. duskywing 1
white 1
Anise swallt 1

Date 3/21/08 Plot number 71 Time start 1420 end 1435

Plot location 1791156.37 N / 6360366.11 E Survey1

Surveyor B. Parker | D. Allen

Temp (°C) 22 Wind (km/hr) 3-4 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Adenostema fasciculatum Leptosiphon sp popcorn flower

Painted lady
West coast lady
Anise swallowtail
Behr metal mark

Date 3/21/08 Plot number 77 Time start 1350 end 1405

Plot location 1791561.86 N / 6360703.67 Survey

Surveyor B Parker / D Allen

Temp (°C) 22 Wind (km/hr) 0-3 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Adenostoma fasciculatum
Ceanothus oleyensis
Salvia clevelandii

Popcorn Flower
Lasthenia
Lupinus
Erodium cicutarium

Sand Aster
Painted Lady
Least Coast Lady
Perplexing Hairstreak
Behr Metalmark

Date 3/21/08 Plot number 78 Time start 1330 end 1345

Plot location OTAY Hills 1791619.73N/6360235.76E Survey1

Surveyor B. Parker / D. Allen

Temp (°C) 22 Wind (km/hr) 2-3 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
2	SW		
1	NE		

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Adenostoma fasciculatum
Ceanothus tomentosus
C. otayensis
Arctostaphylos sp.

Popcorn flower
Lasthenia
Lupinus
Erodium cicutarium

Sara orangetip
Painted lady
West Coast lady
Behr's metalmark

Date 3/21/08 Plot number 82 Time start 1310 end 1325

Plot location 1791899.82 N / 6359787.90 E Survey 1

Surveyor B. Parker / D. Allen

Temp (°C) 21.5 Wind (km/hr) 2-3 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
2	SW		

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Adenostoma fasciculatum
Ceanothus tomentosus

Popcorn Flower
Lasthenia
Erodium cicutarium
Linanthus sp.

Common white
Sara orangetip
CAL. Ringlet
Pepper Grass Skipper
Painted Lady
West Coast Lady

Date 3/26/09 Plot number 25 Time start 1120 end 1135

Plot location Otay Hills Area 4 1785775.32 N 6359319.66 E

Surveyor D Allen

Temp (°C) 20 Wind (km/hr) 2-5 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, ≥100 – 1000, (>1000)
Plantago patagonica	0, 1-20, 20-100, ≥100 – 1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

COWI†
DALA
BEMM
V. Lanum
E. Saxosus
popcorn
Goldfield

Date 3/26/08 Plot number 28 Time start 1055 end 1110

Plot location Otay Hills Area 4 1786447.66N 6359280.79E

Surveyor D Allen

Temp (°C) 26.6 (80°F) Wind (km/hr) 0-3 Sky: (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, (>100)
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, (26-50%), 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

BEMM
COWH
FUDW
PALA

E fascic
V. lanceolata

Date 3/26/08 Plot number 31 Time start 1210 end 1225

Plot location Otay Hills Area 4 1786619.50 N 6358581.10 E

Surveyor D Allen

Temp (°C) 21 Wind (km/hr) 7-9 Sky: (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, (20-100), >100
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, (51-75%), >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

BEMM E. fasac
PACA U. lacin.
COWH

Date 3/26/08 Plot number 53 Time start 1410 end 1425

Plot location 1789158.30N 6260296.39E

Surveyor Brian Porter

Temp (°C) ~~68~~ 20 °C Wind (km/hr) 4-6 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%), 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Shrub - Malosma, Buckwheat, Deerweed, Viguiera
Nectar - Dichelostemma, Gilia, Plagiobothrys, chamaesyce
Butterflies - P.C. ~~Blue~~ Ringlet
Roads
- Dominant plant: Erodium
- Evidence of Trail use: ~~scat~~ scat, tracks & Mammal class Pinnipeds

Date 3/26/08 Plot number 58 Time start 1234 end 1249

Plot location 1789731.34 N 6359106.29 E

Surveyor BRIAN PARKER

Temp (°C) 23 Wind (km/hr) 3-5 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100 (100-1000)
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Viguiera laciniata → dom - shrubs
Eriogonum fasciculatum
Lots of grass cover - Bromus madritensis rubens/Bromus diandr
Some cryptantha, Dichelostemma

(over)

Date 3/26/08 Plot number 71 Time start 1415 end 1430

Plot location 179154.37 N 6360366.16 E

Surveyor DALE RITTENOUR

Temp (°C) 27° Wind (km/hr) 0-6 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100 (100-1000)
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Adenostoma, Salvia clevelandii, Ceanothus

Nectar - Plagiobothrys abundant

Butterflies - P. LADY ☒ 1:-15

WC LADY 1:-5

Date 03/27/08 Plot number 32 Time start 12:55 end 1:10 pm

Plot location 1786529.74 N 6360556.22 E

Surveyor Sally Trnka

Temp (°C) 68°F Wind (km/hr) 2-8mph Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
none			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100-1,000, (1,000+)
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, (>75%) several years ago
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Date 03/27/08 Plot number 34 Time start 10:22 a.m. end 10:37 a.m.

Plot location 34 1786787.51 N 636427.16 E

Surveyor Sally Trnka

Temp (°C) 63°F Wind (km/hr) 0-4 mph Sky: (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
none			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 100 - 1,000, 1,000+
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
	includes dirt road
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75% — several years ago
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Date 3/27/08 Plot number SR Time start 1242 end 1257

Plot location 1787047.74 N 636052.25 E

Surveyor Brian Parker

Temp (°C) 70 Wind (km/hr) 4-6 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
1	SW 32°34.037' N		
	116° 54.184 W		
	No Photo		

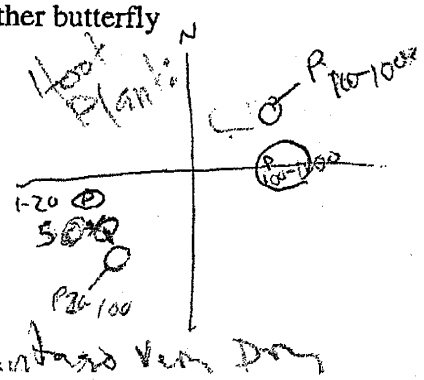
Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100 (1000+)
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Shrubs - En. fas, Ade fas, Mal lau

Nectar - Las cal, Eriogonum some Cast. ess., some Cryptanthe

Butterflies
Sara Orangetip - 1
Checkered White - 2
Painted Lady - 7
QCB - 1
Behr Metalmark - 6



Date 3/27/08 Plot number 39 Time start 1120 end 1135

Plot location Otay Hills Area 2 1787683.64N 6362405.22E

Surveyor Alison Vamer

Temp (°C) 21.6 Wind (km/hr) 0-3 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
NO Rhino observed			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed). Nectar: Cryptantha, Lotsco, Chs ex4s, Vig lac, Cal mac

Down shrub: Erifas

Painted Lady IIIIIII

Date 3/27/08 Plot number 42 Time start 13:02 end 13:17

Plot location Otay Hills 1788015.47 N 6361690.87 E

Surveyor Stacy Nigro - Helix Envir. Planning

Temp (°C) 21 Wind (km/hr) 5-13 Sky (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta ✓	0, 1-20, 20-100, (>100)
Plantago patagonica	(0,) 1-20, 20-100, >100
Antirrhinum coulterianum	(0,) 1-20, 20-100, >100
Corylanthis rigidus	(0,) 1-20, 20-100, >100
Castilleja exserta ✓	0, 1-20, (20-100,) >100
% Bare ground estimate	(0-25%,) 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%,) 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%,) 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

whites - 4
ladies - 5

Nectar sources: Crypto/Phacelia spp. Erio. fasc., Linanthus

Dom. shrubs: Art. cal, Vig. lac, Erio. fasc

Date 3.27.08 Plot number 48 Time start 1350 end 14:05

Plot location Otay Hills 1788593.15ftN, 6361189.13ftE

Surveyor Amy Mattson

Temp (°C) 65°F (18.3°C) Wind (km/hr) 0-3 (0-4.8 km/hr) mph Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
Ø			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, ~~>~~100 - 1000, >1000
Plantago patagonica	0, 1-20, 20-100, ~~>~~100 - 1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75% N/A
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Sulfurflies : white, Gabbs, ringlet

Nectar : malacothamnus, Lotus scop, Cryptantha, Orch cap, Brassica sp. Viola

Shrubs - viguiera, Mat Tan, Cal cil, Johnny jumpup, silene sp, Sisy bel, Allium sp

mostly wasps

Date 3.27.08 Plot number 51 Time start 11:35 end 11:50

Plot location Otay Hills 1789126.05 ft N, 6362136.07 ft E

Surveyor Amy Mattson

Temp (°C) 65°F (18.3 C) Wind (km/hr) 3-6 mph (4.8 - 9.6 km/hr) Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
0			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100 - 1000, >1000
Plantago patagonica	0, 1-20, 20-100, >100 - 1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75% NA
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

butterflies - Gabbs, ladies, painted lady, white

shrubs - AA cal, Lesonia, Sal api, Lot sco, Vis lae, Eri fas

nectar - Lin dia, Dic cap, Cryptanth, Lasthen, Mim cal, Oen alt, Allium sp, Lathyrus, Lasthenia, Phac cic, Hyp sta, Ess cal, Johnny jumpup, Erodium spp, Solanum sp, Silene, Lupinus sp, Brassica sp, Vis lae

Date 3.27.08 Plot number 54 Time start 10:34 end 10:59

Plot location Otay Hills 1789158.41 FN, 6361302.09 ft E

Surveyor Amy Mattson

Temp (°C) 18.3°C Wind (km/hr) 0-8 km/hr (0-5 mph) Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
0			

Hostplant species	Density per plot (estimate)
Plantago erecta ✓	0, 1-20, 20-100, >100 - 1000, >1000
Plantago patagonica	0, 1-20, 20-100, >100 - 1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta ✓	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75% n/a
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

other butterfly: lady, ruddy, ringlet, Gabbs
shrubs - Mal lam, Viguiera, Ericam, Adenostoma
nectar - Gilia, Lupinus, Allium sp, Helianthus, etc.

Date 3/27/08 Plot number 56 Time start 11:45 end 12:00

Plot location Otay Hills 1789356.91 N 6363403.95 E

Surveyor Stacy Nigro - Helix Env. Plng

Temp (°C) 20 Wind (km/hr) 3-11 Sky: (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	(0), 1-20, 20-100, >100
Plantago patagonica	(0), 1-20, 20-100, >100
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, (51-75%), >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Behrs - ♂ = 1
Ladies - ♀♀ = 5
Gabbs - ♂ = 1
White - ♀ = 2
Dom. shrubs = Ade. fas, Salvia mun. &
nectar sources = Cryptantha / Plagiobothrys

Date 3/27/08 Plot number 77 Time start 1015 end 1030

Plot location 1791561.86 N / 6360703.67 E

Surveyor Doug Allen

Temp (°C) 18.8°C (F 66) Wind (km/hr) 3-5 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100 (1600)
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, (1-20), 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, (51-75%), >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Chamise
C. lanuen
C. otay
Yylo. coc.

PALA
WCLA

Gold Fields
Pop corn

Date 3/27/08 Plot number 78 Time start 1035 end 1050

Plot location 1791619.73N / 6360235.76E

Surveyor D. Allen

Temp (°C/°F) 18.8/66 Wind (km/hr) 0-3 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
1	NE		

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100 (>100)
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, (51-75%), >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Chamise
C. tomen
T. Cypress

PAST.
LUCU
PALA
BEMM

Gold field
Popcorn Flower
Eriodictyon CC

Date 3/27/08 Plot number 82 Time start 1025 end 1055

Plot location 1791899.82W / 6359787.9E

Surveyor RobH

Temp (°C) 67° / 19.4°C Wind (km/hr) 2-4 mph Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
1 1 (2)	SW		

Hostplant species	Density per plot (estimate)
Plantago erecta	0, (1-20), 20-100, >100
Plantago patagonica	(0), 1-20, 20-100, >100
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Date 3/27/08 Plot number 85 Time start 1155 end 1215

Plot location 1792631.38 N 6357559.51 E

Surveyor Rob H

Temp (°C) 69°F / 20.5°C Wind (km/hr) 35 mph Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, (1-20), 20-100, 101-1000, >1000
Plantago patagonica	(0), 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%), 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Date 03/28/08 Plot number 26 Time start 1:15 end 1:30

Plot location 1786378.06 N 1036023.56 E

Surveyor Sally Tonke

Temp (°C) 68°F Wind (km/hr) 4-10 mph Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
none			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100, (>1,000)
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, (>75%)
% Shrub cover estimate	0-25%, (26-50%), 51-75%, ~~>75%~~

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Date 4/7/08 Plot number 26 Time start 1310 end 1325

Plot location 26 - Otay Hills 1786328.06 N 6360231.56 E

Surveyor Dale Ritenour

Temp (°C) 20 Wind (km/hr) 8-10 mph Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, (101-1000), >1000
Plantago patagonica	(0), 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	0-25%, (26-50%), 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%), 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Painted Ladies, Check. White

Date 4/7/08 Plot number 32 Time start 12:43 end 12:58

Plot location Otay Hills 1786529.74 N 6360556.22 E

Surveyor Amy Mattson

Temp (°C) 23°C Wind (~~km/hr~~) 6-10 mph Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
Ø			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75% N/A
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

butterflies: lad, white

shrubs: Eri fas, Vis lac,

Forbs: Vis lac, Cal sol, Ein fas, Lac cal, Cal mac, Osm fra, Lotus sp., Linan Erodium sp., Cryptanthe sp., Esc cal, Solanum sp.

Date 4/7/08 Plot number 34 Time start 1355 end 1410

Plot location Otay Hills 1786787.51 N 6361427.16 E

Surveyor Dale Rivenes

Temp (°C) 20 Wind (km/hr) 4-10 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Date 4/8/08 Plot number 38 Time start 1240 end 1255

Plot location 38 - Otay Hills 1787047.74 N 6360525.25 E

Surveyor Dale Ritenour

Temp (°C) 23 Wind (km/hr) 6-10 mph Sky (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, (>1000)
Plantago patagonica	(0), 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	(0-25%), (26-50%), 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%), 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Few annuals still in flower - some cryptantha.

Painted Lady, Behr's Metalmark + Checkered White also observed.

Date 04/07/08 Plot number 41 Time start 12:57 end 13:12

Plot location Otay Hills 1787603.02 N 6360535.57 E

Surveyor Sally TRUKA

Temp (°C) 65°F Wind (km/hr) 5-8 mph Sky: (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
none			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, (>75%)
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Date 4-7-08 Plot number 53 Time start 1410 end 1425

Plot location 1789518.30 N / 6360296.39E

Surveyor Brian Parker

Temp (°C) 19 Wind (km/hr) 6-12 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	(0) 1-20, 20-100, >100
Plantago patagonica	(0) 1-20, 20-100, >100
Antirrhinum coulterianum	(0) 1-20, 20-100, >100
Corylanthis rigidus	(0) 1-20, 20-100, >100
Castilleja exserta	(0) 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%), 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Shrubs - Malosma, Eriogonum, Lotus, Viguiera

Nectar - Dichelostemma, Dendromecon, Eriogonum, Calandrinia

Butterflies - Ringlet - 1 Painted Lady - 1

West Coast Lady - 2

Notes - Rock outcrop - sharp chalk.

Date 4-10-08 Plot number 71 Time start 1230 end 1245

Plot location 1791156.37 N 6360366.16 E

Surveyor Brian Parker

Temp (°C) 74 Wind (km/hr) 4-6 m/h Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Sara 2.
P. Lady 1

Hostplant species	Density per plot (estimate)
Plantago erecta	(0) 1-20, 20-100, >100
Plantago patagonica	(0) 1-20, 20-100, >100
Antirrhinum coulterianum	(0) 1-20, 20-100, >100
Corylanthis rigidus	(0) 1-20, 20-100, >100
Castilleja exserta	(0) 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Nectar Cryptantha, Eriogonum

shrubs - Cosmica, Salicle, Eri. fas,

Butterflies - Sara Orangetip - 3
Painted Lady - 2

Date 4/10/08 Plot number 77 Time start 11:11 end 11:26

Plot location Otay Hills 1791561.81E N 6360703.67E

Surveyor Stacy Nigro

Temp (°C) 21 Wind (km/hr) 1-4 mph Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100, (>1000)
Plantago patagonica	(0,) 1-20, 20-100, >100
Antirrhinum coulterianum	(0,) 1-20, 20-100, >100
Corylanthis rigidus	(0,) 1-20, 20-100, >100
Castilleja exserta	(0,) 1-20, 20-100, >100
% Bare ground estimate	0-25%, (26-50%), 51-75%, >75%
% Burned area estimate	(0-25%) 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, (51-75%) >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Nectaring resources: Lasth cal, Crypt. sp, Eri. fasc

Dom. shrubs = Aden. fasc, Ceanothus sp.

butterflies: 1 blue, 1 anise swallowtail = 2

Date 04/10/08 Plot number 78 Time start 11:21 end 11:36 a.m.

Plot location Otay Hills Quarry 17 91619.73 N 1 6360235.76 E

Surveyor Sally TRNKA

Temp (°C) 68°F Wind (km/hr) 2-4mph Sky: (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
none			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100 (100-1000) >1000 very dry
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, (1-20), 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, (>75%) several yrs ago
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

chamise is dominant (Adenostema fasciculata)

flowering plants

Cry sp. Eriodyctyon tric.
Hyp gla Salvia clevelandii
Yuc whip. Eriophyllum confertiflorum
~~Linaria can.~~
Ant. notalianum.

animals

raven
Coenotodes frit. 1
Gabb's chlorspt 11
whit III
lady HHT
Sarai orti 1

Date 4-10-08 Plot number 82 Time start 1130 end 1145

Plot location 1791899.82N 6359787.90E

Surveyor Brian Parker

Temp (°C) 71°F Wind (km/hr) 2-4 m/s Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
0			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100 None Visible
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100 SW
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Butterflies
SaraOT:
Ringlet ☒
Com Ent:
Chk Wht:
GRBB:
WC Lady:

Shrubs - Adenostoma, Ceanothus, Lotus Scop, Erio. fass, Sal clev., Malosma
Nectar - Cryptantha

Date 4/10/08 Plot number 85 Time start 13:22 end 13:37

Plot location Otay Hills 1792631, 38 N 635559.51 E

Surveyor Stacy Nigro

Temp (°C) 22 Wind (km/hr) 2-5 mph Sky: (clear,) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, (20-100), >100
Plantago patagonica	(0), 1-20, 20-100, >100
Antirrhinum coulterianum	(0) 1-20, 20-100, >100
Corylanthis rigidus	(0) 1-20, 20-100, >100
Castilleja exserta	(0) 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dom Shrubs = Vig lac, Erio Fasc

Nect resources = Crypt / Plag, Erio Fasc

orgtip-11 = 2

Behr's metal mark-11 = 2

red admiral-1 = 1

lady-11 = 5

ringlet-1 = 1

11

Date 04/10/08 Plot number 87 Time start 13:00 end 13:15

Plot location 1793126.39 N 6358207.94 E

Surveyor Sally TRNKA

Temp (°C) 70°F Wind (km/hr) 2-10mph Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100
Plantago patagonica	0, 1-20, 20-100, (>100)
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, (>75%)
% Shrub cover estimate	0-25%, 26-50%, (51-75%), >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Date 4-11-08 Plot number 39 Time start 1110 end 1125

Plot location 1787683.64 N 6362405.22 E

Surveyor Brian Parker

Temp (°C) 27 Wind (km/hr) 10-13 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

SHRUBS- Malosma, Artemisia
Viguiera

Flowering- Viguiera, Deinandra, Cryptantha, DeLelostemma

4- P Lady ::
1- Englet
2- Sara Orangetip :
* Hard to ID Plantago b/c all dried.

Date 4/11/08 Plot number 42 Time start 1230 end 1245

Plot location Otzy Hills 1788015.47 N 636290.82E

Surveyor Dale Ritenour

Temp (°C) 29 Wind (km/hr) 11-19 Sky: (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	(0), 1-20, 20-100, >100
Plantago patagonica	~~0~~, 1-20, 20-100, >100
Antirrhinum coulterianum	~~0~~, 1-20, 20-100, >100
Corylanthis rigidus	~~0~~, 1-20, 20-100, >100
Castilleja exserta	~~0~~, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%), 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dominant shrubs: Vrg lac, Eri Par

Butterflies: Painted Lady

Nectar: Vrg lac, Erithras, Lin. dia.

Date 4/11/08 Plot number 48 Time start 1115 end 1130

Plot location Otay Hills 1788593.15 N 6361189.13 E

Surveyor Dale Ritenour

Temp (°C) 26 Wind (km/hr) 0-6 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
None			

Hostplant species	Density per plot (estimate)
Plantago erecta	(0), 1-20, 20-100, >100
Plantago patagonica	(0), 1-20, 20-100, >100
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	0-25%, (26-50%), 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%), 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dominant Shrubs: Viglzc, Artcal, Mallau
Nectar: Viglzc; Few popcorn flowers
Butterflies: Painted Ladies, Fritillary

Date 4/11/08 Plot number 52 Time start 1415 end 1430

Plot location Otay Hills 1789126.05 N 6362136.07 E

Surveyor Dale Ritenour

Temp (°C) 24 Wind (km/hr) 2-20 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
None			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100 >1000
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dominant Shrubs: Salapi, Mallau, Adefas, Artca1

Nectar: Plaere, Lindia, Silgal. Ericon

Butterflies: West Coast Lady, Painted Lady, Common White, Fritillary

Date 4/11/08 Plot number 54 Time start 1045 end 1100

Plot location Otzy Hills 17 89158.41N 6361302.09E

Surveyor Dale Ritenour

Temp (°C) 26 Wind (km/hr) mph - 2-5 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
None			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100 (>1000)
Plantago patagonica	(0), 1-20, 20-100, >100
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dominant Shrubs - Adefas, Salspi, Artcal

other butterflies: Painted Lady, Callippe Fri. Hillegs, Sara Orangetip, CA Ringlet

Date 4/11/08 Plot number 56 Time start 1335 end 1350

Plot location Otay Hills 1789356.51 N 6363403.95E

Surveyor Dz/cBitenour

Temp (°C) 28 Wind (km/hr) 2-10 Sky: (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
None			

Hostplant species	Density per plot (estimate)
Plantago erecta	~~0~~, 1-20, 20-100, >100
Plantago patagonica	~~0~~, 1-20, 20-100, >100
Antirrhinum coulterianum	~~0~~, 1-20, 20-100, >100
Corylanthis rigidus	~~0~~, 1-20, 20-100, >100
Castilleja exserta	~~0~~, 1-20, 20-100, >100
% Bare ground estimate	0-25%, ~~26-50%~~, 51-75%, >75%
% Burned area estimate	~~0-25%~~, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, ~~26-50%~~, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dominant shrubs: Ade Fas, Salvia clev.,

Butterflies: Painted Lady

Nectar: Popcorn flowers, Ant. nut., Eri. con.

Date 4/14/08 Plot number 25 Time start 1038 end 1053

Plot location 1785775.32 N 6359319.66 E

Surveyor Alison Varner

Temp (°C) 29.4 / 85°F Wind (km/hr) 0-2 mph Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000 dry
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed). Flowering Plants: Cal mac, Erifas, Viglac Cal sp, Plaere (dry), Deifas, Osmodenia Sil gal

Behrs metalmark 1/1+ 11
White 1

Date 4/14/08 Plot number 26 Time start 11:34 end 11:49

Plot location Otay Hills 1786328.06 N 6360231.56 E

Surveyor Stacy Nigro

Temp (°C) 28 Wind (km/hr) 3-8 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

ϕ

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, (101-1000), >1000
Plantago patagonica	(0), 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

crispy

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dom. shrubs = Erio. fasc, Art cal, Vig. lac

blue-1 = 1
white-11 = 2
lady-11 = 2
Behrs-1 = 1
6

Nectar resources = Erio. fasc

Date 4/14/08 Plot number 28 Time start 1000 end 1015

Plot location 1786447.66 N 6359280.79 E

Surveyor Allison Varner

Temp (°C) 28.8 (84°F) Wind (km/hr) 0-3 mph Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed). Flowering: Deifas, Erifas, Viglac, Calsp1, Plaere (dry)

Painted Lady III

Behrs metalmark II

gabbs 1

Dom shrubs: Erifas, Viglac

Date 4/14/08 Plot number 31 Time start 1000 end 1035

Plot location 1786619.50 N 6358581.10E

Surveyor Alison Varner

Temp (°C) 28.8 (84°F) Wind (km/hr) 0-2 mph Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

dry

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed). Flowering Plants: Viglac, Calmac, Eri fas, Den-fas, Cal spl, Brassica Erodium/Hedara Dom shrub: Eri-fas

Funeria & Dusky wing 1
Behrs metalmark 1111
Common white 11

Date 4/14/08 Plot number 32 Time start 11:08 end 11:23

Plot location Otay Hills 1786579.74 N 6360556.22E

Surveyor Stacy Nigro

Temp (°C) 28 Wind (km/hr) 3-6.4 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Ø

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, (101-1000), >1000
Plantago patagonica	(0), 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	0-25%, (26-50%), 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

crispy

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dom. shrubs = Erio. fasc, Vig. lac, Art cal

Nectar sources = Erio fasc, Crypt/Plagio.

Behr's met - IIII = 4
white - IIII III = 8
lady - I = 1
Callipe frit - II = 2

15

Date 4/14/08 Plot number 34 Time start 12:20 end 12:35

Plot location Otay Hills 1786787.51 N 6361427.116E

Surveyor Stacy Nigro

Temp (°C) 30 Wind (km/hr) 3-8 Sky: (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

ϕ

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, (20-100), 101-1000, >1000
Plantago patagonica	(0), 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0) 1-20, 20-100, >100
Corylanthis rigidus	(0) 1-20, 20-100, >100
Castilleja exserta	(0) 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%) 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%) 26-50%, 51-75%, >75%

Crispy –

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dom. shrubs: Erio. fasc, Mal. laur, Vig. lac

Sorangtip-1

Callipe frit. -1

Behr's mat. -1

3

Date 4/14/08 Plot number 38 Time start 10:48 end 11:03

Plot location Otay Hills 1787047.74 N 6316525.85 E

Surveyor Stacy Nigro

Temp (°C) 26 Wind (km/hr) 0-6.4 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

0

Hostplant species	Density per plot (estimate)
crispy ← *Plantago erecta*	0, 1-20, (20-100,) 101-1000, >1000
Plantago patagonica	(0,) 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0) 1-20, 20-100, >100
Corylanthis rigidus	(0) 1-20, 20-100, >100
Castilleja exserta	(0) 1-20, 20-100, >100
% Bare ground estimate	0-25%, (26-50%,) 51-75%, >75%
% Burned area estimate	(0-25%,) 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%,) 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dom shrubs - Erio fasc, Lot scop, Mal laev

Nectar sources - Erio fasc.

- behr's metalmark-II = 2
- white-III = 4
- lzdy-1 = 1
- CA ringlet-1 = 1

8

Date 4/14/08 Plot number 39 Time start 1107 end 1122

Plot location 1787683.64 N 6362405.22 E

Surveyor Alison Varner

Temp (°C) 29 Wind (km/hr) 2-4 mph Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000 dry
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed). Flowering Plants: Eri fas, Vig lac, Cal spl, Dic fas, Cal mac, Lot sco Cryptantha

Common White 11
Gabbs 1
Painted Lady 1

Date 4/14/08 Plot number 41 Time start 10:25 end 10:40

Plot location Otay Hills 1787603.02 N 6360535.57 E

Surveyor Stacy Nigro

Temp (°C) 26 Wind (km/hr) 0-1.6 Sky: (clear,) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	(0,) 1-20, 20-100, 101-1000, >1000
Plantago patagonica	(0,) 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0,) 1-20, 20-100, >100
Corylanthis rigidus	(0,) 1-20, 20-100, >100
Castilleja exserta	(0,) 1-20, 20-100, >100
% Bare ground estimate	(0-25%,) 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%,) 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%,) 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed). woolybear caterpillars

white sp. - IIII = 4
orangetip - I = 1
ca ringlet - III = 3
Callipe. fritillary II = 2
10

Dom. shrubs = Malosma laur, Erio. fasc

Nectar sources - Erio. fasc.

Date 4/14/08 Plot number 42 Time start 1125 end 1140

Plot location 1788015.47N 636269.82E

Surveyor Alison Vamer

Temp (°C) 29.4 Wind (km/hr) 2-6 mph Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	(0,) 1-20, 20-100, 101-1000, >1000
Plantago patagonica	(0,) 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0,) 1-20, 20-100, >100
Corylanthis rigidus	(0,) 1-20, 20-100, >100
Castilleja exserta	(0,) 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%), 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed). Flowering Plants: Viglac, Eriflas Brassica sp., Cal sp., Letsco, Escal Dan fas

Dom shrub: Viglac, Eriflas, [illegible]

Painted Lady 1
Common White 1

Date 4.14.08 Plot number 48 Time start 11:15 end 11:30

Plot location Otay Hills Area 8 1788593.15N 6361189.13E

Surveyor Amy Mattson

Temp (°C) 29.4°C (85°F) Wind (km/hr) 0-3.2 km/hr (0-4 mph) Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
0			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75% N/A
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

nectar : Malac fas, Dishe, Cham poly, Mimulus sp, Bloom cio, Dei Fas, Silene, Hedera, Sis bid, Lot scop

butterflies white, Fritillary

shrubs : Mal laur, Eri fas, Dishe, Malac fas (few)

Date 4/14/06 Plot number 52 Time start 1030 end 1045

Plot location Otay Hills Area 8 1789126.05N 6360130.07E

Surveyor Amy Mattson

Temp (°C) 28.8°C 84°F Wind (km/hr) 0-2 0-3.2 km/hr. Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
0			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000 (dry)
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75% N/A
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

nectar: Silene, Eriophyllum sp, Gilia, Lot scop, Lin dian (almost all dry), (Olyunia) Apiaceae, Cryptantha
butterflies: white, fritillary, Behr, cabbage white
shrubs: mal lan, Haz squ, Sal apiculata
Hyp glab, mustard

Date 4.14.08 Plot number 53 Time start 11:43 end 11:58

Plot location Otay Hills Area 6 · 1789158.30N 636029.659E

Surveyor Amy Mattson

Temp (°C) 29.4°C / 85°F Wind (km/hr) 0-3.2 km/hr / 0-2 mph Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
0			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75% n/a
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

nectar: Dic cap (dry), mustard, Eri fas, Lot sco, Dei fas, Mir cal (dry), Caly mar, Oak sp.

butterflies: Lady, fritillary, ringlet

shrubs: mal fas, Eri fas, Lot sco

Date 4/14/08 Plot number 54 Time start 10:57 end 11:12

Plot location Otay Hills Area 8 1789158.41 N 6361302.09 E

Surveyor Amy Mattson

Temp (°C) 28.8°C 84°F Wind (km/hr) 0-3.2 km/hr 0-2 mph Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
0			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000 dry
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75% N/A
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

nectar - Ulske, mustard, Ade fas, Eri fas, Lindia (almost all dry), Cryptantha, Lasdal (dry), Hel sco, Clark purp, Stephanomeria sp., Lot sco, Daucus

shrubs - real lan, Ade fas, Ulske, Clark purp, Stephanomeria sp., Lot sco

butterflies - fritillary, paint lady, white

Date 4-14-06 Plot number 56 Time start 1000 end 1015

Plot location 1789356.51 N / 636403.95 E

Surveyor Brian Parker

Temp (°C) 26 Wind (km/hr) 3-5 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Sara 4;
Cabbage 1
P Lady 2

CORA
Uta
Bcsp

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Shrubs Chamise, Salvia clevc, Rock Rose, Malosma, Viguiera

flowers Plagiobothrys, Phacelia, Eriophyllum, Deinandra fasc., Rock rose
Viguiera

B-Flies Sara Orangetip - 5 Painted Lady - 2
Cabbage White - 1

Date 4-14-08 Plot number 71 Time start 1122 end 1137

Plot location 1791156 - 37N/636086, 11 E

Surveyor Brian Parker

Temp (°C) 27 Wind (km/hr) 36 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Very dry + hard to see

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Shrubs - Sal cle, Ade fas, Ceanothus, Xylococcus

Flowers - Cryptantha, Eriophyllum

Butterflies Checkered White - 2
Painted Lady - 1

Date 4-14-08 Plot number 77 Time start 1142 end 1157

Plot location 1797561.86 N / 6360703.67 E

Surveyor Brian Parker

Temp (°C) 29 Wind (km/hr) 3-5 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Shrubs - Chamise, Ceanothus, Xylococcus, Salvia clevelandii

Flowers Lasthenia, Chamise, Mimulus, Brassica, Enophyllum Cryptantha

Butterflies - Checkered White - 1
Sara Orangetip - 1

Date 4-14-08 Plot number 78 Time start 1100 end 1115

Plot location 1791619.73N / 6360235.76E

Surveyor BRIAN PARKER

Temp (°C) 27 Wind (km/hr) 0-1 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta ALL DRY	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Comstock :
Ch W :
Ringlet :
Cabbage :

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

· Shrubs · Chamise, Ceanothus, Xylococcus, Cypress (w10), Salvia, Viguiera

Flowers · Chamise, Cryptanthus, Dudleya, Eriophyllum, Viguiera

Butterflies Comstock Fritillary - 3 CA Ringlet - 2
CHECKERED WHITE 3 Cabbage White 2

Date 4-14-08 Plot number 82 Time start 1040 end 1055

Plot location 1791899.82 N / 6359787.98

Surveyor Brian Parker

Temp (°C) 27 Wind (km/hr) 0-1 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Comstock : .

Sara : .

R. ringlet

Anise : .

Ch W : .

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100 - Totally dried + not visible
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Shrubs - Chamise, Ceanothus, Lotus, Xylococcus

Flowers - Sisbel, Dodecatheon, Cryptantha, Eriophyllum, Mimulus, Mustard, Erodium

Butterflies - Comstock Fritillary - 4
Sara Orangetip - 2
CA Ringlet 8
Anise Swallowtail - 1
CHECKERED WHITE - 1

Date 4/14/08 Plot number 05 Time start 1218 end 1233

Plot location 1792631.38 N 6357559.51E

Surveyor Alison Jarmer

Temp (°C) 30 Wind (km/hr) 0-2 mph Sky: ~~clear~~, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

dry

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed). Flowering Plants: Viglac, Brassicaz Dendas, Eriofas, Cal spot, Calmac

Sara Orangetip 1
Painted Lady II
Common White II
Behrs metalmark 1

Dom shrub: Viglac

Date 4-14-08 Plot number 87 Time start 1234 end 1249

Plot location 1793126.39 N 603582.07.94 E

Surveyor Brian Parker

Temp (°C) 29 Wind (km/hr) 3-5 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

CW ♀
Ring °
Sara ♀
CabbW °
GCS °

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

· Shrubs - Ceanothus, Chamise, Malosma, Xylococcus, Viguiera

Flowers - Eschscholzia, Dichelostemma, Brassica, Eriophyllum, Cryptantha, Viguiera, Caterpillar phacelia

Butterflies Checkered White - 3 Sara Orangetip - 2

Ringlet - 1 Cabbage White - 1

Gabb Checkerspot 1

Date 4/17/08 Plot number 25 Time start 0956 end 1011

Plot location 1,785,775.32 N / 6,359,319.66 E

Surveyor Brian Parker

Temp (°C) 25 Wind (km/hr) 10-13 Sky: ~~clear~~, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, ~~101-1000~~, >1000 very DRY
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100 PL ?
Castilleja exserta	0, 1-20, 20-100, >100 Behr ?
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Shrubs - Eriogonum, Viguiera, Art. cal

flowers - V. juvierta, Deinandra fas, Eriogonum, Sonchus

Butterflies - Painted Lady

Note - Reveg @ South end about to start → No Eriogonum containers (dominant in adjacent habitat) but many Salvia (not present in adjacent habitat).

Survey #5

Date 4/17/08 Plot number 26 Time start 9:55 end 10:10

Plot location Otay Hills

Surveyor Stacy Nigro

Temp (°C) 26 Wind (km/hr) 4.8-9.6 Sky: (clear,) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

dry

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, (101-1000), >1000
Plantago patagonica	(0,) 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0) 1-20, 20-100, >100
Corylanthis rigidus	(0) 1-20, 20-100, >100
Castilleja exserta	(0) 1-20, 20-100, >100
% Bare ground estimate	(0-25%) 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed). Dom shrubs = Erio. fasc, Vig. lac, Art cal

Nectar - Erio. fasc

Const frit-1 = 1
lady - IIII = 4
ptd lady-II = 2
7

Date 4-17-08 Plot number 28 Time start 1042 end 1057

Plot location 1786447.66 / 6359280.79

Surveyor Brian Parker

Temp (°C) 26 Wind (km/hr) 6-10 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

PL EJ

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Shrubs- Eri fas, Viguiera, Ant cal, Malosma

Flowers - Dendranthema, Eri fas, Vig lac, Calochortus

Butterflies - Painted Lady - 7

Date 4-17-08 Plot number 31 Time start 1024 end 1039

Plot location 1786619.50 N / 6358581.10 E

Surveyor Brian Parker

Temp (°C) 26 Wind (km/hr) 8-11 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Comstock ;
PL ;
WCL ;
Behr

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

- Shrubs - Viguiera, Eriogonum, Artemisia cal.
- Flowers - Viguiera, Deinandra fas., Calochortus, Eriogonum
- Butterflies - Comstock Fritillary - 2 Behr's Metalmark 1
  - Painted Lady - 6
  - West Coast Lady -

Survey #5

Date 4/17/08 Plot number 32 Time start 10:12 end 10:27

Plot location Otay Hills

Surveyor Stacy Nigro

Temp (°C) 26 Wind (km/hr) 8-11 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

dry

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Acmon blue - 1

Behr's metalmark - 1

Lady - 1

3

Dom. Shrubs = Eio. fas, Vig lac

Nectar source

Survey 5

Date 4/17/08 Plot number 34 Time start 11:20 end 11:35

Plot location Otay Hills

Surveyor Stacy Nigro

Temp (°C) 26 Wind (km/hr) 8-16 Sky (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	(0) 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0) 1-20, 20-100, >100
Corylanthis rigidus	(0) 1-20, 20-100, >100
Castilleja exserta	(0) 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

dry

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dom. Shrubs: Eri. fas., Lot. scop., Vig. lac.

Behr's met. - 11

2

Nectar source

Survey 5

Date 4/17/08 Plot number 38 Time start 10:32 end 10:47

Plot location Otay Hills

Surveyor Stacy Nigro

Temp (°C) 26 Wind (km/hr) 8-16 Sky: (clear,) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	(0,) 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0,) 1-20, 20-100, >100
Corylanthis rigidus	(0,) 1-20, 20-100, >100
Castilleja exserta	(0,) 1-20, 20-100, >100
% Bare ground estimate	(0-25%,) 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%,) 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%,) 26-50%, 51-75%, >75%

dry

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Domshrubs = Erio. fas

Nectar source

- Behrs metalmark - 1
- Lady - 1
- White - 1
- Comet frit. - 1

4

Date 4-17-08 Plot number 89 Time start 1140 end 1155

Plot location 1787633.64 N / 6362405.225

Surveyor Brian Parker

Temp (°C) 27 Wind (km/hr) 10-13 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

BMM, Ringlet

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Shrubs: Art cal, mal lau, Vig lac, Eri fas

Flowers: Vig lac, Dic cap, Eri fas, Cal mac,

Butterflies Behr MM - 1

CA Ringlet 1

Survey 5

Date 4/17/08 Plot number 41 Time start 10:52 end 11:07

Plot location Otay Hills

Surveyor Stacy Nigro

Temp (°C) 26 Wind (km/hr) 8-16 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	(0,) 1-20, 20-100, 101-1000, >1000
Plantago patagonica	(0,) 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0,) 1-20, 20-100, >100
Corylanthis rigidus	(0,) 1-20, 20-100, >100
Castilleja exserta	(0,) 1-20, 20-100, >100
% Bare ground estimate	(0-25%,) 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%,) 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%,) 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Dom. shrubs = Mal. laur, Eri fas

Comst frit - 11

Sara orgtp - 1

Nectar source →

3

Date 4-17-08 Plot number 42 Time start 1120 end 1135

Plot location 1783015-47 N/ 362690 . 826

Surveyor Brian Parker

Temp (°C) 27 Wind (km/hr) 0-13 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

PL: CW:

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Shrubs- Artcal, Vig lac, Mal Lau, Lotsco, Eri fas
Flowers . Vig lac, Dei fas, Eri fas, Esc cal, Calochortus
Butterflies

Date 4/17/08 Plot number 58 Time start 1010 end 1025

Plot location 1789731.34 / 6359106.29

Surveyor D Allen

Temp (°C) 27.1 Wind (km/hr) 3-5 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Calliope fritillary
PALA
BEMM

E. fasciculatum
V. laciniata

Date 4/16/08 Plot number 48 Time start 1055 end 1110

Plot location 1788593.15 / 6361189.13

Surveyor D Allen

Temp (°C) 27.4 Wind (km/hr) 5-8 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

- MALOSMA laurina — Callippe fritillary
- V. lacciata — BEMM
- E. Saccculatum — COWH
- A. Californica — DALA

Date 4/18/08 Plot number 52 Time start 1120 end 1135

Plot location 1789126.05/6362136.07

Surveyor D Allen

Temp (°C) 27.9 Wind (km/hr) 4-7 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000 DNY
Plantago patagonica	~~0, 1-20, 20-100, 101-1000, >1000 DNY~~
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	~~0~~, 1-20, 20-100, >100 DNY
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

E. fasciculatum
A. californica
S. apiacea apiana
A fasciculatum

comstock fritillary
CAWH

Date 4/18/08 Plot number 53 Time start 1030 end 1045

Plot location 1709158.30 / 6360296.39

Surveyor D Allen

Temp (°C) 27.4 Wind (km/hr) 3-5 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000 DRY
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

E. fasciculatum
A. californica
L. scoparius

Calliprepholidary.
PALA
BEMM

Date 4/18/08 Plot number 54 Time start 1200 end 1215

Plot location 1789158.41 / 6361302.09

Surveyor D Allen

Temp (°C) 28.1 Wind (km/hr) 5-8 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000 DRY
Plantago patagonica	~~0, 1-20, 20-100, 101~~-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100 Dry
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

A. fasciculatum — Comstock Fritillary
Xylococcus bi — PALA
A. californica — BEMM
E. fasciculatum — COWH

Date 4/18/08 Plot number 56 Time start 1000 end 1015

Plot location 1789356.51/6363403.95

Surveyor D Allen

Temp (°C) 25 Wind (km/hr) 0-2 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	(0), 1-20, 20-100, 101-1000, >1000
Plantago patagonica	(0), 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	0-25%, (26-50%), 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

A. fasciculatum PALA
COWH
SAOT

Date 4/18/08 Plot number 71 Time start 958 end 1015

Plot location Otay Hills

Surveyor Dale Ritenour

Temp (°C) 24 Wind (km/hr) 0-3 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
9			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, ~~26-50%~~, 51-75%, >75%
% Burned area estimate	~~0-25%~~, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, ~~26-50%~~, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Nectar - Deinandra fasciculata, Eriophyllum confertiflorum, Anth. nutt., Ade. fas., Cryptantha sp.

Butterflies - fritillary
Painted Lady

Date 4/18/08 Plot number 77 Time start 1030 end 1045

Plot location Otay Hills

Surveyor Dale Ritenour

Temp (°C) 24 Wind (km/hr) 0-3 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
None			

Hostplant species	Density per plot (estimate)
Plantago erecta	~~0~~, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	~~0~~, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	~~0~~, 1-20, 20-100, >100
Corylanthis rigidus	~~0~~, 1-20, 20-100, >100
Castilleja exserta	~~0~~, 1-20, 20-100, >100
% Bare ground estimate	~~0-25%~~, 26-50%, 51-75%, >75%
% Burned area estimate	~~0-25%~~, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, ~~51-75%~~, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Butterfly species: Sara Orangetip, Fritillary, Painted Lady

Nectar: Cryptantha sp.

Date 18 April 2018 Plot number 78 Time start 1020 end 1035

Plot location OTAY HILLS

Surveyor JASMINE WATTS

Temp (°C) 24 Wind (km/hr) 0-3 Sky: (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
0			

Hostplant species	Density per plot (estimate)
Plantago erecta	(0), 1-20, 20-100, 101-1000, >1000
Plantago patagonica	(0), 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, (51-75%), >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

~~Gabb's checkerspot~~
Checkered White
Fritillary
Painted Lady

Dom. Shrubs
Ade. fas.
Coa. tom.
Eri. far.

Nectar
Cryptantha sp.
Eri. con.
Antirrhinum sp.
Dei. fas.

Date 18 April 2008 Plot number 82 Time start 0955 end 1010

Plot location OTAY Hills

Surveyor JASMINE WATTS

Temp (°C) 24 Wind (km/hr) 0-3 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
Ø			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

DOM. SHRUBS
Ade. fas.
Cea. tom
Eri fas

NECTAR
Blo. cle.
Eri. con.
Sis. bal.

Gabb's checkerspot
Fritillary
Braun elfin
Behr's metalmark
Anise swallowtail
Calif. Ringlet, checkered white

Date 18 April 2018 Plot number 85 Time start 1120 end 1135

Plot location OTAY HILLS

Surveyor JASMINE WATTS

Temp (°C) 25 Wind (km/hr) 3-7 Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
0			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, (26-50%), 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%), 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Fritillary
Painted Lady
Gabb's Checkerspot
Checkered White

NECTAR
Eri. far.
Vig. lac
Eri. con.

Date 4/18/08 Plot number 87 Time start 1130 end 1150

Plot location Otay Hills

Surveyor Dale Ritenour

Temp (°C) 25 Wind (km/hr) 5-15 Sky: (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
Ø			

Hostplant species	Density per plot (estimate)
Plantago erecta	~~Ø~~, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	~~Ø~~, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	~~Ø~~, 1-20, 20-100, >100
Corylanthis rigidus	~~Ø~~, 1-20, 20-100, >100
Castilleja exserta	~~Ø~~, 1-20, 20-100, >100
% Bare ground estimate	(~~0-25%~~), 26-50%, 51-75%, >75%
% Burned area estimate	(~~0-25%~~), 26-50%, 51-75%, >75%
% Shrub cover estimate	(~~0-25%~~), 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Butterfly: Funerial Dusky, Checkered White

Nectar: Erio. conf.

Date 4/21/08 Plot number 25 Time start 1120 end 1135

Plot location [redacted] 1785775.32 N 6359319.66 E

Surveyor Alison James

Temp (°C) 22.2 (72°F) Wind (km/hr) 2-6 (mph) Sky: (clear) partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
NO animals observed			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000 dry
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed). Flowering Plants: Cal mac, Erifas, Viglac, Erifas, Osmodenia

Painted Lady III
Behrs mm II

Date 4/21/08 Plot number 31 Time start ~1138 end 1153

Plot location 1786619.50 N 6358581.10E

Surveyor Alison Varner

Temp (°C) 23.8 (75°F) Wind (km/hr) 4-8 (mph) Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
No Quino observed			

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, 101-1000, >1000
Plantago patagonica	0, 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed). Flowering Plants: Calmac, Eri fas, Dei fas Viglac, Cal spl

White 1
Painted Lady 1
Gabbs 1

Date 4/21/09 Plot number 41 Time start 1014 end 1029

Plot location 1787603.02 N 636053557 E

Surveyor Alison Varner

Temp (°C) 18.8 (66°F) Wind (km/hr) 2-4 (mph) Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
No Quino observed			

Hostplant species	Density per plot (estimate)
Plantago erecta	(0,) 1-20, 20-100, 101-1000, >1000
Plantago patagonica	(0,) 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0,) 1-20, 20-100, >100
Corylanthis rigidus	(0,) 1-20, 20-100, >100
Castilleja exserta	(0,) 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%,) 26-50%, 51-75%, >75%
% Shrub cover estimate	(0-25%,) 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed). Flowering Plants: Delfas, Viglac Erifas, Brassica sp., Calmac, Erircon

Fritillary ||||-||||-||||-|

Date 4/21/08 Plot number 58 Time start 0945 end 1000

Plot location 1789731.34 N 635910 6.29 E

Surveyor Alison Varner

Temp (°C) 17.7 (64 F) Wind (km/hr) 0-2 mph Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
NO Quino observed			

Hostplant species	Density per plot (estimate)
Plantago erecta	(0) 1-20, 20-100, 101-1000, >1000
Plantago patagonica	(0) 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0) 1-20, 20-100, >100
Corylanthis rigidus	(0) 1-20, 20-100, >100
Castilleja exserta	(0) 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed). Flowering Plants: Erifas, Viglac Deifas, Calmac

Dom Shrub: Erifas

Painted Lady 1

Date 4-4-08 Plot number 87 Time start 1135 end 1250

Plot location 3793126.39 N / 6358207.94 E

Surveyor Brian Parker

Temp (°C) 21 Wind (km/hr) 6-11 Sky: clear, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Comstock ::
Ringlet :

Hostplant species	Density per plot (estimate)
Plantago erecta	0, 1-20, 20-100, >100
Plantago patagonica	0, 1-20, 20-100, >100
Antirrhinum coulterianum	0, 1-20, 20-100, >100
Corylanthis rigidus	0, 1-20, 20-100, >100
Castilleja exserta	0, 1-20, 20-100, >100
% Bare ground estimate	0-25%, 26-50%, 51-75%, >75%
% Burned area estimate	0-25%, 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Shrubs – Chamise, Ceanothus, Viguiera, Xylococcus

Nectar, Viguiera, Dicholostemma, Eriophyllum

Butterflies - Comstock Fritillary - 4

Ringlet - 2

Date 4/21/08 Plot number 28 Time start 1102 end 1117

Plot location 1786447.66 N 635928.79 E

Surveyor Alison Varner

Temp (°C) 22.2 (72°F) Wind (km/hr) 2-4 (mph) Sky: ~~clear~~, partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)
No Quino observed			

Hostplant species	Density per plot (estimate)
Plantago erecta	(0), 1-20, 20-100, 101-1000, >1000
Plantago patagonica	(0), 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, 26-50%, (51-75%), >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed). Flowering Plants: Dei fas, Uig lac, Cal spl, Eri fas, Cal mac

Painted Lady!!!!

Behrs mm 1

Date 4-23-08 Plot number 58 Time start 1205 end 1220

Plot location 1789731.34 N / 6359106.29 E

Surveyor Brian Parker

Temp (°C) 18 Wind (km/hr) 6-10 (4-6) Sky: (clear), partly cloudy, cloudy

Observations (use additional sheets if needed)

Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)	Number of adults	Quadrant (or GPS coordinates NAD 83 outside plot)

Hostplant species	Density per plot (estimate)
Plantago erecta	0, (1-20), 20-100, 101-1000, >1000
Plantago patagonica	(0), 1-20, 20-100, 101-1000, >1000
Antirrhinum coulterianum	(0), 1-20, 20-100, >100
Corylanthis rigidus	(0), 1-20, 20-100, >100
Castilleja exserta	(0), 1-20, 20-100, >100
% Bare ground estimate	(0-25%), 26-50%, 51-75%, >75%
% Burned area estimate	(0-25%), 26-50%, 51-75%, >75%
% Shrub cover estimate	0-25%, (26-50%), 51-75%, >75%

Notes. Include dominant shrub species, GPS coordinates for other life stages observed, and other relevant information (e.g. butterfly behavior, nectar sources, other butterfly species, other life stages observed).

Shrubs - Ery fas, Vig lac,

flowers - Ery fas, Vig lac, Dei fas

Butterflies Painted Lady - 34

WC Lady - 6

Behr's Metalmark - 4

Appendix D
QUINO CHECKERSPOT BUTTERFLY PHOTOS









Quino Checkerspot Butterfly Photos

OTAY HILLS QUARRY

Appendix D









Quino Checkerspot Butterfly Photos

OTAY HILLS QUARRY

Appendix D

Appendix B-7

2016 QUINO CHECKERSPOT BUTTERFLY SURVEY REPORT (304.6-ACRE PROPOSED OPEN SPACE)

HELIX
Environmental Planning

Otay Hills Project

Quino Checkerspot Butterfly Survey Report

May 6, 2016

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

I certify that the information in this survey report and attached exhibits fully and accurately represent our work:

Jasmine Bakker

Erica Harris

Rob Hogenauer

Amy Mattson

Sally Trnka

Otay Hills Project

Quino Checkerspot Butterfly Survey Report

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

May 6, 2016

Otay Hills Project
2016 Quino Checkerspot Butterfly Survey Report

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B	Survey Forms and Field Notes
C	Butterfly Checklist

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1.0 INTRODUCTION

This report documents the results of HELIX Environmental Planning, Inc.'s (HELIX's) 2016 Quino checkerspot butterfly (*Euphydryas editha quino*; QCB) survey of the Otay Hills Project (project). The QCB host plant mapping was conducted across the entire site, while QCB surveys were limited to proposed open space within the property boundaries. The project is located within the South County Segment of the County of San Diego (County) Multiple Species Conservation Program Subarea Plan. HELIX biologists performed the non-protocol QCB survey (which comprises four site visits) under HELIX's active 10(a)(1)(A) recovery permit (TE 778195-12).

The approximately 438.4-acre project site is located in southwestern San Diego County at the edge of Otay Mesa, 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. In addition to developed land, 11 vegetation communities/habitats occur on the Project site: 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.

2.0 METHODS

HELIX biologists mapped host plants on the proposed development portion and proposed open space portion of the site between February 21 and 29, 2016 prior to the initiation of protocol surveys (Figures 3a – 3e). Biologists conducted pedestrian surveys within the host plant mapping area recording the location, size, and conditions of host plants. Host plants were mapped with the aid of global positioning system (GPS) units. Patches of host plants larger than approximately 250 square feet were mapped as polygons. Patches of host plants were categorized as low density (1 to 100 plants), medium density (100 to 1,000 plants), high density (1,000 to 10,000 plants), and very high density (over 10,000 plants). Host plants were also mapped incidentally when encountered during protocol surveys.

HELIX conducted four non-protocol QCB surveys within the proposed open space portion of the Otay Hills Project to determine presence/absence of QCB within the proposed open space portion of the Otay Hills Project. Surveys focused on areas of highest potential within the open Diegan coastal sage scrub, southern mixed chaparral, and chamise chaparral areas. Potentially suitable habitat areas within the Otay Hills Project included areas supporting QCB host plants, nectar sources, hilltops, ridgelines, and areas of bare ground.

The surveys were conducted when site conditions were most appropriate (based on presence of host plants and availability of nectar resources) and covered the peak of the butterfly flight season. Surveys began following the first observation of adult QCB in San Diego County (reported by Korey Klutz on February 22 at east Otay Mesa). Four focused surveys were conducted by HELIX biologists Robert Hogenauer, Erica Harris, Jasmine Bakker, and Amy Mattson on March 1, 2016 and continued through March 23, 2016.

Surveys consisted of walking through appropriate habitat and identifying all butterflies observed by sight and with the aid of binoculars. Larval host plants not previously documented were mapped with the aid of GPS units when encountered during surveys, and potential nectar plant species also were documented. Surveys covered between 5 and 10 acres per hour.

Identification of butterflies was based on personal knowledge, museum specimens, the San Diego Natural History Museum website, and field guides by Shiraiwa (2009) and Glassberg (2001). Other nomenclature for this report is taken from Holland (1986) and Oberbauer (2008) for vegetation communities and Baldwin et al. (2012) for plants.

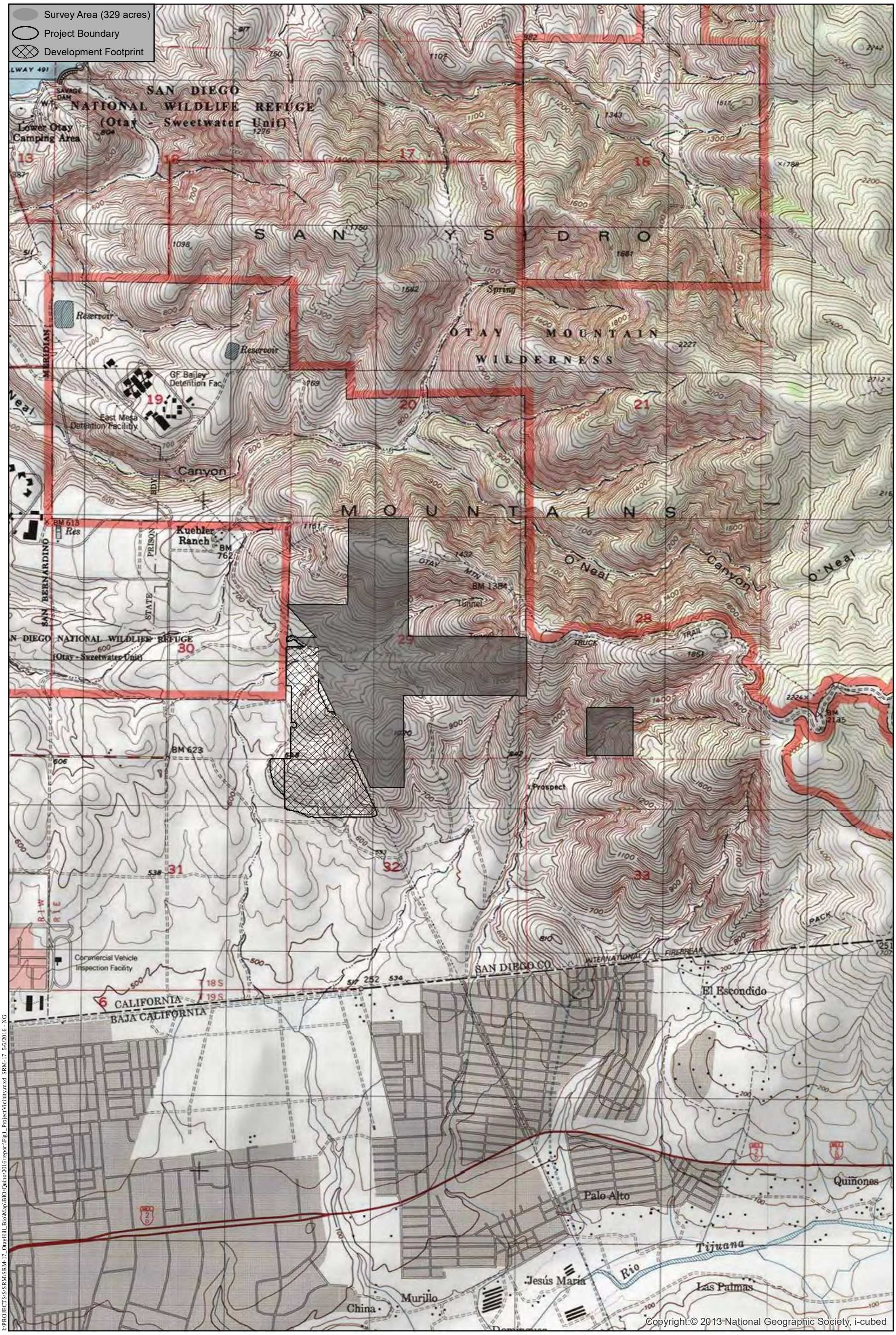
3.0 RESULTS

Dates, times, and weather conditions at the beginning and ending of each of the four surveys are presented in Appendix A. Copies of field notes taken are provided as Appendix B. A list of total butterflies observed during the 2016 QCB surveys is included as Appendix C.

No QCB or QCB larvae were detected within the survey area during the 2016 protocol surveys. Surveyors observed a total of 1,500 butterfly individuals representing at least 23 butterfly species during the four surveys. The most common butterflies observed were Sara's orangetip (*Anthocharis sara sara*), Behr's metalmark (*Apodemia mormo virgulti*), and anise swallowtail (*Papilio zelicaon*).

Two larval host plant species were observed during each of the surveys: dwarf plantain (*Plantago erecta*) and purple owl's clover (*Castilleja exserta*). Dwarf plantain was the most abundant larval host plant observed and recorded within the survey area. Dwarf plantain was mapped in patches of low density (1 to 100 plants), medium density (100 to 1,000 plants), high density (1,000 to 10,000 plants), and very high density (10,000 to over 100,000) (Figures 3a-e). High and very high density patches were further mapped by estimating ranges within these categories. For example, each high density polygon (1,000 to 10,000) was further refined by estimating a range (i.e., 4,000 to 6,000) to more narrowly define these larger patches. High and very high density patches of dwarf plantain were mapped as polygons if they were in areas larger than approximately 250 square feet. 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, by the fourth week of surveys dwarf plantain numbers were beginning to decrease and most individuals were beginning to senesce. 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, goldfields (*Lasthenia californica*), ground pink (*Linanthus dianthiflorus*), and onion (*Allium* sp.). Other potential nectar sources were documented on survey forms and field notes. California buckwheat was a dominant within coastal sage scrub and was observed flowering throughout the four surveys. Popcorn flower was present throughout the survey area. Ground pink, onion, and goldfields occurred in smaller, isolated patches.



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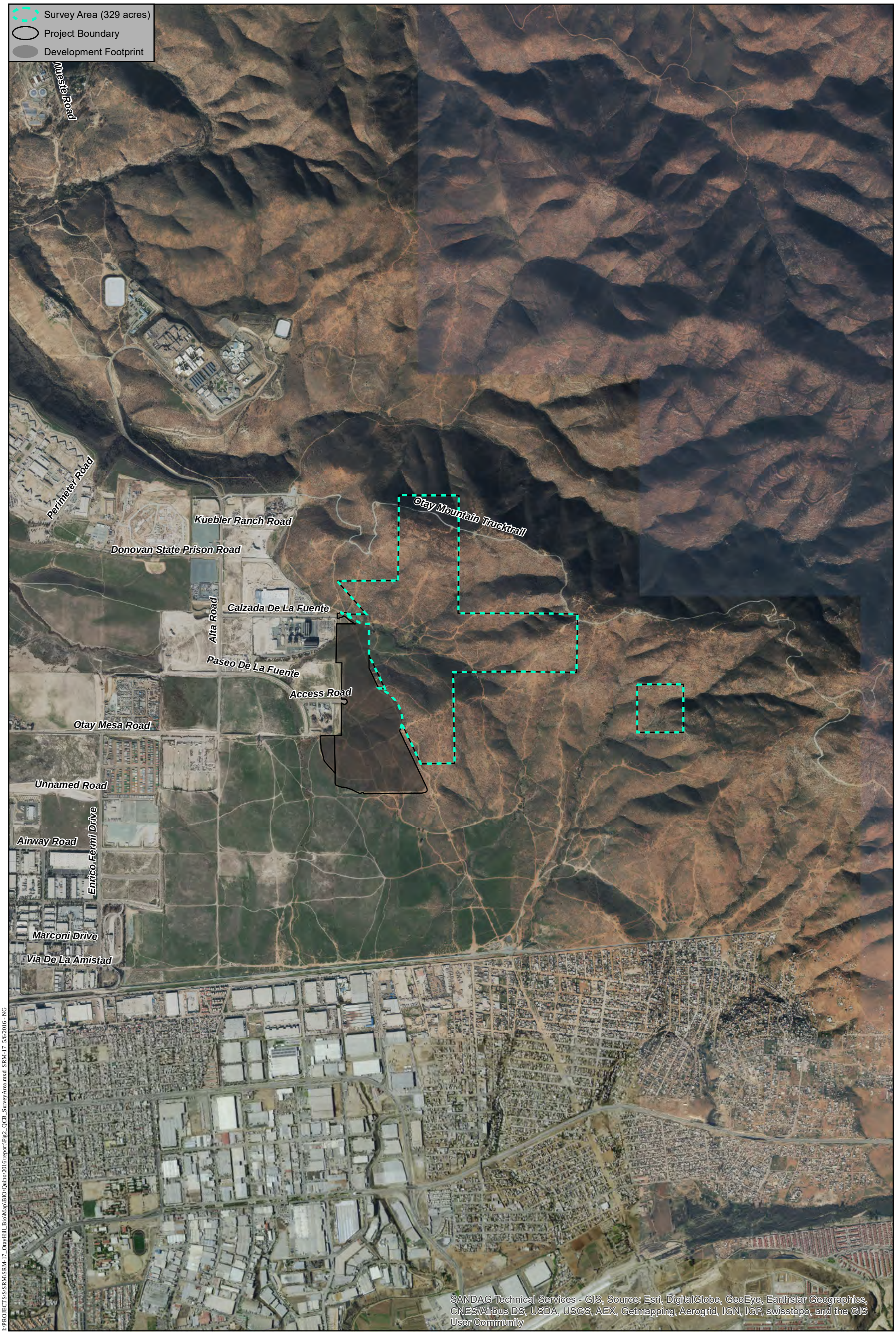
Project Vicinity (USGS Topography)

OTAY HILLS

HELIX Environmental Planning

N 0 2,000 Feet

Figure 1



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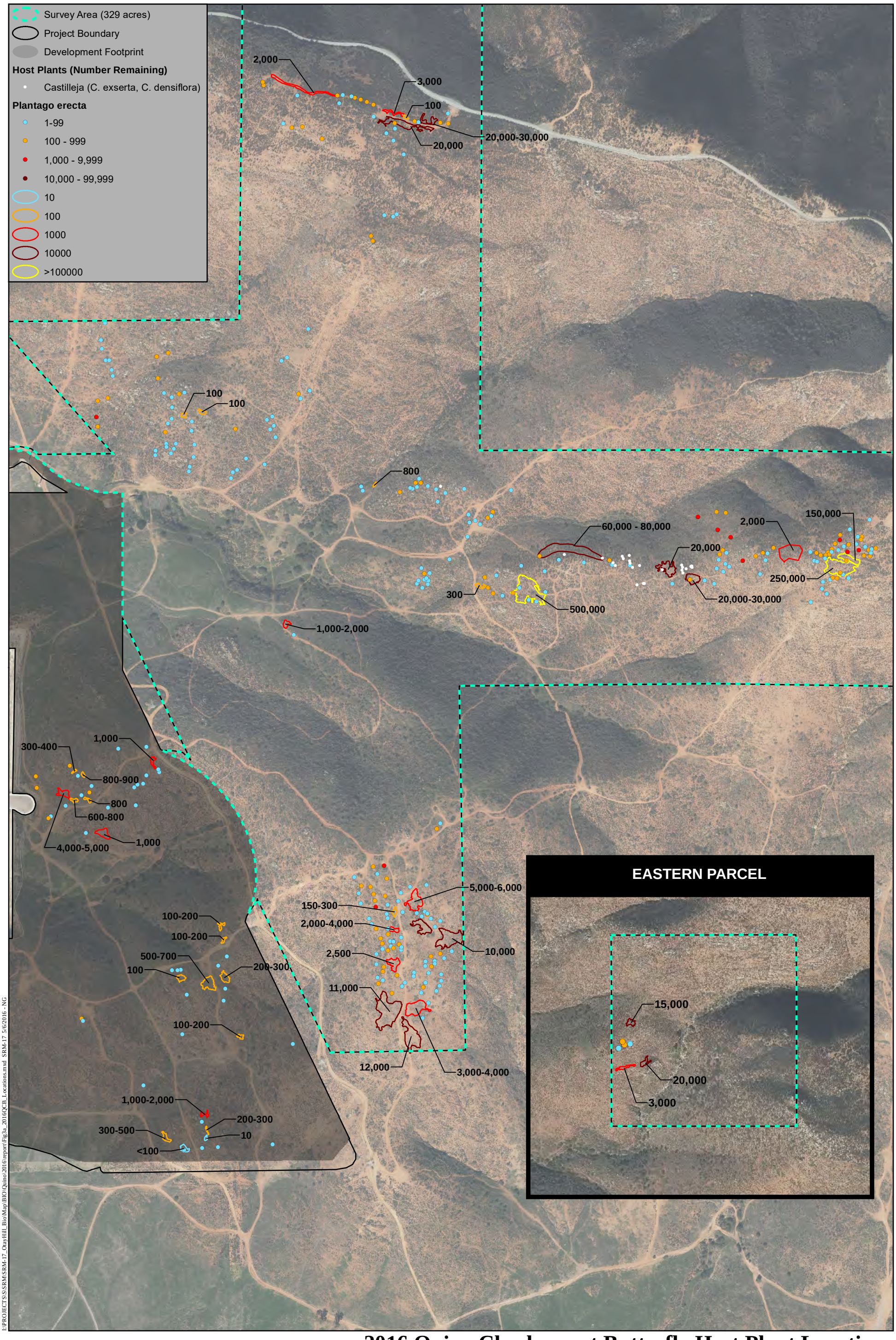
2016 Quino Checkerspot Butterfly Survey Area

OTAY HILLS

HELIX Environmental Planning

N 0 2,000 Feet

Figure 2



2016 Quino Checkerspot Butterfly Host Plant Locations

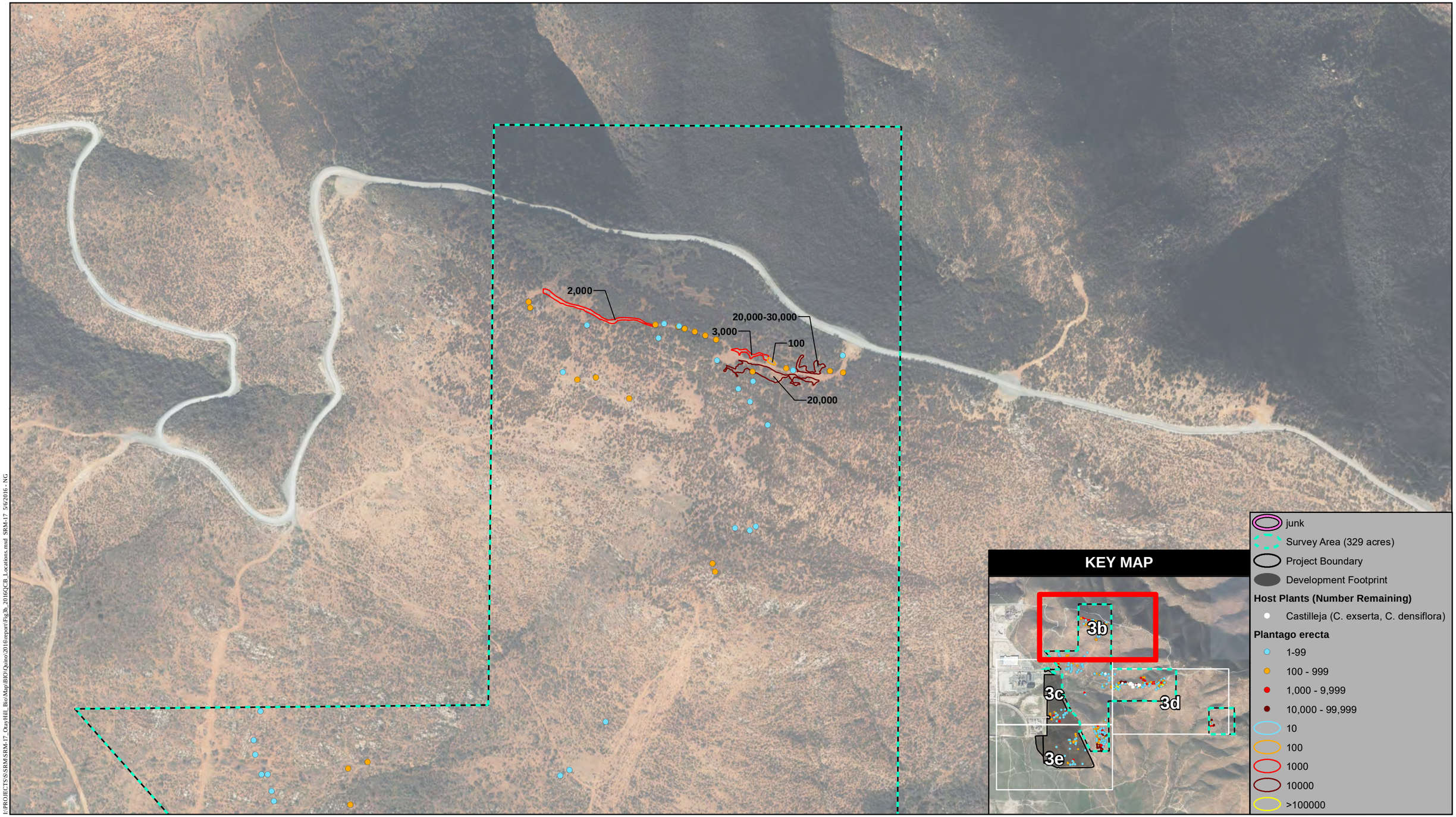
OTAY HILLS

HELIX Environmental Planning

N 0 500 Feet

Figure 3a

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2016 Quino Checkerspot Butterfly Host Plant Locations

OTAY HILLS

HELIX Environmental Planning

0 300 Feet

Figure 3b

100
100
800
300
1,000-2,000
300-400
4,000-5,000
800-900
1,000
800
600-800
1,000
3b
3c
3d
3e
KEY MAP
Survey Area (329 acres)
Project Boundary
Development Footprint
Host Plants (Number Remaining)
Castilleja (C. exserta, C. densiflora)
Plantago erecta
1-99
100 - 999
1,000 - 9,999
10,000 - 99,999
10
100
1000
10000
>100000
I:\PROJECTS\SRM\SRM-17_OtayHill_BioMap\BIO\Quino\2016report\Fig3c_2016QCB_Locations.mxd SRM-17 5/6/2016 - NG

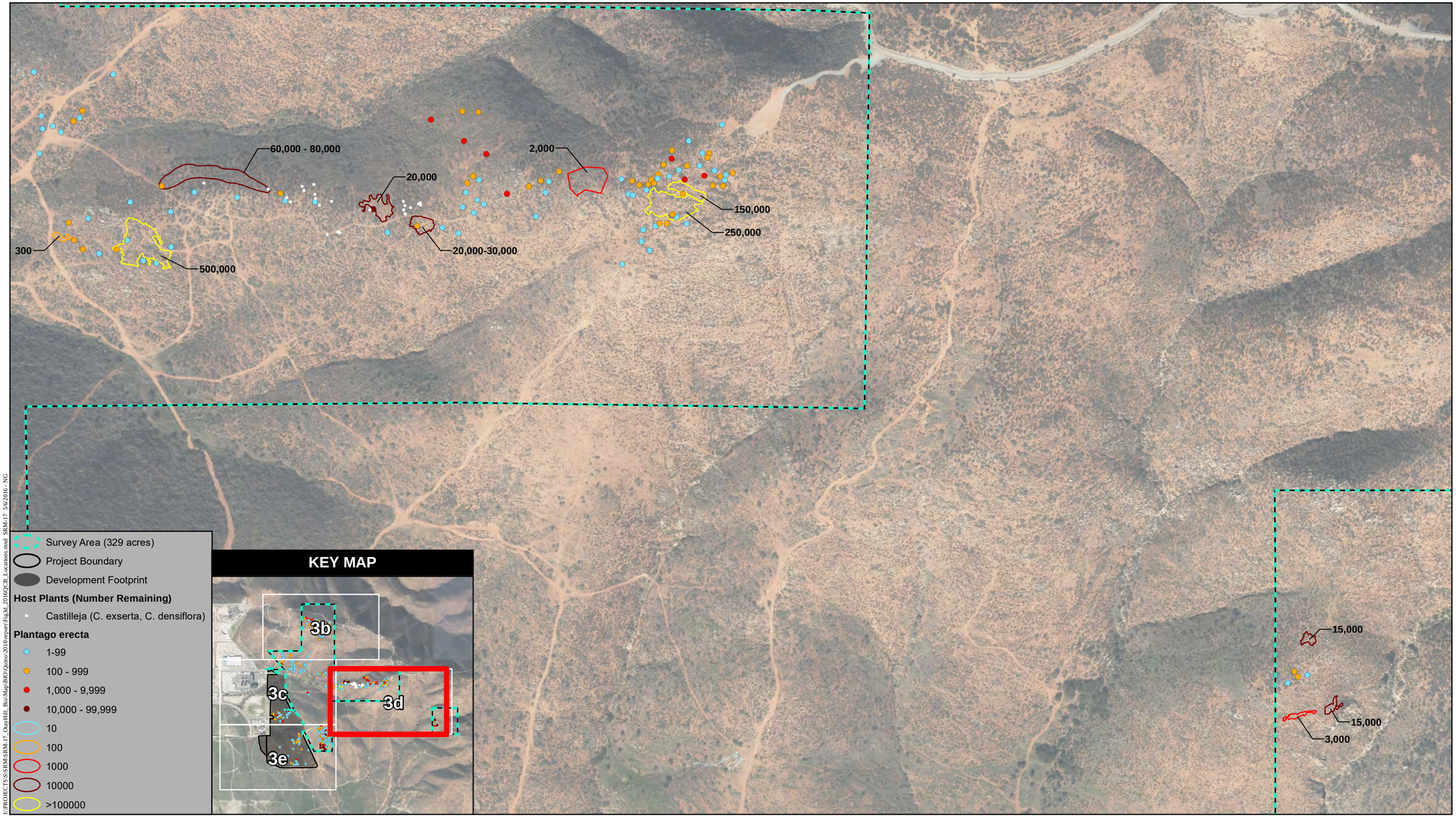
2016 Quino Checkerspot Butterfly Host Plant Locations

OTAY HILLS

HELIX Environmental Planning

N 0 300 Feet

Figure 3c



2016 Quino Checkerspot Butterfly Host Plant Locations

OTAY HILLS

HELIX Environmental Planning

0 300 Feet

Figure 3d

100-200
100-200
200-300
100
500-700
100-200
1,000-2,000
200-300
10
300-500
<100
5,000-6,000
150-300
1,000
2,000-4,000
10,000
2,500
11,000
3,000-4,000
12,000

Survey Area (329 acres)
Project Boundary
Development Footprint

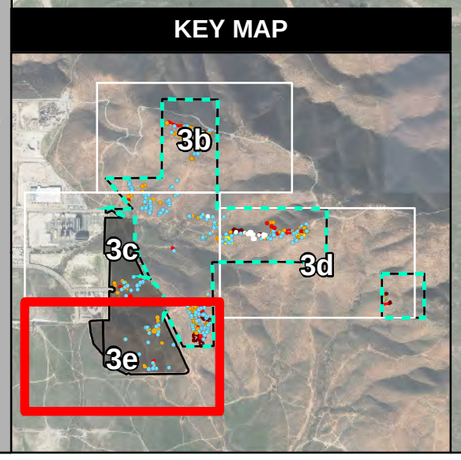
Host Plants (Number Remaining)

Castilleja (C. exserta, C. densiflora)

Plantago erecta

1-99
100 - 999
1,000 - 9,999
10,000 - 99,999
10
100
1000
10000
>100000

KEY MAP



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2016 Quino Checkerspot Butterfly Host Plant Locations

OTAY HILLS

HELIX Environmental Planning

N

0 300 Feet

Figure 3e

Dominant plants within the Otay Hills Project Diegan coastal sage scrub were made up of mostly California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), lemonadeberry (*Rhus integrifolia*), and laurel sumac (*Malosma laurina*). Dominant plant species within the chamise chaparral and southern mixed chaparral were primarily chamise (*Adenostoma fasciculatum*), mission manzanita (*Xylococcus bicolor*), and Ramona lilac (*Ceanothus tomentosus*).

Surveys were discontinued after the fourth survey due to lack of recent QCB sightings at adjacent reference sites and projects within the surrounding area indicating that the 2016 flight season for the coastal regions were completed. Sightings of QCB were reported in low numbers throughout the County between February 22 and March 25, 2016. The last fresh QCB sighting was reported on March 17, 6 days prior to the last survey, when a QCB was observed at San Vicente Reservoir. The last reported QCB sighting was on March 25 representing a single worn individual in Marron Valley.

Despite the low number of QCB sightings within the County in 2016, this survey season was a good habitat year across the region and the 2016 QCB resource mapping for the Otay Hills project survey area is considered representative of QCB resources on site.

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Appendix A

SURVEY INFORMATION

Appendix A
SURVEY INFORMATION – SAN MIGUEL HABITAT MANAGEMENT AREA

SITE VISIT	BIOLOGIST	TIME (start/end)	WEATHER CONDITIONS		RESULTS†
			Start	End	
1 March 1, 2016	Erica Harris Robert Hogenauer	0730/1340	0% clouds, 60˚F, wind 0-2 mph	20% clouds, 76˚F, wind 1-6 mph	No QCB Observed
1 March 2, 2016	Jasmine Bakker Amy Mattson	0925/1335	10% clouds, 74˚F, wind 0-1 mph	5% clouds, 76˚F, wind 1-3 mph	No QCB Observed
2 March 10, 2016	Jasmine Bakker Robert Hogenauer Amy Mattson	0935/1510	35% clouds, 68˚F, wind 0-1 mph	45% clouds, 71˚F, wind 3-8 mph	No QCB Observed
3	Jasmine Bakker	0935/1510	0% clouds, 70˚F, wind 0-1 mph	0% clouds, 75˚F, wind 3-5 mph	No QCB observed
	Amy Mattson	1030/1530	0% clouds, 70˚F, wind 0 mph	0% clouds, 75˚F, wind 4-7 mph	No QCB Observed
March 18, 2015	Sally Trnka	1030/1530	5% clouds, 70˚F, wind 0-2 mph	0% clouds, 75˚F, wind 5-10 mph	No QCB Observed
4 March 23, 2015	Jasmine Bakker Amy Mattson Robert Hogenauer	0855/1445	0% clouds, 64˚F, wind 0-1 mph	0% clouds, 77˚F, wind 6-8 mph	No QCB Observed

†QCB=Quino checkerspot butterfly

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Appendix B

SURVEY FORMS AND FIELD NOTES

2016 Quino Checkerspot Butterfly Survey Form

Surveyor: Erica Harris **Date:** 3/1/16

Site Name: Otay Hills **Site Visit No:** 1

Acres Surveyed north and northeast **Survey Time:** 6.2 **Acres per Hour:** N/A

Other Surveyors Present: Robert Hogenauer

Field Conditions				
	Time (24 hr)	**Temperature (˚F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	0730	60	0-2	0%
End	1340	76	1-6	20
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
CSS

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	x	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	x
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	x
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia menziesii* var. *intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	
Chinese houses (*Collinsia* spp.)		buckwheat (*Eriogonum fasciculatum*)	
		ground pink (*Linanthus dianthiflorus*)	x

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	1
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	1	pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	13	anise swallowtail (*P. zelicaon*)	11
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa)*	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	6
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	45	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	1
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur	3		
Column Subtotal	**62**	**Column Subtotal**	**19**
		Total	**81**

2016 Quino Checkerspot Butterfly Survey Form

Surveyor: Jasmine Bakker **Date:** 3/2/16

Site Name: Otay Hills **Site Visit No:** 1

Acres Surveyed N/A **Survey Time:** 3:48 (3.8) **Acres per Hour:**

Other Surveyors Present: Amy Mattson

Field Conditions				
	Time (24 hr)	**Temperature (˚F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	09:25	74	0-1	10% (haze)
End	10:20	75	0-1	10% (haze)
Start	10:42	75	0-1	10% (haze)
End	13:35	76	1-3	5% (haze)

Vegetation Communities Surveyed (inc. dominant spp.)
CSS

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	X	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	X
purple owl's clover (*Castilleja exserta*)	X	goldfields (*Lasthenia* spp.)	X
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia menziesii* var. *intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	X
Chinese houses (*Collinsia* spp.)		buckwheat (*Eriogonum fasciculatum*)	X
		ground pink (*Linanthus dianthiflorus*)	X

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)	2	great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	1
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	2
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	16	anise swallowtail (*P. zelicaon*)	3
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	1
checkered (common) white (*Pontia protodice*)	2	mourning cloak (*Nymphalis antiopa)*	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	2
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	18	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	2
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur	3		
Column Subtotal	**41**	**Column Subtotal**	**11**
		Total	**52**

SRM-17 OTAY HILLS — 2 Mar 2016
QCB Survey #1 (Northern) — JB (AM)

START 0925, 74, 10% cc haze, 0-1 mph
1020 75 ↓ ↓ ↓
START 1042 ↓ ↓ ↓
1335 76 52 cc, haze, 1-3 mph

① Common Buckeye |

Plant Spp (flowering)

Erocic Placere*
Hypgla Cryptantha sp*
Cea tom Erifas*
Ericom. Pectocarya
Acmispon sp. - annual
Sal. mun. Antinut
Arm.fa Sis. iri.
Erid.tric Sol., Cas. ers*
Cal mal Lasthyas
Sil gal Clematis
Lepidium Ran lac
Pseudognaphalium Dicapi
Oxa cal Hel sco
Esch cal Allium sp.*
Uropappus Plagiobothrys* Spicata
Lin.dia* Cast aff. phacic
Las.cal* Vio. ped. sidimal

Butterflies

⑱ Behr's metalmark |||| |||| |||| ||||
③ Anise swallowtail |||
⑯ Sarah's Orangetip |||| |||| |||| ||||
② Calif. Patch ||
③ Fun. dusky wing |||
① W. Coast Lady ||
② Common White ||
② Checkered Skipper ||
③ Sulphur sp. |||
① Gray hairstreak |

Wildlife

CAGN CORA
Gopher Snake YRWA
BGGN RCSP
side blotched lizard
horned lizard

Rite in the Rain

2016 Quino Checkerspot Butterfly Survey Form

Surveyor: Amy Mattson **Date:** 3/2/16

Site Name: Otay Hills **Site Visit No:** 1

Acres Surveyed north and northeast **Survey Time:** 3:48 (3.8) **Acres per Hour:**

Other Surveyors Present: Jasmine Bakker

Field Conditions				
	Time (24 hr)	**Temperature (˚F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	09:25	74	0-1	10% (haze)
End	10:20	75	0-1	10% (haze)
Start	10:42	75	0-1	10% (haze)
End	13:35	76	1-3	5% (haze)

Vegetation Communities Surveyed (inc. dominant spp.)
CSS

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	x	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	x
purple owl's clover (*Castilleja exserta*)	x	goldfields (*Lasthenia* spp.)	x
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia menziesii* var. *intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	x
Chinese houses (*Collinsia* spp.)		buckwheat (*Eriogonum fasciculatum*)	x
		ground pink (*Linanthus dianthiflorus*)	x

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	1
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	6
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	1	pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	28	anise swallowtail (*P. zelicaon*)	6
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)	3	common buckeye (*Junonia coenia grisea*)	2
checkered (common) white (*Pontia protodice*)	1	mourning cloak (*Nymphalis antiopa)*	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	2
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	27	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur	2		
Column Subtotal	**62**	**Column Subtotal**	**17**
		Total	**79**

SRM 17 QCB #1 N & NE areas 3/2/16

Otay Hills — Amy w/ Jasmine

Start	09:25 AM	10% cloud cover (haze)	0-1 mph	74°F
end	10:20 AM	↓	↓	75°F
Start	10:42	↓	↓	75 F
end	13:35	5% cloud cover (haze)	1-3 mph	71°F

Hyp gla — Phacelia — Calmac
Ero cic — Cryptantha 2sp. — Ant nut
Hed cic — Eri fas Pectocarya sp. — Dic cap
Silgil — Centaurea — Cle pan
Ero bot — Eri con — Pseudognaphalium
Sisymbrium — Sal mau — † Bahlac
Smoke — Amsgla — Solanum-like purple
Gayana — Hes whi — Allium
Ste med — Eri tri — Prodyglaum spicata
Cenmel — Trichostemma — Anisocoma sp.
Esc cal — Chamaesyce
Mir lae — Lindera
Castaff — Vio pen
Sid mal — Shep purse
Lasgal — Sanicula arg. (gel)
Helsco — Eas exs
Les fil

honeybee, bees
beetle, jelly
SATO
CALT
tarantula/hawk (6) Anise ST HHT I
Amer
deer (scat)
garter snake
grasshopper (6) Lady HHT I
UNKN
Coyote scat scratch (2) Fun dusky II
LEGU
cottontail
scat + ammo (3) cabbage white III
horn lizard
moth
BGGN (27) Sulphur HHT HHT HHT HHT II

(2) Buckeye II
(1) WC lady I
(2) Sulphur II
(1) blue I
(1) Common wood I

pe similar to previous surveys, in location.

Long ridgeline → lower hilltop - patches dense pe w/ Lindera. Large w/in chamise.

1) Lots of nectaring resources. Plantago patches good - flowering, not dry. Open area
2) Upper ridgeline still many open areas, some w/ Pe. Lots hilltopping swallowtails
3) Low Areas w/o abundance of weeds, suitable habitat w/ nectar resources & pe patches.

2016 Quino Checkerspot Butterfly Survey Form

Surveyor: Jasmine Bakker **Date:** 3/10/16

Site Name: Otay Hills **Site Visit No:** 2

Acres Surveyed N/A **Survey Time:** 5 hours 35 minutes **Acres per Hour:** N/A

Other Surveyors Present: Rob Hogenauer ; approximately last third of survey also Amy Mattson

Field Conditions				
	Time (24 hr)	**Temperature (˚F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	0935	68	0-1	35% (haze)
End	1510	71	3-8	45% (haze)
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Northern and Northeastern ridgelines; Southern Ridge; central hilltops
Chaparral (chamise and southern mixed) and Diegan Coastal Sage Scrub (buckwheat)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	x	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	x
purple owl's clover (*Castilleja exserta*)	x	goldfields (*Lasthenia* spp.)	x
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia menziesii* var. *intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	x
Chinese houses (*Collinsia* spp.)		buckwheat (*Eriogonum fasciculatum*)	x
		ground pink (*Linanthus dianthiflorus*)	x

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	1
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	2
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	1
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	2
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	1
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	18	anise swallowtail (*P. zelicaon*)	9
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	6	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa)*	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	2
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	13	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	2
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur	4		
Column Subtotal	**41**		**20**
		Total	**61**

SRM-17 OTAY HILLS O.S. 10 March 2016
Northern / Eastern portion / Southern Ridge JB, (RH AM)
QCB Survey #2
START 0935, 68°, 0-1mph, 35% cc (haze)
STOP 1510, 71°, 3-8mph, 45% cc

Butterflies

Sara Orangetip	𝍸 𝍸 𝍸 |||
Anise swallowtail	𝍸 ||||
Calif ringlet	𝍸 |
Painted Lady	||
Behr's metalmark	𝍸 𝍸 |||
Sulphur sp.	||||
Pale swallowtail	|
Perplexing Hairstreak	|
Checkered skipper	||
Gray hairstreak	||
Fun. dusky wing	||
W. Coast Lady	|

QCB Plants

Plaere Jindia
Juscal
Eri. far
Cryptantha
Cas. exs.
Allium sp

2016 Quino Checkerspot Butterfly Survey Form

Surveyor: Amy Mattson **Date:** 3/10/16

Site Name: Otay Hills **Site Visit No:** 2

Acres Surveyed southeast via central **Survey Time:** 5:55 (5.9) **Acres per Hour:**

Other Surveyors Present: Approximately last third of survey also Jasmine Bakker and Rob Hogenauer

Field Conditions				
	Time (24 hr)	**Temperature (˚F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	09:15	73	0-1	5% (haze)
End	15:10	71	3-8	45% (haze)
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
CSS, NNG

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	x	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	x
purple owl's clover (*Castilleja exserta*)	x	goldfields (*Lasthenia* spp.)	x
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia menziesii* var. *intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	x
Chinese houses (*Collinsia* spp.)		buckwheat (*Eriogonum fasciculatum*)	x
		ground pink (*Linanthus dianthiflorus*)	x

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	1
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)	1	painted lady (*V. cardui*)	
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	1
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	8
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	1
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	17	anise swallowtail (*P. zelicaon*)	24
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	4	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)	2	common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	1	mourning cloak (*Nymphalis antiopa)*	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	11	funereal duskywing (*Erynnis funeralis*)	4
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	90	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	2
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur	12		
Column Subtotal	**138**		**41**
		Total	**179**

3/10/16

SRM 17 QCB 2 SE area, via central site, Amy

Start 915, 73°F, 0-1mph, 5% clouds (haze)

end 1510 71, 3-8, 45% clouds (haze)

Dic cap
Bak lac
Sanicula (red) bP
Sanicula arg (yel)
Sis bif
~~Acm gla~~
- Eri cap - few in bloom
Lab mac
Mit lae
- Allium - not on billing inventory
Cal mae
Vio ped
Oxa cal
Phacelia coerdis
Cla ere - dayjms
- Las cal - sparse patches
- Cryptantha - very few.
- Lindin (dry) - very few
Acimispon sp.
Cal spl.
Esc cal
~~Eri con~~
Solanum sp purple
Gilia
Chamaesyce
~~Arct. nit~~

Ezo bif/cil
Hed cre
Bra nig
Sisymbrium
Son ole
Sil gal
Cen mel
Lepidium

Caseks in central only.

(4) ringlet ||||

(90) Bel MM ~~||||~~ ~~||||~~ ~~||||~~ ~~|||~~ ~~||||~~ ~~||||~~ ~~||

2016 Quino Checkerspot Butterfly Survey Form

Surveyor: Rob Hogenauer **Date:** 3/10/16

Site Name: SRM-17 **Site Visit No:** 2

Acres Surveyed N/A **Survey Time:** 5.6 **Acres per Hour:** N/A

Other Surveyors Present: Jasmine Bakker, Amy Mattson

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover
Start	0935	68		35%
End	1510	71	3-8	45%
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (*Plantago erecta*)		popcorn flower (*Cryptantha/Plagiobothrys* spp.)	
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia menziesii* var. *intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	
Chinese houses (*Collinsia* spp.)		buckwheat (*Eriogonum fasciculatum*)	
		ground pink (*Linanthus dianthiflorus*)	

Butterfly Species	No.	Butterfly Species	No.
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	2
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	1
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	2
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	30	anise swallowtail (*P. zelicaon*)	12
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	2	mourning cloak (*Nymphalis antiopa*)	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	28	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur	2		
Column Subtotal	62	**Column Subtotal**	18
		Total	80

2016 Quino Checkerspot Butterfly Survey Form

Surveyor: Jasmine Bakker **Date:** 3/18/16

Site Name: Otay Hills **Site Visit No:** 3

Acres Surveyed N/A **Survey Time:** 4 hours 40 minutes **Acres per Hour:** N/A

Other Surveyors Present: Amy Mattson; Sally Trnka

Field Conditions				
	Time (24 hr)	**Temperature (˚F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	0935	70	0-1	0%
End	1510	75	3-5	0%
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Northern ridgeline and Far Eastern "Square"
Chaparral (chamise and southern mixed) and Diegan Coastal Sage Scrub (buckwheat)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	x	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	x
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	x
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia menziesii* var. *intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	
Chinese houses (*Collinsia* spp.)		buckwheat (*Eriogonum fasciculatum*)	x
		ground pink (*Linanthus dianthiflorus*)	

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	1
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)	1	painted lady (*V. cardui*)	3
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	1
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	50	anise swallowtail (*P. zelicaon*)	6
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	4	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa)*	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	4	funereal duskywing (*Erynnis funeralis*)	5
Metalmarks		mournful duskywing (*Erynnis tristis*)	1
Behr's metalmark (*Apodemia mormo virgulti*)	42	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		northern white skipper	2
orange sulphur (*Colias eurytheme*)		**Other**	
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur	1		
Column Subtotal	**102**		**19**
		Total	**121**

SRM-17 OTAY HILLS O.S. 18 Mar 2016

Northern & Far East JB (AM, ST)

QCB Survey #3

START 1030, 70°, 0% cc, 0 mph

STOP 1510, 75, 0% cc, 3-5 mph

BUTTERFLIES

Sara orangetip	𝍸 𝍸 𝍸

2016 Quino Checkerspot Butterfly Survey Form

Surveyor: Amy Mattson **Date:** 3/18/16

Site Name: Otay Hills **Site Visit No:** 3

Acres Surveyed north and northeast **Survey Time:** 5:00 (5.0) **Acres per Hour:**

Other Surveyors Present: Jasmine Bakker and Sally Trnka (in different areas)

Field Conditions				
	Time (24 hr)	**Temperature (˚F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	10:30	70	0	0%
End	15:30	75	4-7, with gusts	0%
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
CSS, CC, NNG

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	x	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	x
purple owl's clover (*Castilleja exserta*)	x	goldfields (*Lasthenia* spp.)	x
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia menziesii* var. *intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	x
Chinese houses (*Collinsia* spp.)		buckwheat (*Eriogonum fasciculatum*)	x
		ground pink (*Linanthus dianthiflorus*)	x

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	1
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	1
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	2	pale swallowtail (*Papilio eurymedon*)	1
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	112	anise swallowtail (*P. zelicaon*)	3
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	1	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)	4	common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	1	mourning cloak (*Nymphalis antiopa)*	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white		funereal duskywing (*Erynnis funeralis*)	4
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	22	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	20
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur	2		
Column Subtotal	**144**		**30**
		Total	**174**

3.18.16 SRM 17 Otay Hills QCB#3 Amy
also on site Jasmine & Sally

Start	10:30	70°F	0% cloud, 0mph
end	15:30	75°F	0% cloud. 4-7mph

flowering

Pla ere
Bahlac
- Eri fas
Calmac
Salmun
Eri con
Pseudognaphalium
Hes whi
- Cryptantha sp
Trichostema
Amsinckia sp
Dic cap
Acm gla
Mal fas
Cal spl
Solanum - sleepy
Cdora
Chamaesyce
Lathyrus
Cast aff
Esc cal
Ant mul
- Allium sp.
Helsco
Lup bic
Oxacal
Lup bic
Phacelia dissecta
- Lin lew
Les fil
Vio ped
Sid mal

Hyp glan
Eri cic
Baeria
Gnaph
Symphyotrichum
Hed ctc
Gayo lin
Dau pus
Sil gal

CC, NNG - CSS
/ + Baeria
Centaurea
Eri fas
+ Ade fas
Mallan

Bat cal
Salmel
Mallan
NNG's

More visible CC than last week.

Gilia sp.
- Lascel
Ade fas
Cas exs

Behr 𝍸 𝍸 𝍸 𝍸 || (22)

Sara OTip 𝍸 𝍸 𝍸 𝍸

2016 Quino Checkerspot Butterfly Survey Form

Surveyor: Sally Tnrka **Date:** 3/18/16

Site Name: Otay Hills **Site Visit No:** 3

Acres Surveyed N/A **Survey Time:** 4 hours 40 minutes **Acres per Hour:** N/A

Other Surveyors Present: Amy Mattson; Jasmine Bakker

Field Conditions				
	Time (24 hr)	**Temperature (˚F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	1030	70	0-2	5%
End	1530	75	5-10	0%
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Northern ridgeline and Far Eastern “Square”
Chaparral (chamise and southern mixed) and Diegan Coastal Sage Scrub (buckwheat)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)		popcorn flower (*Cryptantha/Plagiobothrys* spp.)	x
purple owl’s clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia menziesii* var. *intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	
Chinese houses (*Collinsia* spp.)		buckwheat (*Eriogonum fasciculatum*)	x
		ground pink (*Linanthus dianthiflorus*)	x

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb’s checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin’s admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	1
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	1
Edward’s blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	2
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	16	anise swallowtail (*P. zelicaon*)	7
desert (Felder’s) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	6	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	1
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa)*	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	13	funereal duskywing (*Erynnis funeralis*)	4
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr’s metalmark (*Apodemia mormo virgulti*)	48	fiery skipper (*Hylephila phyleus*)	
Wright’s metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	1
Sulphurs		northern white skipper	
orange sulphur (*Colias eurytheme*)		**Other**	
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur	3		
Column Subtotal	**86**		**17**
		Total	**103**

other surveyors - other areas: AM; JW

SRM-01

03/18/16
Sally T

start: 10:30am.; clear 5%; 70°F; 0-2mph

animals

~~crow~~ raven
anise swlwtl |||| ||
chk skipper |
buckeye |
CA ringlet |||| |
Behr's metalmark |||| |||| |||| |||| |||| ||| +10 +10
sulphur |||
white |||| |||| |||
CATO
w fence liz
fun dusky ~~Monarch~~ |||||
giant multipede
Sara's o-tip |||| |||| |||| |
pale swlwtl ||
LEGO
Annas
hawk
whiptail
TUVU
N cat lady |
NOHA
golden eagle!
~~Red~~ lady |

flowering plants

Heady one
Ero
Chrys cor
Lath vest
Bra nig
Acm gla
Eri fas
Ant mut (sml pupl bush)
Vig lac
Caly mac
Dic cap
Mim cal
Pha cic
Sil gal
Cal spl
Cry sp. (few)
Pla ere (very few, sml)
Lin dia (few)
long hill only drying up - Las cal
Esch ~~mexicana~~
Ana arv
Sis bel
Oxa
Lot co
Eri con

end: 3:30pm; 5-10mph + gusts

2016 Quino Checkerspot Butterfly Survey Form

Surveyor: Jasmine Bakker **Date:** 3/23/16

Site Name: Otay Hills **Site Visit No:** 4

Acres Surveyed N/A **Survey Time:** 5 hours 50 minutes **Acres per Hour:** N/A

Other Surveyors Present: Rob Hogenauer , Amy Mattson

Field Conditions				
	Time (24 hr)	**Temperature (˚F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	0855	64	0-1	0%
End	1445	77	6-8	0%
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Southern Ridge; central hilltops
Chaparral (chamise and southern mixed) and Diegan Coastal Sage Scrub (buckwheat)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	x	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	x
purple owl's clover (*Castilleja exserta*)	x	goldfields (*Lasthenia* spp.)	x
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia menziesii* var. *intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	x
Chinese houses (*Collinsia* spp.)		buckwheat (*Eriogonum fasciculatum*)	x
		ground pink (*Linanthus dianthiflorus*)	x

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	2	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	1
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	1
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	36	anise swallowtail (*P. zelicaon*)	15
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	3	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	1
checkered (common) white (*Pontia protodice*)	6	mourning cloak (*Nymphalis antiopa)*	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	5	funereal duskywing (*Erynnis funeralis*)	3
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	92	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	8
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur	4		
Column Subtotal	**148**		**29**
		Total	**177**

SRM 17 OTAY HILLS OS. 23 Mar 2016
QCB Survey #4 JB, (BE - AM QCB)
Southern Ridge (AM, RH)
START 855, 64°, 02cc, 0-1mph
STOP 1445, 77°, 02cc, 6-8mph

BUTTERFLIES

Checkered skipper	8	
Anise swallowtail	15	
Sara orangetip	32	
Behr's metalmark	92	
White sp.	5	
Common white	6	
Fun. duskywing	3	
Sulphur sp.	4	
Calif. ringlet	3	
Painted lady	1	
Gabb's checkerspot	2	
Pale swallowtail	1	
Buckeye	1	

QCB Plants

Eri far Cas.exs.
Jas tal Allium - seeding
Pla ere
Cryptantha
Lin dia

WILDLIFE

HOLA side-blotched lizard
CORA WREN
CAKI MTKG
ANHU CAGN
WCSP RTHA
CALT Rite BUSH

2016 Quino Checkerspot Butterfly Survey Form

Surveyor: Amy Mattson **Date:** 3/23/16

Site Name: Otay Hills **Site Visit No:** 4

Acres Surveyed north and northeast **Survey Time:** 4:50 (5.8) **Acres per Hour:**

Other Surveyors Present: Jasmine Bakker and Rob Hogenauer (in different areas)

Field Conditions				
	Time (24 hr)	**Temperature (˚F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	8:55	64	0-1	0%
End	14:45	77	6-8	0%
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
CSS, CC, NNG

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	x	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	x
purple owl's clover (*Castilleja exserta*)	x	goldfields (*Lasthenia* spp.)	x
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia menziesii* var. *intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	x
Chinese houses (*Collinsia* spp.)		buckwheat (*Eriogonum fasciculatum*)	x
		ground pink (*Linanthus dianthiflorus*)	x

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	1
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	4
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	2	pale swallowtail (*Papilio eurymedon*)	1
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	158	anise swallowtail (*P. zelicaon*)	1
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	1	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)	7	common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)	1	mourning cloak (*Nymphalis antiopa)*	
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	27	funereal duskywing (*Erynnis funeralis*)	1
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	40	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	2
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)		fritillary	1
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur	4		
Column Subtotal	**240**		**11**
			251

3/23/16 SRM 17 Amy w/ Jasmine & Rob & Beth
QCB 4 ↳ border patrol hill/ridge & check tip

855A, 64°F, 0% clouds, wind 0-1 mph
245P 77°F 0% clouds, 6-8 mph

Sal mun
Rhicom
Bah lac
- Cryptantha
Cal mac
Pseudognaphal
Dic cap
Oxa cal
Hes whi
Hel sco
Trichostemma
Ant nid
Adc bes
- Eri fas
mal fas
Cal sol
Es cal
Chamaesyce
Cas aff
Phacelia
Lup bic
Astragalus
Api aus
Mir lac
Lathyrus
- Allium (cotyledon = dry form)
Artemisia sp.
Dau pus
Solanum dk purple
- Lindelia
Leanotus
Vio pet
Les fil
Sid mal
Gilia
Phacelia acerdes

Ery cic
Bra nig
Hyp gla
Sonchus ole
Hedera
Gaz lin
Sisymbrium
Sil gal
Anagal.

- Las cal
Sanicula
Cal cil

(158) Sun Drop
(4) lady
(27) White
(7) cabbage white
(40) Behr
(1) fritillary
(1) pale ST
(1) anise ST
(1) Common wood
(2) blue
(1) red admiral
(2) Checkered skipper
(1) California ringlet
(1) fun dusky wing
(Gnats - same location as 3/3)
(4) sulphur

2016 Quino Checkerspot Butterfly Survey Form

Surveyor: Rob A **Date:** 3/23/16

Site Name: OTay Hills **Site Visit No:** 4

Acres Surveyed N/A **Survey Time:** 5.5 hours **Acres per Hour:** N/A

Other Surveyors Present: Amy Mattson,
also on site - Jasmine Walker

Field Conditions				
	Time (24 hr)	**Temperature (°F)**	**Wind Speed (mph)**	**Cloud Cover**
Start	0910 - 0920	61	1-2	0%
End	1005 - 1245	64 - 73	2-4 / 3-6	0%
Start	1245 - 1436	75	2-4	0%
End				

Vegetation Communities Surveyed (inc. dominant spp.)

Host Plants	**Obs.**	**Nectar Plants**	**Obs.**
dwarf plantain (*Plantago erecta*)	✓	popcorn flower (*Cryptantha/Plagiobothrys* spp.)	✓
purple owl's clover (*Castilleja exserta*)		goldfields (*Lasthenia* spp.)	✓
snapdragon (*Antirrhinum coulterianum*)		goldenstar (*Muilla* spp.)	
birds-beak (*Cordylanthus rigidus*)		fiddleneck (*Amsinckia intermedia*)	
woolly plantain (*Plantago patagonica*)		onion (*Allium* spp.)	
Chinese houses (*Collinsia* spp.)		buckwheat (*Eriogonum fasciculatum*)	✓
		ground pink (*Linanthus dianthiflorus*)	

Butterfly Species	**No.**	**Butterfly Species**	**No.**
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)		great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)		brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	
southern blue (*Glaucopsyche lygdamus australis*)		painted lady (*V. cardui*)	
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	2
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue		pale swallowtail (*Papilio eurymedon*)	3
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	69	anise swallowtail (*P. zelicaon*)	13
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)		monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)		common buckeye (*Junonia coenia grisea*)	
checkered (common) white (*Pontia protodice*)		mourning cloak (*Nymphalis antiopa*)	2
spring white (*P. sisymbrii*)		**Skippers**	
unidentified white	12	funereal duskywing (*Erynnis funeralis*)	
Metalmarks		mournful duskywing (*Erynnis tristis*)	
Behr's metalmark (*Apodemia mormo virgulti*)	41	fiery skipper (*Hylephila phyleus*)	
Wright's metalmark (*Calephelis wrighti*)		white (common) checkered-skipper (*Pyrgus albescens*)	
Sulphurs		**Other**	
orange sulphur (*Colias eurytheme*)			
sleepy orange (*Eurema nicippe*)			
cloudless sulfur (*Phoebus sennae marcellina*)			
unidentified sulphur			
Column Subtotal	122	**Column Subtotal**	20
		Total	142

Appendix C

BUTTERFLY CHECKLIST

2016 Quino Checkerspot Butterfly Surveys
BUTTERFLY CHECKLIST

Site Name: Otay Hills

Dates: March 1 – March 23, 2016

Survey Numbers: 1-4

Surveyors: Erica, Harris, Robert Hogenauer, Jasmine Bakker, Amy Mattson

Butterfly Species	No.	Butterfly Species	No.
Checkerspots		**Hairstreaks**	
California patch (*Chlosyne californica*)	2	great purple hairstreak (*Atlides halesus corcorani*)	
Gabb's checkerspot (*C. gabbii*)	2	brown elfin (*Callophrys augustinus*)	
Quino checkerspot (*Euphydryas editha quino*)		bramble (perplexing) hairstreak (C. *dumetorum affinis*)	3
chalcedon checkerspot (*E. chalcedona chalcedona*)		gray hairstreak (*Strymon melinus pudica*)	5
Leanira checkerspot (*Thessalia leanira wrighti*)		**Ladies/Admirals**	
Mylitta crescent (*Phyciodes mylitta*)		California sister (*Adelpha bredowii californica*)	
Blues		Lorquin's admiral (*Limenitis lorquini*)	
western pygmy-blue (*Brephidium exila*)		west coast lady (*Vanessa annabella*)	6
western tailed blue (*Everes amyntula*)		red admiral (*V. atalanta rubria*)	2
southern blue (*Glaucopsyche lygdamus australis*)	2	painted lady (*V. cardui*)	8
Edward's blue (*Hemiargus ceraunus gyas*)		American (Virginia) lady (*V. virginiensis*)	1
Acmon blue (*Icaricia acmon acmon*)		unidentified lady (*Vanessa* sp.)	23
marine blue (*Leptotes marina*)		**Swallowtails**	
unidentified blue	6	pale swallowtail (*Papilio eurymedon*)	11
Whites		western tiger swallowtail (*P. rutulus*)	
Sara orangetip (*Anthocharis sara sara*)	563	anise swallowtail (*P. zelicaon*)	110
desert (Felder's) orangetip (*A. cethura*)		**Miscellaneous**	
common California ringlet (*Coenonympha californica*)	25	monarch (*Danaus plexippus*)	
cabbage white (*Pieris rapae*)	16	common buckeye (*Junonia coenia grisea*)	5
checkered (common) white (*Pontia protodice*)	14	Comstock's fritillary (*Speyeria callippe comstocki*)	
spring white (*P. sisymbrii*)		mourning cloak (*Nymphalis antiopa)*	2
unidentified white	72	**Skippers**	
Metalmarks		funereal duskywing (*Erynnis funeralis*)	34
Behr's metalmark (*Apodemia mormo virgulti*)	506	mournful duskywing (*Erynnis tristis*)	1
Wright's metalmark (*Calephelis wrighti*)		fiery skipper (*Hylephila phyleus*)	
Sulphurs		white (common) checkered-skipper (*Pyrgus albescens*)	38
orange sulphur (*Colias eurytheme*)		northern white skipper (*Heliopetes ericetorum*)	2
sleepy orange (*Eurema nicippe*)		**Other**	
cloudless sulfur (*Phoebus sennae marcellina*)		fritillary (*Speyeria* sp.)	1
unidentified sulphur	40		
Column Subtotal	**1,248**	**Column Subtotal**	**252**
		Total Butterflies Observed	**1,500**

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Appendix C

COASTAL CALIFORNIA GNATCATCHER SURVEY REPORTS

2000 COASTAL CALIFORNIA GNATCATCHER SURVEY REPORT

APPENDIX C

2000 COASTAL CALIFORNIA GNATCATCHER SURVEY REPORT

HELIX environmental planning, inc.

8100 La Mesa Blvd., Suite 150

La Mesa, CA 91941-6476

e-mail:admin@helixepi.com

fax (619) 462-0552

phone (619) 462-1515

October 20, 2000 SRM-01

Mr. Severo Chavez
7850 Mission Center Court, Suite 104
San Diego, CA 92108

Subject: Gnatcatcher survey report for the East Otay Project Site

Dear Mr. Chavez:

This letter presents a U.S. Fish and Wildlife Service protocol survey report for the proposed East Otay Project Site in eastern Otay Mesa in the County of San Diego (Figure 1). The site is located on and around a hill approximately two miles east of the intersection of Alta and East Otay Mesa Roads (Figure 2).

INTRODUCTION

HELIX performed U.S. Fish and Wildlife Service protocol surveys for the coastal California gnatcatcher (*Polioptila californica californica*) on the 360-acre project site. There are approximately 292.1 acres of Diegan coastal sage scrub on site. However, the entire site was burned within the last five years and much of the habitat, including the Diegan coastal sage scrub, is not fully mature in scattered patches and having shrubs 2-feet or less in height. Regardless, we surveyed all of the Diegan coastal sage scrub on site to ensure adequate coverage. A copy of this report will be submitted to the U.S. Fish and Wildlife Service (USFWS) as a condition of HELIX's Threatened and Endangered Species Permit TE778195-5 under which these surveys were performed.

METHODS

Scott Taylor, Deborah Pudoff, and Peter Allen of HELIX conducted three complete surveys every seven to ten days for the gnatcatcher. Survey information is provided in Table 1. The surveys were conducted according to the latest (1997) USFWS protocol for presence/absence of the species.

Appropriate gnatcatcher habitat (292.1 acres of coastal sage scrub) was surveyed. In addition, appropriate habitat immediately adjacent to the impact areas was surveyed as best as possible. These auxiliary habitats included chaparral, grassland, and mule fat scrub habitats. Surveys routes consisted of dirt roads and trails that could be found within and surrounding the habitat areas. Since the Diegan coastal sage scrub was practically continuous across the site, in many areas transects were walked through the habitat to ensure maximum coverage. Taped vocalizations were played four or five times per hour during the survey.

Table 1
SURVEY INFORMATION

Date of Survey	Personnel*	Start/Stop Times	Acres Surveyed/ Coverage Rate	Weather Conditions
June 13, 2000	DP, PA	0600/1200	192.1 acres/16 acres per biologist per hour	Overcast, clearing by 0800, 59-80°F, wind 0-5 mph
June 14, 2000	ST	0600/1200	100 acres/16.6 acres per biologist per hour	Overcast, clearing by 1000, 63-75°F, wind 0-5 mph
June 21, 2000	ST, DP, PA	0600/1200	292.1 acres/16.2 acres per biologist per hour	Mostly clear, 62-80°F, wind 0-5 mph
June 28, 2000	ST, DP, PA	0600/1200	292.1 acres/16.2 acres per biologist per hour	Foggy, clearing by 1000, 63-84°F, wind 0-5 mph

*DP=Deborah Pudoff, PA=Peter Allen, ST=Scott Taylor

PLANT COMMUNITY DESCRIPTIONS

Diegan coastal sage scrub (including disturbed Diegan coastal sage scrub) dominates over 80 percent of the project site. Plant species observed on site 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 has a higher proportion of non-native annual species. This habitat occurs throughout the site (Attached foldout map) and likely coincides with areas where post-fire regrowth occurred at a relatively slow rate, allowing for more non-native species to become established.

Additional habitats on site include mule fat scrub, native grassland, non-native grassland, southern mixed chaparral, chamise chaparral, and disturbed habitat types.

Mulefat scrub is dominated by mulefat (*Baccharis salicifolia*). Other species present include willow (*Salix lasiolepis*), tamarisk (*Tamarix* sp.), and (*Baccharis sarothroides*). This habitat occurs along a drainage in the northwest corner of the site.

Native grassland on site is a community dominated by perennial bunchgrasses such as purple needle grass (*Achnatherum pulchra*) with associated annual and perennial forbs such as common golden stars (*Bloomeria crocea* ssp. *crocea*) and California blue-eyed grass (*Sisyrinchium bellum*). Native grassland occurs in two patches on north-facing slopes in the center of the project site. Additional habitat occurs in smaller patches within Diegan coastal sage scrub habitat on these same slopes.

Southern mixed chaparral occurs in two small patches in the northern portion of the site at the base of a north-facing slope. Dominant plant species observed within this habitat include chamise (*Adenostoma fasciculatum*), spiny redberry (*Rhamnus crocea*), laurel sumac, and California sagebrush.

Chamise chaparral occurs in one small patch on a ridgeline along the southern project boundary. This habitat is dominated by chamise and contains a sparse cover of peak rush rose (*Helianthemum scoparium*).

Non-native grassland occurs in the western portion of the site. Characteristic species within this habitat on site include oats (*Avena* sp.), red brome (*Bromus madritensis* ssp. *rubens*), and wild mustard (*Brassica* sp.).

Disturbed habitat occurs just outside of the southern site boundary. This area contains a few annual forbes such as mustard, and filaree (*Erodium* spp.) and appears to have been previously cleared as a road.

SURVEY RESULTS AND CONCLUSION

The coastal California gnatcatcher was not detected during the protocol surveys for the species. Due to the overall habitat quality at present, the negative survey results were expected. Gnatcatchers are typically known from the Otay Mesa area, and likely have occurred on site in the past, but with the relatively recent fire, populations may now be missing from many former territorial locations. As the habitat on site develops into a more mature community gnatcatchers may be expected to move onto the site after a few years.

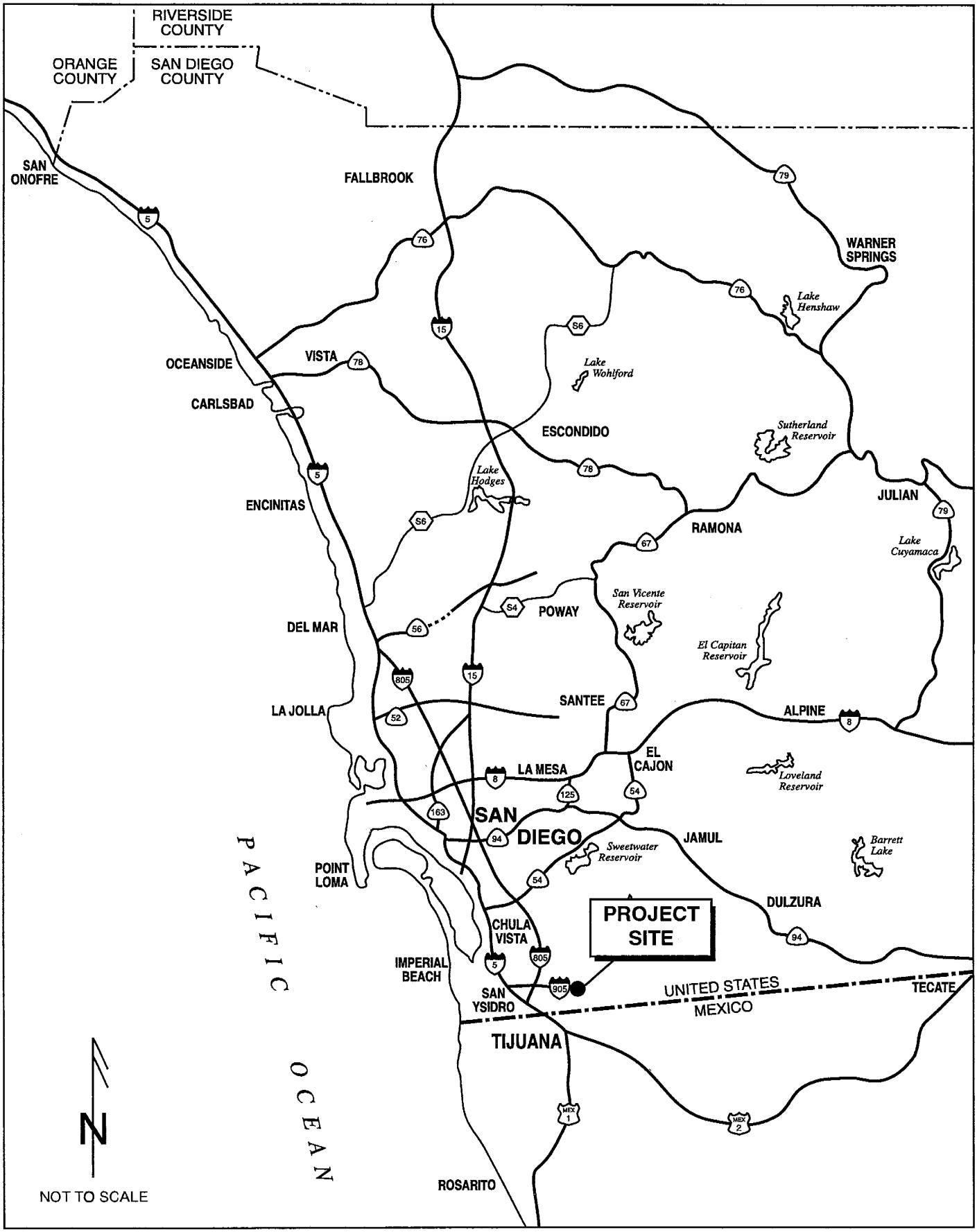
Please contact Scott Taylor or myself if you have any questions about the surveys or the contents of this letter.

Sincerely,

Scott Taylor
Wildlife Biologist

Enclosures: Figure 1 Regional Location Map
Figure 2 Vicinity Map
Foldout map Vegetation

cc: U.S. Fish and Wildlife Service

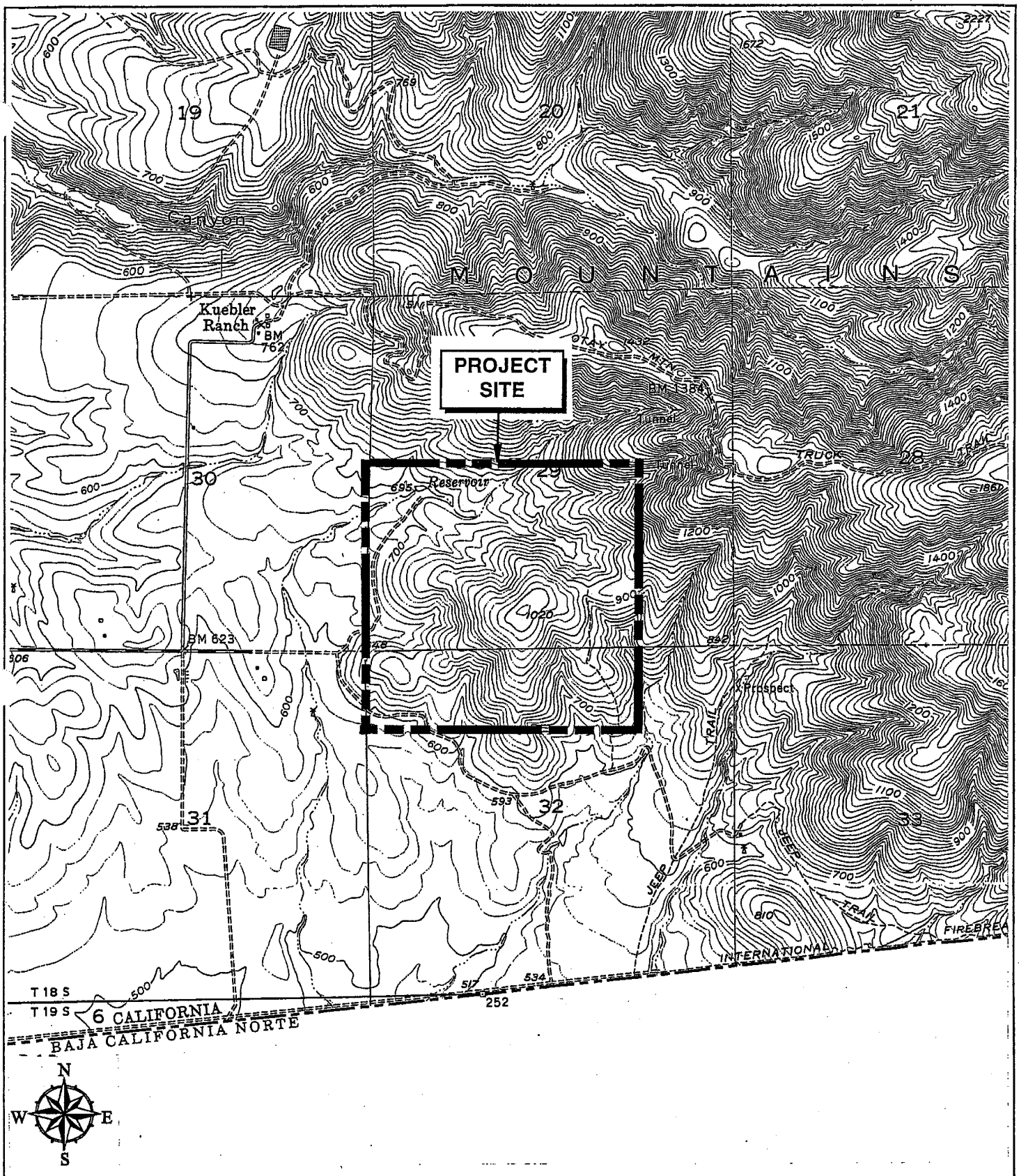


Regional Location Map

EAST OTAY PROJECT SITE

Figure 1

HELIX



Scale: 1" = 2000'
Source: USGS 7.5min. Quadrangle; Otay Mesa

Project Vicinity Map

EAST OTAY PROJECT SITE

Figure 2

HELIX

2011 COASTAL CALIFORNIA GNATCATCHER SURVEY REPORT

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Suite 200
La Mesa, CA 91942
619.462.1515 **tel**
619.462.0552 **fax**
www.**helixepi**.com

June 15, 2011 SRM-12

Ms. Erin McCarthy
U.S. Fish and Wildlife Service
6010 Hidden Valley Road
Carlsbad, California 92011

Subject: Year 2011 Coastal California Gnatcatcher Survey Report for the Otay Hills Aggregate Extraction Project

Dear Ms. McCarthy:

This letter presents the results of HELIX Environmental Planning, Inc.'s (HELIX's) 2011 survey for the coastal California gnatcatcher (*Polioptila californica californica* [CAGN]) for the Otay Hills Aggregate Extraction Project. This letter describes the survey methods and results and is being submitted to the U.S. Fish and Wildlife Service (USFWS) as a condition of HELIX's Threatened and Endangered Species Permit TE778195.

The project site consists of 2 areas of vacant land located in southwestern San Diego County at the edge of Otay Mesa, approximately one mile north of the U.S. 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. It is within Township 18 south, Range 1 west on the U.S. Geological Survey 7.5-minute Otay Mesa quadrangle map (Figure 1).

METHODS

The survey consisted of 3 site visits that were performed in accordance with the current (1997) USFWS protocol by Deborah Leonard and Erik LaCoste within the larger, western area of the project site. The smaller eastern area was not surveyed (Figure 1). The CAGN survey area encompassed approximately 301 acres of potential CAGN habitat, including Diegan coastal sage scrub, Diegan coastal sage scrub-disturbed, and coastal sage-chaparral scrub (Figure 2), which

last burned in 1997 and appears to have recovered from that fire. Due to the size of the CAGN survey area, 2 days were needed to complete one site visit (Table 1).

The survey was conducted by walking through potential CAGN habitat and infrequently playing recorded CAGN vocalizations to elicit a response from any potentially present, non-vocal CAGN. Binoculars were used to aid in the identification of birds when necessary. The approximate survey routes followed are depicted on Figure 2.

Table 1
SURVEY INFORMATION

Site Visit	Date	Biologist	Time (Start/Stop)	Acres (ac) Covered/ Survey Rate	Weather Conditions (Start/Stop)
1 (part 1 of 2)	4/14/11	D. Leonard E. LaCoste	0730/1200	150.5 ac/ 16.7 ac per hour	Clear, 55 degrees Fahrenheit (°F), wind 0-2 miles per hour (mph)/ Clear, 70°F, wind 4-8 mph
1 (part 2 of 2)	4/15/11	D. Leonard E. LaCoste	0730/1200	150.5 ac/ 16.7 ac per hour	Clear, 59 °F, wind 0-2 mph/ Clear, 79°F, wind 2-5 mph
2 (part 1 of 2)	4/26/11	D. Leonard E. LaCoste	0800/1200	150.5 ac/ 18.8 ac per hour	Overcast, 62 °F, wind 0 mph/Clear, 74°F, wind 2-4 mph
2 (part 2 of 2)	4/27/11	D. Leonard E. LaCoste	0800/1200	150.5 ac/ 18.8 ac per hour	Clear, 64 °F, wind 0-2 mph/Clear, 82°F, wind 2-4 mph
3 (part 1 of 2)	5/05/11	D. Leonard E. LaCoste	0800/1200	150.5 ac/ 18.8 ac per hour	Clear, 67 °F, wind 0-2 mph/Clear, 78°F, wind 7-10 mph
3 (part 2 of 2)	5/06/11	D. Leonard E. LaCoste	0800/1200	150.5 ac/ 18.8 ac per hour	Overcast, 60 °F, wind 0-3 mph/Clear, 74°F, wind 2-4 mph

VEGETATION COMMUNITY DESCRIPTIONS

In addition to developed land, 11 vegetation communities occur on the project site: 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. A brief description of each vegetation community is provided below.

Mule Fat Scrub

Mule fat scrub is a depauperate, shrubby riparian scrub community dominated by mule fat (*Baccharis salicifolia*) interspersed with shrubby willows (*Salix* spp.). 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). On the project site, mule fat scrub is dominated by mule fat; other species include arroyo willow (*S. lasiolepis*), tamarisk (*Tamarix* sp.), and broom baccharis (*B. sarothroides*).

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 include yerba mansa (*Anemopsis californica*), saltgrass (*Distichlis spicata* var. *stricta*), cattails (*Typha* spp.), and rush (*Juncus* sp.). On the project site, cismontane alkali marsh is dominated by San Diego marsh-elder (*Iva hayesiana*) and southwestern spiny rush (*Juncus acutus* ssp. l*eopoldii*).

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 (*C. stephensonii*). This forest often occurs as isolated groves within a matrix of chaparral or piñon-juniper woodland (Holland 1986).

Tamarisk Scrub

Tamarisk scrub is a weedy stand of tamarisk species, which are non-native plants 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).

Native Grassland

Native grassland is a vegetation community dominated by perennial bunchgrasses such as purple needlegrass (*Nassella 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 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 grass species that occur within this vegetation community include purple needlegrass and San Diego needlegrass (*Achnatherum diegoense*).

Diegan Coastal Sage Scrub (including disturbed)

Coastal sage scrub is one of two major shrub types that occur in southern California, occupying 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 (northern, central, Venturan, and Diegan) are recognized along the California coast. 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.

Plant species observed within the Diegan coastal sage scrub on the project site include California sagebrush (*Artemisia californica*), lemonadeberry (*Rhus integrifolia*), California buckwheat (*Eriogonum fasciculatum*), and laurel sumac (*Malosma laurina*).

Diegan coastal sage scrub-disturbed 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.

Coastal Sage-Chaparral Scrub

Coastal sage-chaparral scrub is a mixture of sclerophyllous chaparral shrubs and drought-deciduous sage scrub species regarded as an ecotone, or transition, between the 2 vegetation communities. This vegetation community often contains floristic elements of both communities, including California sagebrush, California buckwheat, laurel sumac, Nuttall's scrub oak (*Quercus dumosa*), chamise (*Adenostoma fasciculatum*), and ceanothus (*Ceanothus* spp.).

Chamise Chaparral

The most widely distributed chaparral shrub is chamise, which occurs from Baja California, Mexico to northern California in pure stands or in 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 the production of seeds (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*) and black sage (*Salvia mellifera*) are minor associates within this vegetation community.

Southern Mixed Chaparral

Southern mixed chaparral is composed of broad-leaved sclerophyllous shrubs that reach between 6 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 level 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 resprout from underground root crowns become dominant. Depending upon relative proximity to the coast, southern mixed chaparral is dominated by chamise, mission manzanita, wart-stemmed ceanothus (*Ceanothus verrucosus*), Ramona ceanothus (*C. tomentosus*), white-stem wild-lilac (*C. leucodermis*), big-berry manzanita (*Arctostaphylos glauca*), and scrub oak (*Quercus berberidifolia*).

Non-native Grassland

Non-native grassland is a dense-to-sparse cover of annual grasses, often associated with native annual forbs. This association occurs on gradual slopes with deep, fine-textured, usually clay soils. Most of the introduced annual species that comprise non-native grassland originated from the Mediterranean region of Europe, an area with a climate similar to that of California and a long history of agriculture. These 2 factors have contributed to the successful invasion and establishment of these species and the replacement of native grasslands with an annual dominated, non-native grassland (Jackson 1985).

Characteristic species within this vegetation community on the project site include oats (*Avena* spp.), red brome (*Bromus madritensis* ssp. *rubens*), and wild mustard (*Brassica* sp.).

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 ornamentals or ruderal, exotic species) that take advantage of disturbance (previously cleared land or abandoned landscaping), or shows signs of past or present animal usage which has removed any capability of providing viable habitat.

On the project site, disturbed habitat includes dirt roads criss-crossing the area that have been carved out of native vegetation and non-native grassland by off-road vehicles. In addition, San Diego Gas and Electric (SDG&E) maintains access roads and transmission facilities on the project site.

Developed Land

Developed land exists where permanent structures and/or pavement has been placed (preventing the growth of vegetation) or where landscaping is clearly tended and maintained.

SURVEY RESULTS

Five pairs of CAGN were found during the survey (Figures 1 and 2). Two pairs were in the northern portion, 2 pairs were in the eastern portion, and one pair was in the southern portion of the survey area. All but the northernmost pair, which was found in southern mixed chaparral, was found in Diegan coastal sage scrub.

CERTIFICATION

We certify that the information in this survey report and attached exhibits fully and accurately represent our work. Please contact us at (619) 462-1515 should you have any questions.

Sincerely,

Deborah Leonard
Senior Scientist
TE778195

Erik LaCoste
Biologist
TE027736

Enclosures: Figure 1 Project Location Map
Figure 2 Coastal California Gnatcatchers, Survey Routes, and Vegetation Communities

REFERENCES

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. State of California, The Resources Agency, 156 pp.

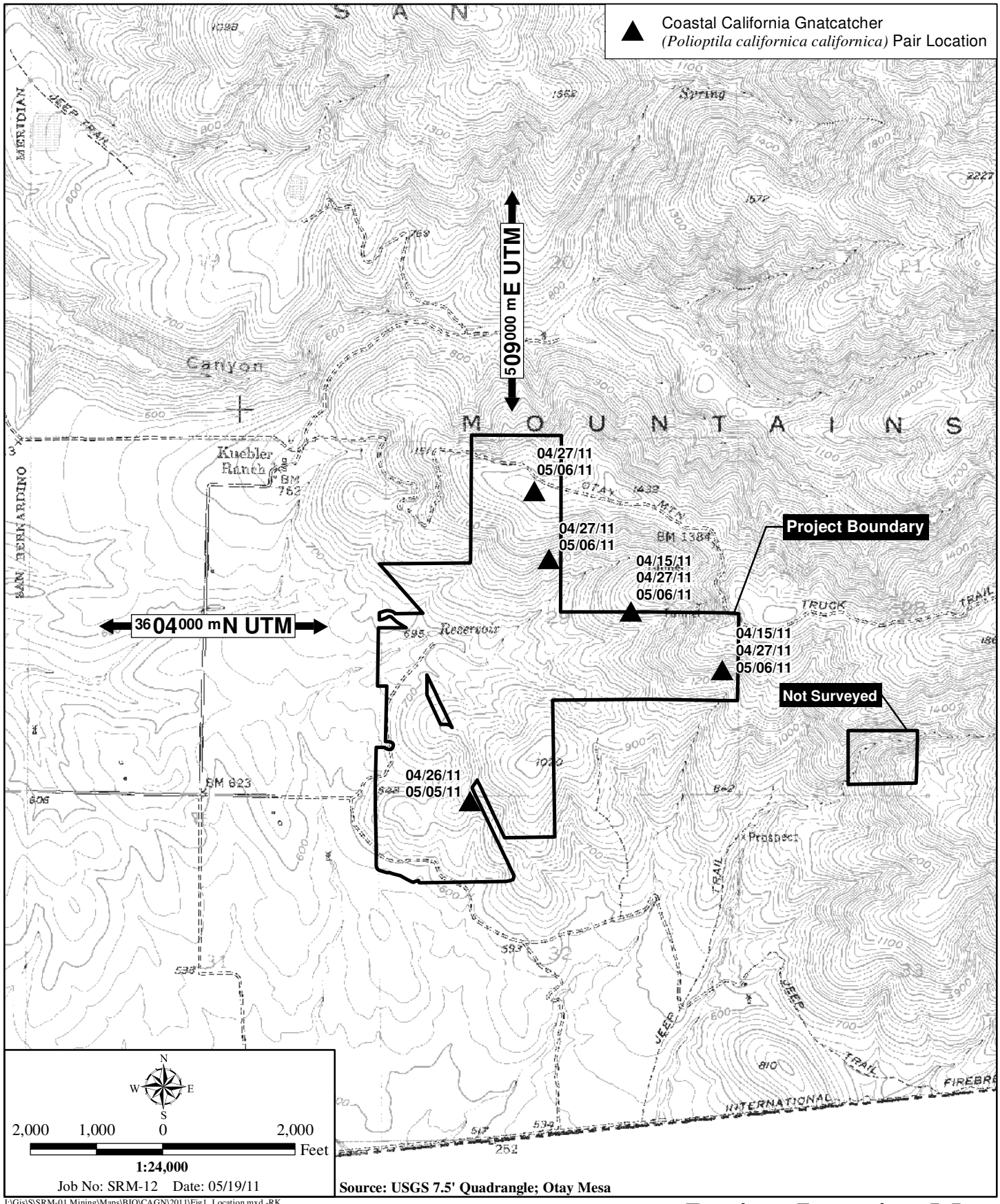
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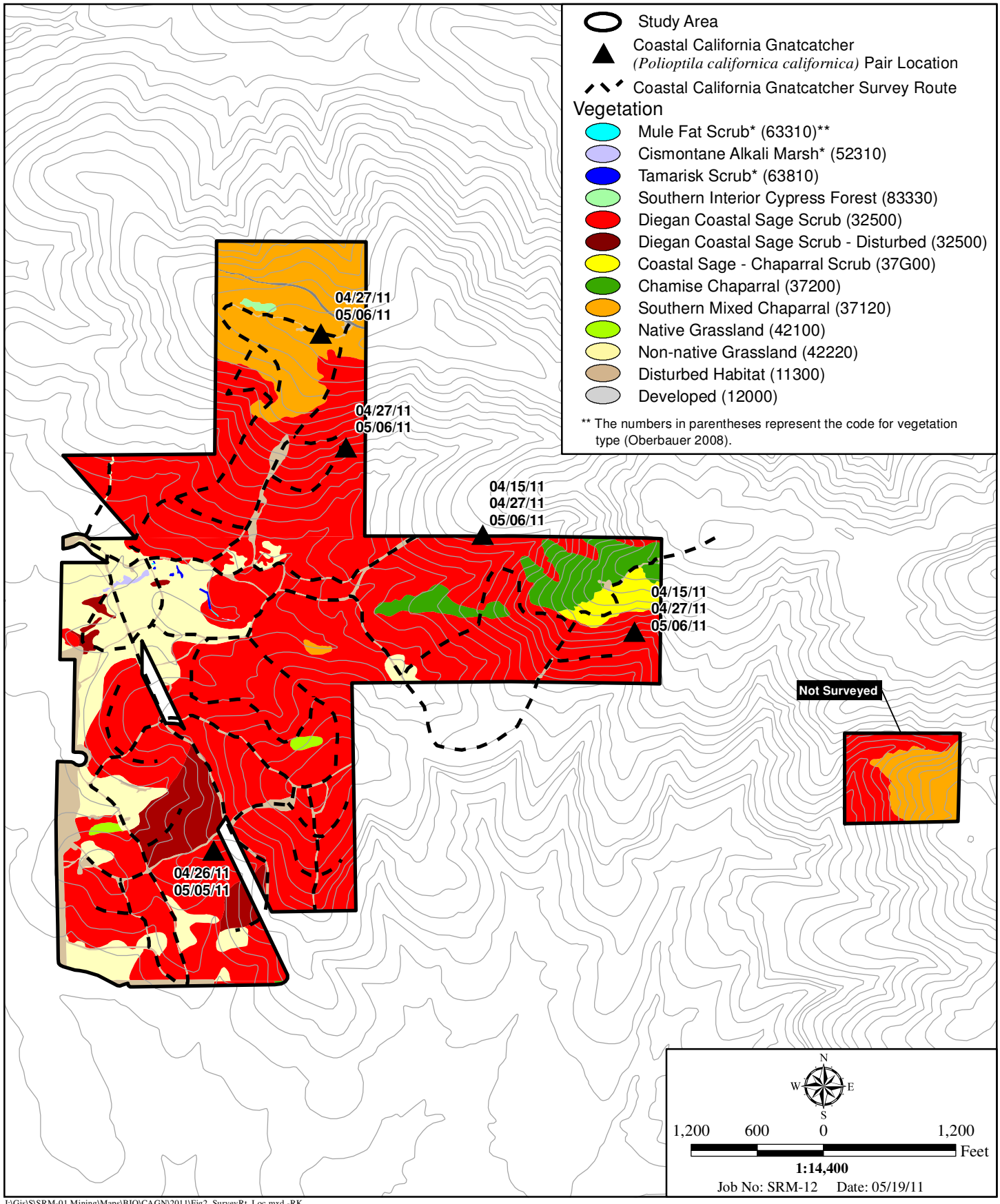
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Project Location Map

OTAY HILLS

HELIX Environmental Planning

Figure 1



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Coastal California Gnatcatchers, Survey Routes, and Vegetation Communities

OTAY HILLS

Figure 2

HELIX Environmental Planning

Appendix D

BURROWING OWL SURVEY REPORTS

BURROWING OWL SURVEY REPORT
APRIL 4, 2012

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
Suite 200
La Mesa, CA 91942
619.462.1515 **tel**
619.462.0552 **fax**
www.**helixepi**.com

April 4, 2012

Arnie Veldkamp SRM-12
Superior Ready Mix Concrete, L.P.
1508 W. Mission Road
Escondido, CA 92029

Subject: Burrowing Owl Survey Report for the Otay Hills Aggregate Extraction Project

Dear Mr. Veldkamp:

This letter presents the results of the 2012 wintering presence/absence survey for the burrowing owl (*Athene cunicularia*) conducted by HELIX Environmental Planning, Inc. (HELIX) for the Otay Hills Aggregate Extraction Project.

LOCATION AND SITE DESCRIPTION

The survey was conducted in an approximately 433.9-acre biological study area (BSA) for the potential impacts associated with the proposed construction of the Otay Hills Aggregate Extraction Project located in San Diego County, California (Figures 1 and 2). The BSA consists of two areas of vacant land located in the foothills immediately east of Otay Mesa, approximately one mile north of the U.S. 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. It is within Township 18 south, Range 1 west on the U.S. Geological Survey 7.5-minute Otay Mesa quadrangle map (Figures 1 and 2). Development within the study area would be required to go through the Multiple Species Conservation Program (MSCP) Subarea Plan Amendment process to receive take authorization for MSCP-covered species.

Land use along and adjacent to the BSA generally includes commercial/industrial and undeveloped. In addition to developed land, 11 vegetation communities occur on the project site: 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 3). In addition to natural habitat, numerous dirt roads cross the study area. These roads are frequently used illegally by off-highway vehicles (OHVs), especially dirt bikes. The 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 within the study area.

METHODS

HELIX biologists Erica Harris, George Aldridge, and Tara Baxter conducted a focused survey for burrowing owls, as well as for burrows and burrowing owl sign, within the 433.9 -acre BSA including a 500-foot buffer in areas containing suitable burrowing owl habitat. A total of 4 survey visits, at approximately 7 days apart, were conducted following survey guidelines (County 2010, CDFG 1995). Surveys were conducted during hours when burrowing owls are typically most active. Two of the visits occurred in the morning (1 hour before sunrise until 2 hours after sunrise) and two visits occurred in the evening (2 hours before sunset to 1 hours after sunset; Table 1) in accordance with County guidelines. These surveys were conducted in January during the portion of the burrowing owl wintering season when owls are most likely to be present, which is defined by the California Department of Fish and Game (CDFG) as December 1 to January 31 (CDFG 1995). Biologists walked slowly and methodically in areas of suitable habitat, closely examining any fence posts, rocks, or other possible perching locations as well as mammal burrows (especially those of California ground squirrel [*Spermophilus beecheyi*]). Potential burrows were checked for signs of recent owl occupation, which include pellets (e.g., regurgitated fur, bones, and insect parts), white wash (excrement), and feathers. In addition, man-made structures such as concrete culverts/piles, wood debris piles, trash piles, and openings beneath cement or asphalt pavement were checked carefully for owl sign.

A list of all animal species observed or detected during the survey is provided in Attachment A.

Table 1
BURROWING OWL SURVEY INFORMATION

SURVEY	DATE	BIOLOGISTS	TIME	WEATHER CONDITIONS	
				Start	Stop
1	1/9/12	E. Harris T. Baxter	0620/0850	54° F, wind 0-1 mph, 0% cloud cover	67° F, wind 0-1 mph, 0% cloud cover
2	1/16/12	E. Harris T. Baxter	1506/1715	58° F, wind 2-4 mph, 100% cloud cover	53° F, wind 2-4 mph, 100% cloud cover
3	1/23/12	E. Harris T. Baxter	0615/0905	50° F, wind 1-3 mph, 99% cloud cover	59° F, wind 1-3 mph, 100% cloud cover
4	1/30/12	G. Aldridge T. Baxter	1505/1720	66° F, wind 4-7 mph, 30% cloud cover	58° F, wind 0-1 mph, 100% cloud cover

SURVEY RESULTS

The results of the 2012 presence/absence burrowing owl survey for the Otay Hills Aggregate Extraction Project were negative. No burrowing owls or sign of burrowing owls such as pellets, whitewash, or burrows were observed within the project site.

Please contact me at 619-462-1515 if you have any questions.

Sincerely,

Erica Harris
Biologist

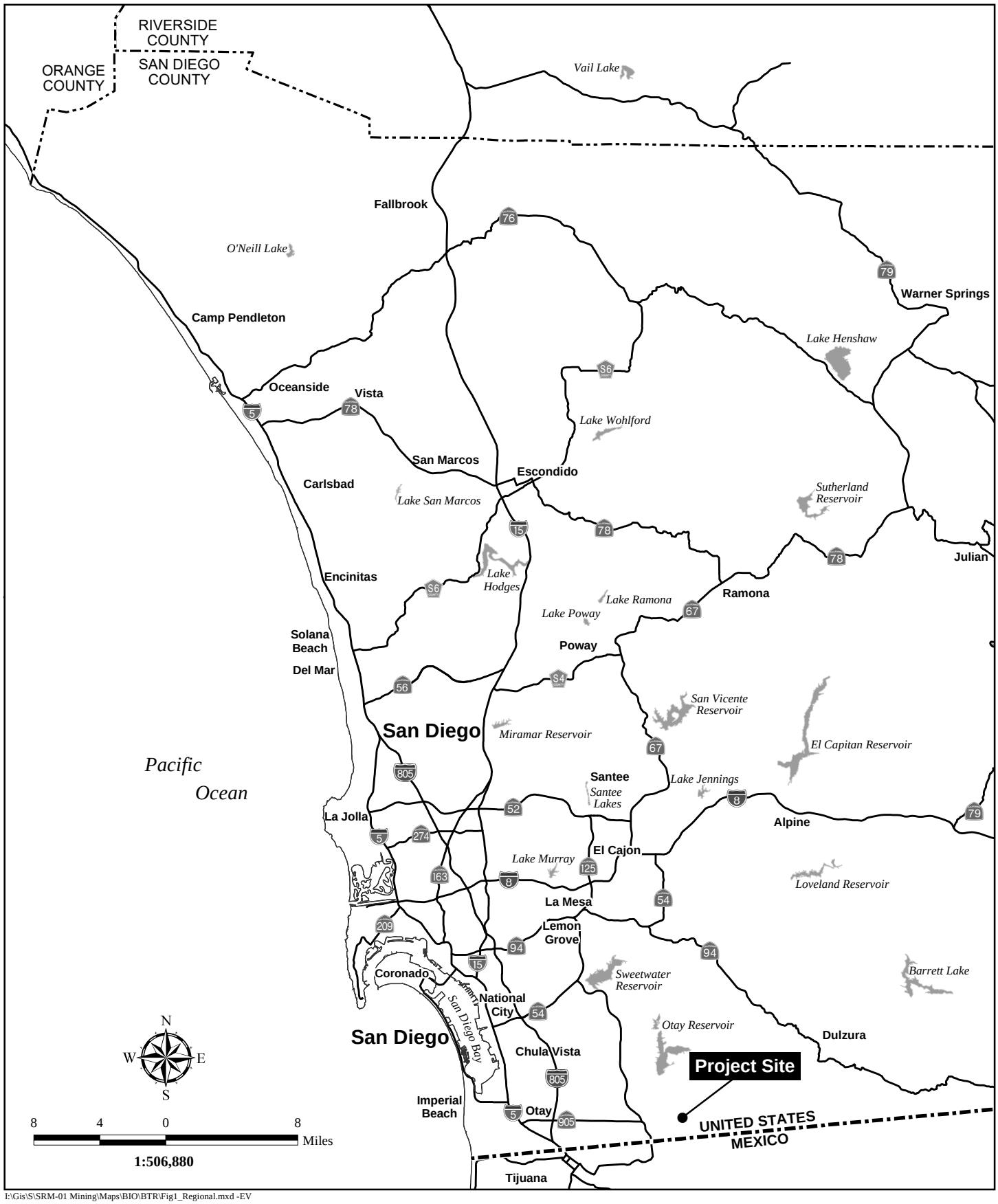
Enclosures:
Figure 1 Regional Location Map
Figure 2 Project Location Map
Figure 3 Vegetation Communities
Attachment A Animal Species Observed or Detected

REFERENCES

California Burrowing Owl Consortium. 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines. April.

California Department of Fish and Game (CDFG). 1995. Staff Report on Burrowing Owl Mitigation. October 17. 8 pp. plus attachments

County of San Diego (County). 2010. Report Format and Content Requirements – Biological Resources. Land Use and Environmental Group, Department of Planning and Land Use and Department of Public Works. Fourth Revision. September 15.

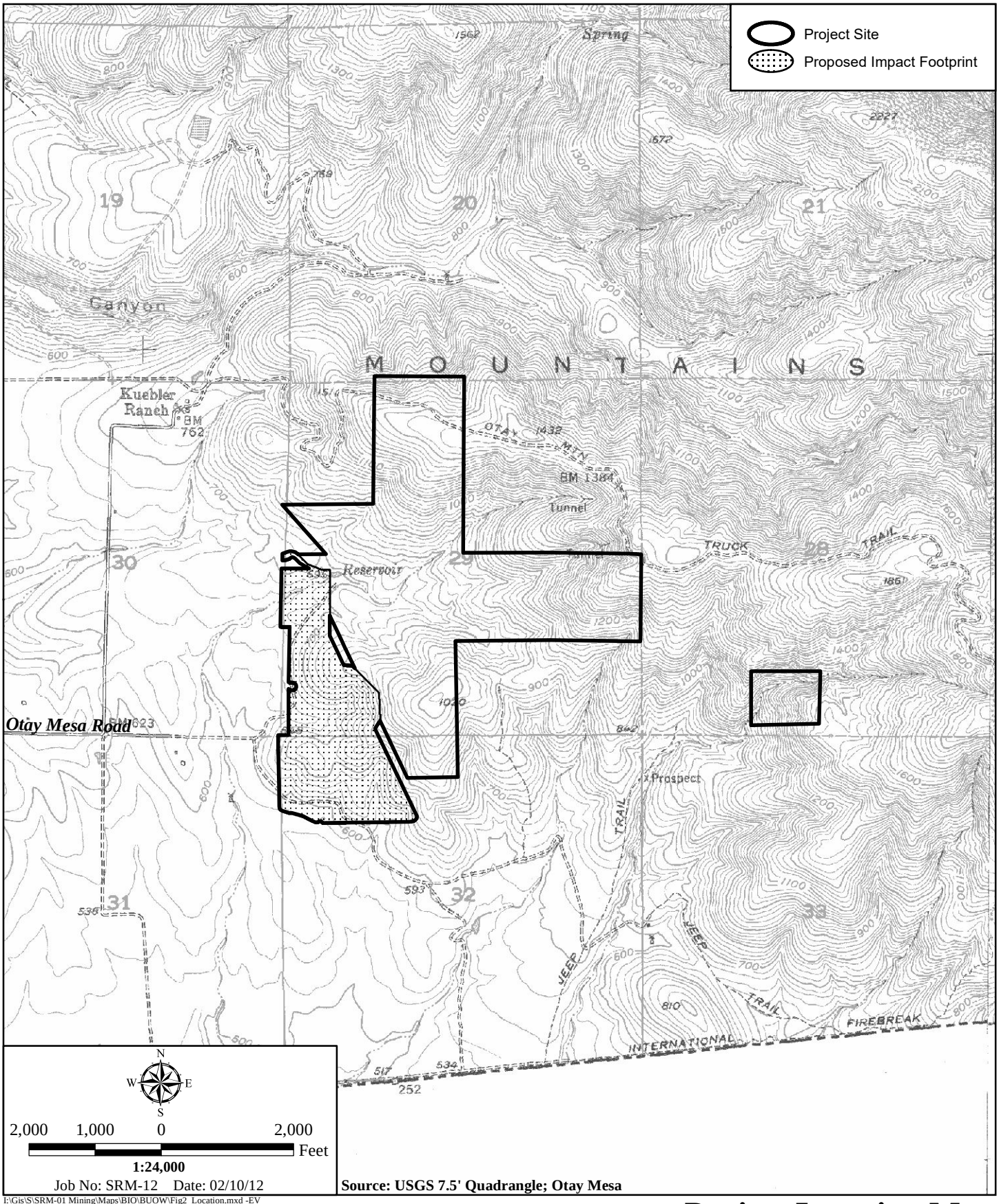


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Regional Location Map

OTAY HILLS

Figure 1

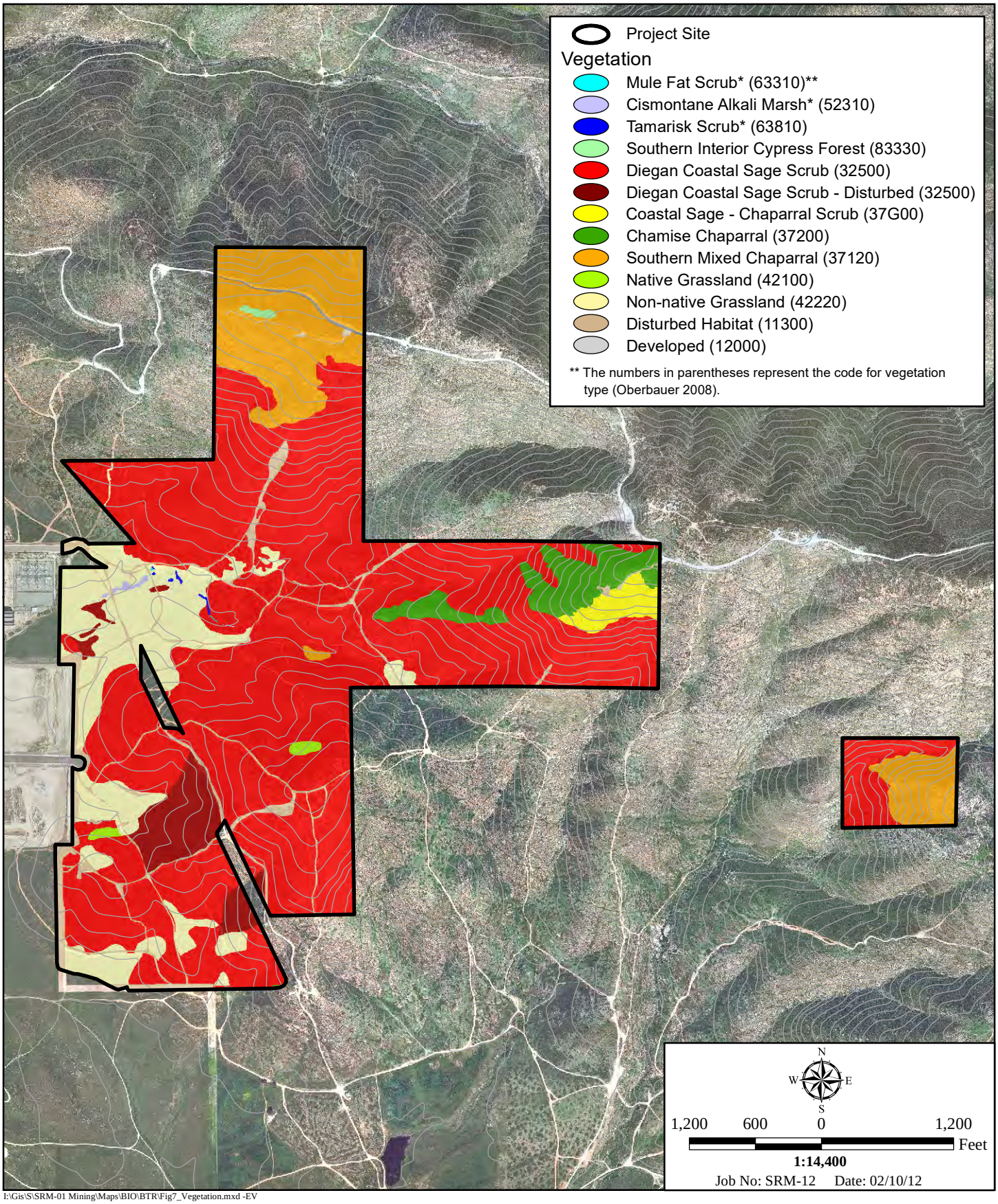


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Project Location Map

OTAY HILLS

Figure 2



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Vegetation Communities

OTAY HILLS

Figure 3

Attachment A
ANIMAL SPECIES OBSERVED OR DETECTED
OTAY HILLS AGGREGRATE EXTRACTION PROJECT

TAXON		SCIENTIFC NAME	COMMON NAME
INVERTEBRATES			
Order	Family		
Lepidoptera	Nymphalidae	*Vanessa cardui*	Painted Lady
VERTEBRATES			
Amphibians			
Order	Family		
Anura	Bufonidae	*Bufo boreas*	Western Toad
Birds			
Order	Family		
Aphodiformes	Trochilidae	*Calypte anna*	Anna's Hummingbird
Columbiformes	Columbidae	*Zenaida macroura*	Mourning Dove
Falconiformes	Accipitridae	*Accipter cooperii*†	Cooper's Hawk
		Buteo jamaicensis	Red-tailed Hawk
		Circus cyaneus†	Northern Harrier
	Falconidae	*Falco* sp.	unidentified falcon
		Falco sparverius	American Kestrel
Passeriformes	Aegithalidae	*Psaltriparus minimus*	Bushtit
	Corvidae	*Corvus brachyrhynchos*	American Crow
		Corvus corax	Common Raven
	Emberizidae	*Chondestes grammacus*	Lark Sparrow
		Melospiza melodia	Song Sparrow
		Passerculus sandwichensis	Savannah Sparrow
		Pipilo crissalis	California Towhee
		Pipilo maculatus	Spotted Towhee
		Pooecetes gramineus	Vesper Sparrow
		Zonotrichia leucophrys	White-crowned Sparrow
	Fringillidae	*Carduelis psaltria*	Lesser Goldfinch

Attachment A (cont.)
ANIMAL SPECIES OBSERVED OR DETECTED
OTAY HILLS AGGREGRATE EXTRACTION PROJECT

TAXON		SCIENTIFC NAME	COMMON NAME
Birds			
Order	Family		
	Fringillidae	*Carpodacus mexicanus*	House Finch
	Hiruninidae	*Stelgidopteryx* sp.	unidentified swallow
	Icteridae	*Sturnella neglecta*	Western Meadowlark
	Laniidae	*Lanius ludovicianus*†	Loggerhead Shrike
	Parulidae	*Setophaga coronata*	Yellow-rumped Warbler
	Sturnidae	*Sturnus vulgaris*	European Starling
	Troglodytidae	*Salpinctes obsoletus*	Rock Wren
		Thryomanes bewickii	Bewick's Wren
		Troglodytes aedon	House Wren
	Tyrannidae	*Sayornis nigricans*	Black Phoebe
		Sayornis saya	Say's Phoebe
		Tyrannus sp.	unidentified kingbird
Pelecaniformes	Phalacrocoracidae	*Phalacrocorax auritus*	Double-crested Cormorant
Mammals			
Order	Family		
Artiodactyla	Cervidae	*Odocoileus hemionus*	mule deer
Carnivora	Canidae	*Canis latrans*	coyote
	Felidae	*Lynx rufus*	bobcat
	Procynoidaee	*Procyon lotor*	caccoon
Lagomorpha	Leporidae	*Lepus californicus*	black-tailed jackrabbit
	Leporidae	*Sylvilagus audubonii*	desert cottontail
Rodentia	Geomyidae	*Thomomy bottae*	pocket gopher
	Muridae	*Neotoma* sp.	unidentified woodrat
	Sciuridae	*Spermophilus beecheyi*	California ground squirrel

†Listed or sensitive species

BURROWING OWL SURVEY REPORT
JUNE 15, 2012

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619.462.1515 **tel**
619.462.0552 **fax**
www.**helixepi**.com

June 15, 2012

Arnold Veldkamp SRM-12
Superior Ready Mix Concrete
1508 West Mission Road
Escondido, California 92029

Subject: Burrowing Owl Survey Report for the Otay Hills Aggregate Extraction Project

Dear Mr. Veldkamp:

This letter presents the results of the 2012 nesting season presence/absence survey for the burrowing owl (*Athene cunicularia*) conducted by HELIX Environmental Planning, Inc. (HELIX) for the Otay Hills Aggregate Extraction Project.

LOCATION AND SITE DESCRIPTION

The survey was conducted in an approximately 433.9-acre biological study area (BSA) of the Otay Hills Aggregate Extraction Project located in San Diego County, California (Figures 1 and 2). The BSA consists of two areas of vacant land located in the foothills immediately east of Otay Mesa, approximately one mile north of the U.S. 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. It is within Township 18 south, Range 1 west on the U.S. Geological Survey 7.5-minute Otay Mesa quadrangle map (Figures 1 and 2). Development within the study area would be required to go through the Multiple Species Conservation Program (MSCP) Subarea Plan Amendment process to receive take authorization for MSCP-covered species.

Land use along and adjacent to the BSA generally includes commercial/industrial to the west and undeveloped land to the north, east, and south. In addition to developed land, 11 vegetation communities occur on the project site: 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 3). In addition to natural habitat, numerous dirt roads cross the study area. The Border Patrol traverses the study area in vehicles and off highway vehicles

(OHV) during daily patrols, and unauthorized OHVs periodically use these trails. In addition, San Diego Gas & Electric (SDG&E) maintains access roads and transmission facilities within the study area.

METHODS

HELIX biologists Amy Mattson, Laura Moreton, and George Aldridge conducted a focused survey for burrowing owls within suitable habitat, as well as for burrows and burrowing owl sign, within the 433.9 -acre BSA. Suitable habitat included non-native grassland, open Diegan coastal sage scrub, and disturbed areas. A total of 4 survey visits, approximately 7 days apart, were conducted following survey guidelines set forth by the County of San Diego (County; 2010) and California Department of Fish and Game (CDFG; 1995). Surveys were conducted during hours when burrowing owls are typically most active. Two of the visits occurred in the morning (1 hour before sunrise until 2 hours after sunrise) and two visits occurred in the evening (2 hours before sunset to 1 hour after sunset; Table 1). These surveys were conducted in April and May during the burrowing owl nesting season, which is defined by CDFG as April 15 to July 15 (CDFG 1995). Biologists walked slowly and methodically in areas of suitable habitat, closely examining any fence posts, rocks, or other possible perching locations as well as mammal burrows (especially those of the California ground squirrel [*Spermophilus beecheyi*]). Potential burrows were checked for signs of recent owl occupation which include pellets (e.g., regurgitated fur, bones, and insect parts), white wash (excrement), and feathers. In addition, man-made structures such as concrete culverts/piles, wood debris piles, trash piles, and openings beneath cement or asphalt pavement were checked carefully for owl sign.

A list of all animal species observed or detected during the survey is provided in Attachment A.

Table 1
BURROWING OWL SURVEY INFORMATION

SURVEY	DATE	BIOLOGISTS	TIME	WEATHER CONDITIONS	
				Start	Stop
1	4/18/12	L. Moreton G. Aldridge	1720/1930	64° F, wind 5-10 mph, 10% cloud cover	64° F, wind 0-1 mph, 0% cloud cover
2	4/25/12	L. Moreton G. Aldridge	0600/0800	60° F, wind 0-2 mph, 100% cloud cover	60° F, wind 2-5 mph, 100% cloud cover
3	5/4/12	A. Mattson G. Aldridge	1737/1930	65° F, wind 2-5 mph, 0% cloud cover	58° F, wind 0-1 mph, 5% cloud cover
4	5/11/12	A. Mattson S. Rodriguez	0550/0750	59° F, wind 0-2 mph, 100% cloud cover	68° F, wind 0-2 mph, 95% cloud cover

SURVEY RESULTS

The results of the spring 2012 presence/absence burrowing owl survey for the Otay Hills Aggregate Extraction Project were negative. No burrowing owls or sign of burrowing owls such as pellets, whitewash, or burrows were observed within the project site.

Please contact me at 619-462-1515 if you have any questions.

Sincerely,



George Aldridge
Biologist

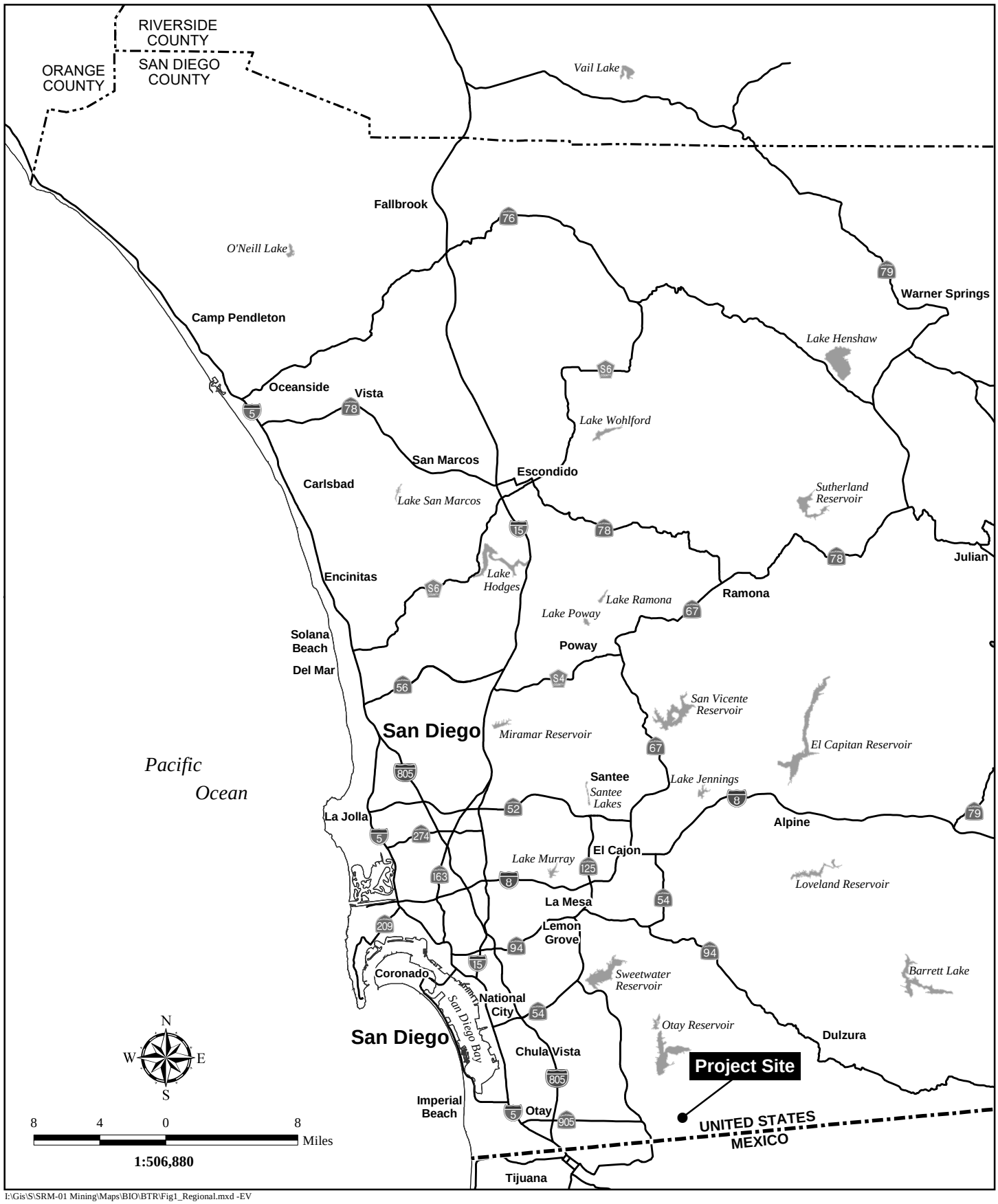
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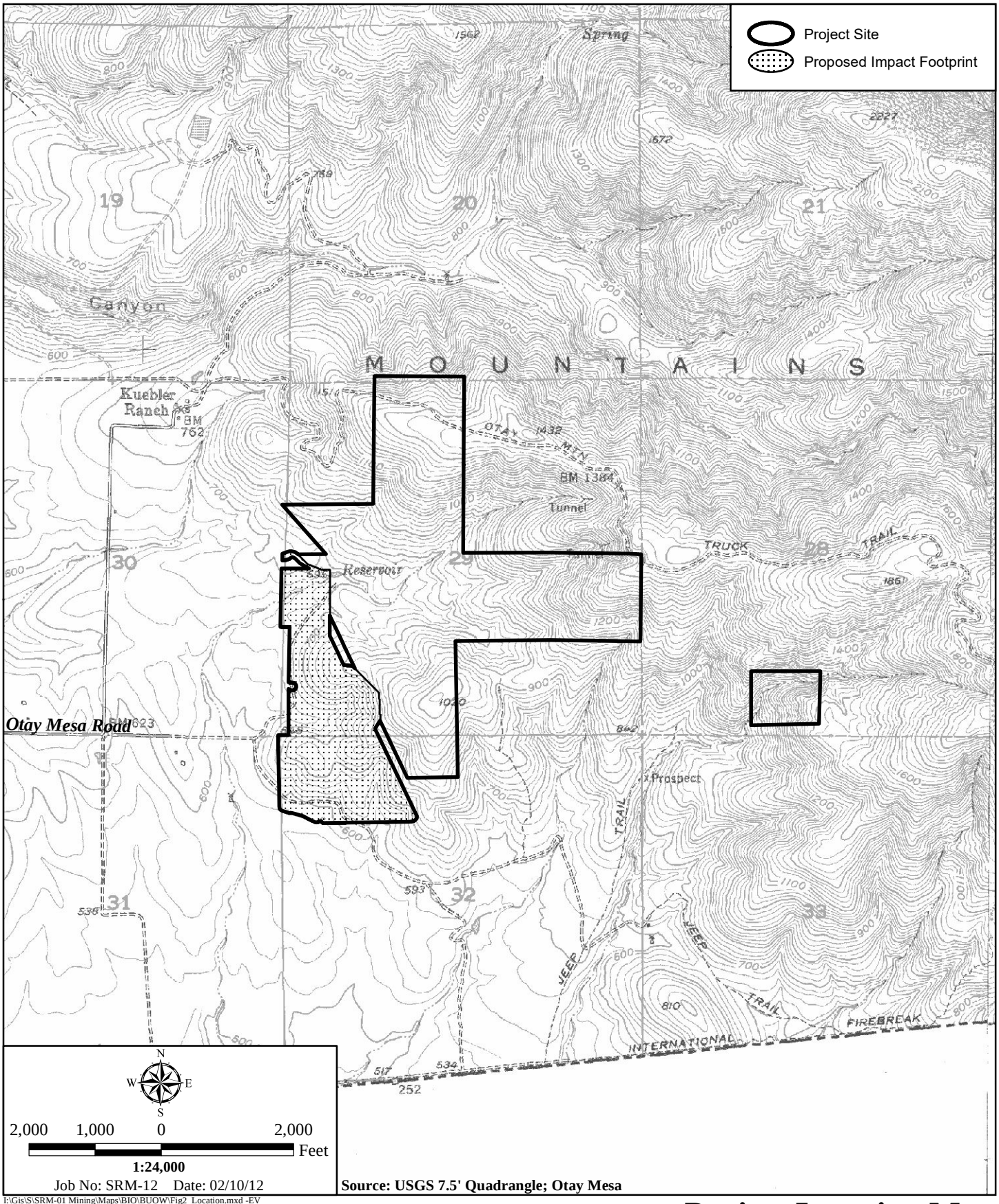


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Regional Location Map

OTAY HILLS

Figure 1

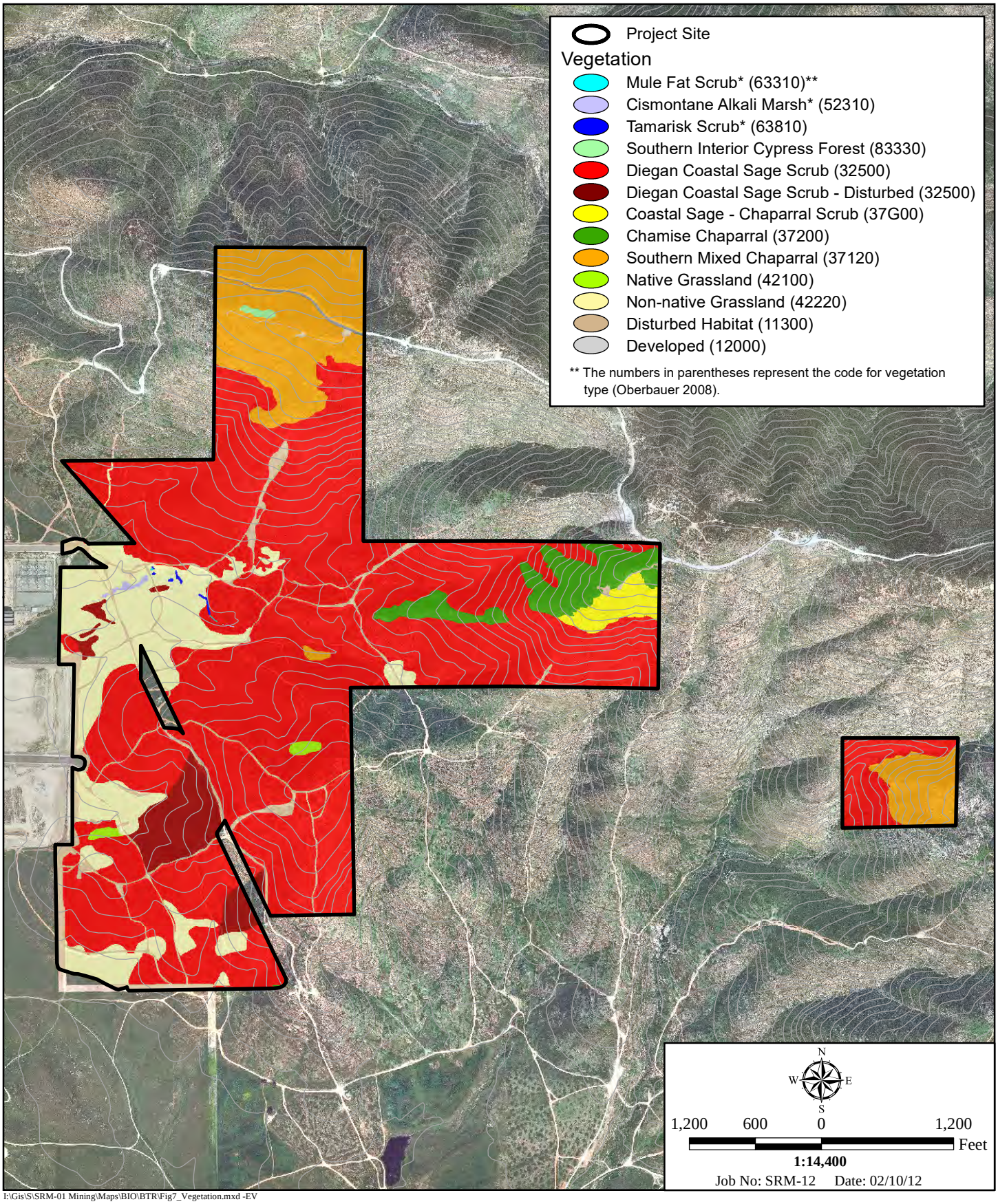


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Project Location Map

OTAY HILLS

Figure 2



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Vegetation Communities

OTAY HILLS

Figure 3

Attachment A
ANIMAL SPECIES OBSERVED OR DETECTED
OTAY HILLS AGGREGRATE EXTRACTION PROJECT

TAXON		SCIENTIFC NAME	COMMON NAME
INVERTEBRATES			
Order	Family		
Lepidoptera	Nymphalidae	*Vanessa cardui*	Painted Lady
VERTEBRATES			
Amphibians			
Order	Family		
Anura	Bufonidae	*Bufo boreas*	Western Toad
Birds			
Order	Family		
Aphodiformes	Trochilidae	*Calypte anna*	Anna's Hummingbird
Caprimulgiformes	Caprimulgidae	*Chrodeiles minor*	Common Nighthawk
Charadriiformes	Charadriidae	*Chrardrius vociferus*	Killdeer
Columbiformes	Columbidae	*Zenaida macroura*	Mourning Dove
Falconiformes	Accipitridae	*Accipter cooperii*†	Cooper's Hawk
		Buteo jamaicensis	Red-tailed Hawk
		Circus cyaneus†	Northern Harrier
		Pandion haliaetus	Osprey
	Falconidae	*Falco* sp.	unidentified falcon
		Falco sparverius	American Kestrel
Galliformes	Odontophoridae	*Callipepla californica*	California Quail
Passeriformes	Aegithalidae	*Psaltriparus minimus*	Bushtit
	Alaudidae	*Eremophila alpestris*	Horned Lark
	Cardinalidae	*Cyanocompsa caerulea*	Blue Grosbeak
		Passerina amoena	Lazuli Bunting

Attachment A (cont.)
ANIMAL SPECIES OBSERVED OR DETECTED
OTAY HILLS AGGREGRATE EXTRACTION PROJECT

TAXON		SCIENTIFC NAME	COMMON NAME
VERTEBRATES (cont.)			
Birds (cont.)			
Order	Family		
Passeriformes (cont.)	Corvidae	*Corvus brachyrhynchos*	American Crow
		Corvus corax	Common Raven
	Emberizidae	*Aimophila ruficeps*	Rufous-crowned Sparrow
		Chondestes grammacus	Lark Sparrow
		Melospiza melodia	Song Sparrow
		Passerculus sandwichensis	Savannah Sparrow
		Pipilo crissalis	California Towhee
		Pipilo maculatus	Spotted Towhee
		Pooecetes gramineus	Vesper Sparrow
		Zonotrichia leucophrys	White-crowned Sparrow
	Fringillidae	*Carduelis psaltria*	Lesser Goldfinch
		Carpodacus mexicanus	House Finch
	Hiruninidae	*Stelgidopteryx serripennis*	Northern Rough-winged Swallow
	Icteridae	*Agelaius phoeniceus*	Red-winged Blackbird
		Sturnella neglecta	Western Meadowlark
	Laniidae	*Lanius ludovicianus*†	Loggerhead Shrike
	Mimidae	*Mimus polyglottos*	Northern Mockingbird
	Parulidae	*Geothlypis trichas*	Common Yellowthroat
		Setophaga coronata	Yellow-rumped Warbler
	Sturnidae	*Sturnus vulgaris*	European Starling
	Troglodytidae	*Salpinctes obsoletus*	Rock Wren
		Thryomanes bewickii	Bewick's Wren
		Troglodytes aedon	House Wren
	Tyrannidae	*Sayornis nigricans*	Black Phoebe
		Sayornis saya	Say's Phoebe
		Tyrannus vociferans	Cassin’s Kingbird

Attachment A (cont.)
ANIMAL SPECIES OBSERVED OR DETECTED
OTAY HILLS AGGREGRATE EXTRACTION PROJECT

TAXON		**SCIENTIFC NAME**	**COMMON NAME**
VERTEBRATES (cont.)			
Birds (cont.)			
Order	Family		
Pelecaniformes	Phalacrocoracidae	*Phalacrocorax auritus*	Double-crested Cormorant
	Threskiornithidae	*Plegadis chihi*	White-faced Ibis
Mammals			
Order	Family		
Carnivora	Canidae	*Canis latrans*	coyote
Lagomorpha	Leporidae	*Lepus californicus*	black-tailed jackrabbit
	Leporidae	*Sylvilagus audubonii*	desert cottontail
Rodentia	Sciuridae	*Spermophilus beecheyi*	California ground squirrel

†Listed or sensitive species

Appendix E

PLANT SPECIES OBSERVED

Appendix E
PLANT SPECIES OBSERVED – OTAY HILLS

FAMILY	SCIENTIFIC NAME	COMMON NAME	HABITAT‡
DICOTS			
Anacardiaceae	*Malosma laurina*	laurel sumac	DCSS, DCSS-D, CSCS
	Rhus integrifolia	lemonadeberry	DCSS, DCSS-D
Apiaceae	*Apiastrum angustifolium*	mock parsley	DCSS
	Daucus carota	Queen Anne's lace	DCSS, DCSS-D
	Daucus pusillus	rattlesnake weed	DCSS
	*Foeniculum vulgare**	fennel	DCSS
	Sanicula arguta	sharp-tooth sanicle	DCSS
Asteraceae	*Achillea millefolium*	Pacific yarrow	DCSS
	Ambrosia psilostachya	western ragweed	DCSS
	*Anthemis cotula**	mayweed	DCSS
	Artemisia californica	California sagebrush	DCSS, DCSS-D, CSCS
	Baccharis salicifolia	mule fat	MFS
	Baccharis sarothroides	broom baccharis	MFS, DCSS
	Brickellia californica	brickellbrush	DCSS
	*Centaurea melitensis**	star thistle	DCSS, DCSS-D, SMC
	Chaenactis artemisiifolia	artemisia pincushion	DCSS
	Chaenactis glabriuscula var. *glabriuscula*	yellow pinchusion	DCSS
	*Cirsium vulgare**	bull thistle	DCSS-D
	*Cotula australis**	Australian brass-buttons	DCSS
	Deinandra conjugens†	Otay tarplant	NNG
	Deinandra fasciculata	fascicled tarplant	DCSS, DCSS-D, NNG
	Encelia californica	California encelia	DCSS
	Erigeron foliosus var. *foliosus*	leafy daisy	DCSS
	Eriophyllum confertiflorum	golden-yarrow	CHP, DCSS-D, SMC
	Filago californica	California filago	DCSS
	Gnaphalium bicolor	bicolor cudweed	DCSS-D, DCSS
	Grindelia camporum var. *bracteosum*	gum plant	DCSS
	Gutierrezia californica	California matchweed	DCSS
	Gutierrezia sarothrae	San Joaquin matchweed	DCSS
	Hazardia squarrosa var. *grindelioides*	saw-toothed goldenbush	DCSS-D, DCSS
	*Hedypnois cretica**	Crete hedypnois	DCSS
	*Hypochaeris glabra**	smooth cat's-ear	DCSS, NNG
	Isocoma menziesii var. *menziesii*	San Diego goldenbush	MFS
	Iva hayesiana†	San Diego marsh-elder	CAM, DCSS, DCSS-D
	Lasthenia californica	goldfields	DCSS
	Lessingia sp.	sand-aster	DCSS, DCSS-D

Appendix E (cont.)
PLANT SPECIES OBSERVED – OTAY HILLS

FAMILY	SCIENTIFIC NAME	COMMON NAME	HABITAT‡
DICOTS (cont.)			
Asteraceae	*Osmadenia tenella*	osmadenia	DCSS, DCSS-D
	Palafoxia arida var. *arida*	Spanish-needle	DCSS
	Porophyllum gracile	odora	DCSS
	*Silybum marianum**	milk thistle	DCSS
	*Sonchus oleraceus**	common sow thistle	DCSS
	Stephanomeria exigua ssp. *exigua*	small wreath-plant	DCSS
	Stephanomeria virgata ssp. *virgata*	virgate wreath-plant	DCSS
	Stylocline gnaphaloides	everlasting nest straw	DCSS
	Uropappus lindleyi	silver puffs	DCSS
	Viguiera laciniata†	San Diego County sunflower	DCSS, DCSS-D
Boraginaceae	*Cryptantha intermedia*	common cryptantha	DCSS
	Harpagonella palmeri	Palmer's grapplinghook	DCSS
	Pectocarya linearis ssp. *ferocula*	slender pectocarya	DCSS
	Plagiobothrys sp.	popcorn flower	DCSS
Brassicaceae	*Brassica nigra**	black mustard	DCSS-D
	*Hirschfeldia incana**	perennial mustard	DCSS
	Lepidium lasiocarpum var. *lasiocarpum*	sand peppergrass	DCSS, DCSS-D
	Thysanocarpus curvipes	lacepod	CHP
	*Sisymbrium altissimum**	tumble mustard	DCSS, DCSS-D
Cactaceae	*Ferocactus viridescens*†	San Diego barrel cactus	DCSS-D
	Mammillaria dioica	fishhook cactus	DCSS
	Opuntia littoralis	coastal prickly pear	DCSS
	Opuntia proliferia	coastal cholla	DCSS
Capparaceae	*Isomeris arborea*	bladderpod	DCSS
Caryophyllaceae	*Silene gallica**	common catchfly	DCSS, NNG
Chenopodiaceae	*Atriplex semibaccata**	Australian saltbush	DCSS
	*Chenopodium album**	pigweed	DCSS
	*Salsola soda**	alkali Russian thistle	CAM
	*Salsola tragus**	Russian thistle	DCSS-D
Cistaceae	*Helianthemum scoparium*	peak rush rose	SMC
Convolvulaceae	*Calystegia macrostegia*	morning-glory	DCSS, DCSS-D
	Dichondra occidentalis†	western dichondra	DCSS-D
Crassulaceae	*Dudleya edulis*	ladies-fingers	DCSS-D, DCSS
	Dudleya pulverulenta	chalk-lettuce	DCSS, DCSS-D
	Dudleya variegata†	variegated dudleya	DCSS

Appendix E (cont.)
PLANT SPECIES OBSERVED – OTAY HILLS

FAMILY	SCIENTIFIC NAME	COMMON NAME	HABITAT‡
DICOTS (cont.)			
Cucurbitaceae	*Marah macrocarpus*	wild cucumber	DCSS
Cuscutaceae	*Cuscuta* sp.*	dodder	DCSS-D
Ericaceae	*Xylococcus bicolor*	Mission manzanita	CC, DCSS-D, SMC
Euphorbiaceae	*Chamaesyce maculata*	spotted spurge	DCSS
	Eremocarpus setigerus	dove weed	DCSS
Fabaceae	*Lupinus bicolor* ssp. *microphyllus*	miniature lupine	NNG
	Lathyrus latifolius	sweet pea	DCSS, DCSS-D
	Lotus scoparius var. *scoparius*	coastal deer weed	DCSS, DCSS-D
	Lupinus sp.	lupine	DCSS
	Trifolium sp.	clover	DCSS
Gentianaceae	*Centaurium venustum*	canchalagua	DCSS-D
Geraniaceae	*Erodium botrys**	long-beak filaree	DCSS-D, NNG
	*Erodium cicutarium**	red-stem filaree	DCSS-D
	*Erodium moschatum**	green-stem filaree	DCSS
Hydrophyllaceae	*Eriodictyon trichocalyx* var. *trichocalyx*	yerba santa	DCSS
	Emmenanthe penduliflora	whispering bells	DCSS
	Pholistoma racemosum	filaree-leaf nemophila	DCSS
	Phacelia cicutaria var. *hispida*	caterpillar phacelia	DCSS, DCSS-D
	Phacelia grandiflora	large-flowered phacelia	DCSS
Lamiaceae	*Salvia apiana*	white sage	DCSS, DCSS-D
	Stachys ajugoides var. *rigida*	hedge-nettle	DCSS
	Salvia columbariae	chia	DCSS
	Salvia munzii†	Munz's sage	DCSS, CC, SMC
	Trichostema parishii	mountain blue-curls	SMC
Lythraceae	*Lythrum hyssopifolium**	grass poly	CAM
Malvaceae	*Malacothamnus fasciculatus*	chaparral mallow	DCSS, DCSS-D
	Sidalcea malvaeflora ssp. *sparsifolia*	checker-bloom	DCSS-D
Myoporaceae	*Myoporum laetum*	myoporum	DCSS
Nyctaginaceae	*Mirabilis californica*	wishbone bush	DCSS
Oleaceae	*Olea europaea**	olive	DCSS-D
Onagraceae	*Clarkia purpurea* ssp. *quadrivulnera*	four-spot clarkia	DCSS
Oxalidaceae	*Oxalis albicans* ssp. *californica**	wood sorrel	DCSS
	*Oxalis corniculata**	yellow sorrel	DCSS
	*Oxalis pes-caprae**	Bermuda-buttercup	DCSS
Papaveraceae	*Romneya coulteri*†	Coulter's matilija poppy	SMC
	Romneya trichocalyx	hairy matilija poppy	DCSS-D
	Eschscholzia californica	California poppy	DCSS, DCSS-D

Appendix E (cont.)
PLANT SPECIES OBSERVED – OTAY HILLS

FAMILY	SCIENTIFIC NAME	COMMON NAME	HABITAT‡
DICOTS (cont.)			
Plantaginaceae	*Plantago erecta*	California plantain	DCSS
Polemoniaceae	*Eriastrum sapphirinum*	wool-star	DCSS
	Gilia sp.	gilia	DCSS
	Linanthus liniflorus	great basin linanthus	DCSS
Polygonaceae	*Chorizanthe fimbriata*	fringed spineflower	DCSS
	Eriogonum fasciculatum ssp. *fasciculatum*	California buckwheat	DCSS, DCSS-D, CSCS
	*Rumex crispus**	curly dock	DCSS-D
	Pterostegia drymarioides	California thread-stem	DCSS
Portulacaceae	*Claytonia perfoliata* var. *perfoliata*	miner's lettuce	DCSS
Primulaceae	*Anagallis arvensis**	scarlet pimpernel	DCSS
	Dodecatheon clevelandii ssp. *clevelandii*	Cleveland's shooting star	DCSS
Ranunculaceae	*Clematis pauciflora*	ropevine	DCSS
	Thalictrum fendleri var. *polycarpum*	meadow rue	DCSS
	Clematis lasiantha	pipestems	DCSS
	Delphinium cardinale	cardinal, scarlet larkspur	DCSS, DCSS-D
	Delphinium parryi	blue larkspur	DCSS, DCSS-D
Rhamnaceae	*Ceanothus oliganthus*	Orcutt ceanothus	SMC
	Ceanothus tomentosus	Ramona ceanothus	CSCS, SMC
	Rhamnus crocea	spiny redberry	CHP, DCSS, DCSS-D
Rosaceae	*Adenostoma fasciculatum*	chamise	CSCS, SMC
	Heteromeles arbutifolia	toyon	DCSS
Rubiaceae	*Galium* sp.	bedstraw	DCSS
	Galium angustifolium ssp. *angustifolium*	narrow-leaved bedstraw	DCSS-D
Salicaceae	*Salix lasiolepis*	arroyo willow	MFS
	Salix sp.	willow	MFS
Scrophulariaceae	*Antirrhinum kelloggii*	climbing snapdragon	DCSS
	Antirrhinum nuttallianum	Nuttall's snapdragon	DCSS-D, DCSS
	Cordylanthus rigidus ssp. *setigerus*	bird's beak	DCSS
	Cordylanthus orcuttianus†	Orcutt's bird's beak	DCSS
	Castilleja affinis ssp. *affinis*	coast paint-brush	DCSS, DCSS-D
	Castilleja exserta	purple owl's clover	DCSS, DCSS-D
	Collinsia heterophylla	Chinese houses	DCSS
	Mimulus aurantiacus	monkey-flower	DCSS
	Mimulus brevipes	hillside monkey-flower	DCSS
	Mimulus guttatus	common monkey-flower	DCSS

Appendix E (cont.)
PLANT SPECIES OBSERVED – OTAY HILLS

FAMILY	SCIENTIFIC NAME	COMMON NAME	HABITAT‡
DICOTS (cont.)			
Solanaceae	*Lycium californicum*	California box-thorn	DCSS
	Solanum parishii	Parish's nightshade	DCSS
	Solanum xanti	purple nightshade	DCSS-D
Tamaricaceae	*Tamarix* sp.*	tamarisk	MFS, DCSS, TS
Urticaceae	*Parietaria hespera* var. *californica*	pellitory	DCSS
Violaceae	*Voila pedunculata*	Johnny jump-up	DCSS-D
MONOCOTS			
Cyperaceae	*Carex spissa*	San Diego sedge	DCSS
	Eleocharis macrostachys	pale spike-rush	CAM
	Eleocharis sp.	spike-rush	DCSS
Iridaceae	*Sisyrinchium bellum*	blue-eyed grass	DCSS
Juncaceae	*Juncus acutus* ssp. *leopoldii*†	southwestern spiny rush	CAM, DCSS-D
Liliaceae	*Allium haematochiton*	wild garlic, red-skinned onion	DCSS
	Allium peninsulare	red-flowered onion	DCSS-D
	Bloomeria crocea var. *crocea*	golden star	DCSS
	Calochortus dunnii†	Dunn's mariposa lily	DCSS
	Calochortus splendens	splendid mariposa lily	DCSS, DCSS-D
	Calochortus weedii var. *weedii*	Weed's mariposa lily	DCSS
	Chlorogalum parviflorum	small-flower soap-plant	DCSS
	Dichelostemma capitatum	blue dicks	DCSS, DCSS-D
	Muilla clevelandii†	San Diego goldenstar	DCSS
	Yucca whipplei	Our Lord's candle	DCSS, DCSS-D, SMC
Poaceae	*Achnatherum coronatum*	giant stipa	DCSS
	Achnatherum diegoensis†	San Diego County needlegrass	NG, DCSS, DCSS-D
	Agrostis pallens	thingrass	DCSS-D
	*Avena barbata**	slender wild oat	DCSS, NNG, DH
	*Avena fatua**	wild oat	DCSS, NNG, DH
	*Bromus diandrus**	common ripgut grass	DCSS, NNG, DH
	*Bromus hordeaceus**	soft chess	DCSS, NNG, DH
	Bromus madritensis ssp. *rubens**	foxtail chess	DCSS, DCSS-D, NNG, SMC, DH
	*Gastridium ventricosum**	nit grass	DCSS
	Hordeum sp.*	barley	NNG
	*Lamarckia aurea**	goldentop	DCSS, DCSS-D
	*Lolium multiflorum**	Italian ryegrass	DCSS, DCSS-D, NNG, DH

Appendix E (cont.)
PLANT SPECIES OBSERVED – OTAY HILLS

FAMILY	SCIENTIFIC NAME	COMMON NAME	HABITAT‡
MONOCOTS (cont.)			
Poaceae (cont.)	*Melica frutescens*	tall melic	DCSS
	Melica imperfecta	melic	DCSS, DCSS-D
	Muhlenbergia microsperma	littleseed muhly	DCSS
	Muhlenbergia rigens	deergrass	MFS
	Nassella lepida	foothill needlegrass	DCSS, DCSS-D
	Nassella pulchra	purple needlegrass	NG, DCSS
	Poa secunda	Malpais bluegrass	DCSS-D
	*Polypogon monspeliensis**	annual beard grass	DCSS
	Sporobolus airoides	alkali sacaton	CAM
	Vulpia microstachys	fescue	DCSS
PTERIDOPHYTES			
Polypodiaceae	*Polypodium californicum*	California polypody	DCSS
Pteridaceae	*Pellaea andromedifolia*	coffee fern	DCSS
	Pellaea mucronata var. *mucronata*	bird's foot fern	DCSS
	Pentagamma triangularis var. *triangularis*	goldenback fern	DCSS
	Pentagamma triangularis var. *viscosa*	silverback fern	DCSS
Selaginellaceae	*Selaginella bigelovii*	Bigelow's mossfern	DCSS, DCSS-D
	Selaginella cinerascens†	ashy spike-moss	DCSS, DCSS-D
GYMNOSPERM			
Cupressaceae	*Cupressus forbesii*†	Tecate cypress	SICF, DCSS

†Sensitive species
*Non-native species
‡Habitat acronyms: CAM=cismontane alkali marsh; CC=chamise chaparral; CHP=chaparral; CSCS=coastal sage-chaparral scrub; DCSS=Diegan coastal sage scrub; DCSS-D=disturbed Diegan coastal sage scrub; DH=disturbed habitat; MFS=mule fat scrub; NG=native grassland; NNG=non-native grassland; SICF=southern interior cypress forest; SMC=southern mixed chaparral; TS=tamarisk scrub

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Appendix F

ANIMALS SPECIES OBSERVED OR DETECTED

Appendix F
ANIMALS SPECIES OBSERVED OR DETECTED – OTAY HILLS

FAMILY	SCIENTIFIC NAME	COMMON NAME
INVERTEBRATES		
Agelenidae – Spiders and Other Chelicerates		
		funnel-web spider
Ctenizidae – Trapdoor Spiders		
	Bothriocyrtum californicum	California trapdoor spider
Hesperiidae – Skippers		
	Hylephila phyleus	fiery skipper
	Pyrgus albescens	white (common) skipper
Hymenoptera – Ants, Wasps, and Bees		
	Apis mellifera	honeybee
	Bombus terricola occidentalis	bumblebee
	Pepsis formosa	tarantula hawk
Lepidoptera – Butterflies		
	Anthocharis sara	Sara orangetip
	Apodemia mormo virgulti	Behr's metalmark
	Artogeia rapae	cabbage white
	Brephidium exilis	western pygmy blue
	Callophrys dumetorum	bramble (perplexing) hairstreak
	Callophrys perplexa	perplexing hairstreak
	Celastrina argiolus	echo blue
	Charydryas gabbii	Gabb's checkerspot
	Coenonympha california	California ringlet
	Colias harfordii	Harford's sulfur
	Erynnis funeralis	funereal dusky-wing
	Euphilotes bernardino bernardino	Bernardino blue
	Euphydryas chalcedona chalcedona	Chalcedon checkerspot
	Euphydryas editha quino†	Quino checkerspot butterfly
	Everes amyntula	western tailed blue
	Glaucopsyche lygdamus australis	southern blue
	Hyles lineata	white-lined sphinx moth
	Incisalia augustinus	brown elfin
	Junonia coenia	buckeye
	Leptotes marina	marine blue
	Papilio erymedon	pale swallowtail
	Paplio rutulus	western tiger swallowtail
	Papilio zelicaon	anise swallowtail
	Phyciodes mylitta	mylitta crescent
	Plebejus acmon	acmon blue
	Pontia protodice	common white

Appendix F (cont.)
ANIMALS SPECIES OBSERVED OR DETECTED – OTAY HILLS

FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**
INVERTEBRATES (cont.)		
Lepidoptera – Butterflies (cont.)		
	Speyeria callippe comstocki	Comstock's fritillary
	Strymon melinus	gray hairstreak
	Vanessa annabella	west coast lady
	Vanessa cardui	painted lady
VERTEBRATES		
Reptiles and Amphibians		
Bufonidae – Toads		
	Bufo boreas	western toad
Phrynosomatidae – Lizards		
	Phrynosoma coronatum blainvillii†	San Diego horned lizard
	Sceloporus occidentalis	western fence lizard
	Uta stansburiana	side-blotched lizard
Teiidae – Whiptails and Relatives		
	Aspidoscelis tigris stejnegeri†	coastal whiptail
Viperidea – Vipers		
	Crotalus ruber†	red-diamond rattlesnake
	Crotalus viridis	western rattlesnake
Birds		
Accipitridae – Hawks, Old World Vultures, and Harriers		
	Aquila chrysaetos† (nesting and wintering)	golden eagle
	Buteo jamaicensis	red-tailed hawk
	Circus cyaneus†	northern harrier
Aegithalidae – Bushtit		
	Psaltriparus minimus	bushtit
Alaudidae – Larks		
	Eremophila alpestris actia†	California horned lark
Cathartidae – American Vultures		
	Cathartes aura†	turkey vulture
Columbidae – Pigeons and Doves		
	Zenaida macroura	mourning dove

Appendix F (cont.)
ANIMALS SPECIES OBSERVED OR DETECTED – OTAY HILLS

FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**
VERTEBRATES (cont.)		
Birds (cont.)		
Corvidae – Jays, Magpies, and Crows		
	Aphelocoma californica	western scrub jay
	Corvus brachyrhynchos	American crow
	Corvus corax	common raven
Cuculidae – Cuckoos and Relatives		
	Geococcyx californianus	greater roadrunner
Emberizidae – Warblers, Sparrows, Blackbirds, and Relatives		
	Aimophila ruficeps canescens†	southern California rufous-crowned sparrow
	Ammodramus savannarum†	grasshopper sparrow
	Amphispiza belli†	Bell's sage sparrow
	Chondestes grammacus	lark sparrow
	Guiraca caerulea	blue grosbeak
	Melospiza melodia	song sparrow
	Passerina amoena	lazuli bunting
	Passerculus sandwichensis	savannah sparrow
	Pipilo crissalis	California towhee
	Pipilo maculatus	spotted towhee
	Pipilo erythropthaimus	rufous sided towhee
	Zonotrichia leucophrys	white-crowned sparrow
Falconidae – Falcons		
	Falco sparverius	American kestrel
Fringillidae – Finches		
	Carpodacus mexicanus	house finch
	Carduelis psaltria	lesser goldfinch
Hirundinidae – Swallows		
	Hirundo rustica	barn swallow
	Hirundo pyrrhonota	cliff swallow
	Stelgidopteryx serripennis	northern rough-winged swallow
	Tachycineta bicolor	tree swallow
Icteridae – Blackbirds and Orioles		
	Icterus bullockii	Bullock's oriole
	Icterus galbula	northern oriole
Laniidae – Shrikes		
	Lanius ludovicianus†	loggerhead shrike
Mimidae – Mockingbirds and Thrashers		
	Mimus polyglottos	northern mockingbird
	Toxostoma redivivum	California thrasher

Appendix F (cont.)
ANIMALS SPECIES OBSERVED OR DETECTED – OTAY HILLS

FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**
VERTEBRATES (cont.)		
Birds (cont.)		
Muscicapidae – Old World Warblers, Gnatcatchers, Kinglets, Thrushes, Bluebirds, and Wrentit		
	Chamaea fasciata	wrentit
	Polioptila californica californica†	coastal California gnatcatcher
Odontophoridae – New World Quails		
	Callipepla californica	California quail
Parulidae – Songbirds and Warblers		
	Dendroica coronata	yellow-rumped warbler
	Sturnella neglecta	western meadowlark
Picidae – Woodpeckers		
	Colaptes auratus	northern flicker
Ptilogonatidae – Silky Flycatchers		
	Phainopepla nitens	phainopepla
Strigidae – Owls		
	Athene cunicularia†	burrowing owl
	Bubo virginianus	great horned owl
Trochilidae – Hummingbirds		
	Calypte anna	Anna's hummingbird
	Calypte costae	Costa's hummingbird
Troglodytidae – Wrens		
	Salpinctes obsoletus	rock wren
	Thryomanes bewickii	Bewick's wren
Tyrannidae – Tyrant Flycatchers		
	Myiarchus cinerascens	ash-throated flycatcher
	Sayornis saya	Say's Phoebe
	Tyrannus verticalis	Western kingbird
Tytonidae – Owls		
	Tyto alba†	barn owl
Mammals		
Canidae – Foxes, Wolves, and Relatives		
	Canis latrans	coyote (track, scat and carcass)
Cervidae – Deer		
	Odocoileus hemionus†	mule deer (including scat)
Cricetidae – Cricetine Mice and Rats		
	Neotoma sp.	wood rat
Felidae – Cats		
	Lynx rufus	bobcat (scat, carcass)

Appendix F (cont.)
ANIMALS SPECIES OBSERVED OR DETECTED – OTAY HILLS

FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**
VERTEBRATES (cont.)		
Mammals (cont.)		
Geomyidae – Pocket gophers		
	Thomomys bottae	Botta's pocket gopher (mounds)
Heteromyidae – Pocket Mice and Kangaroo Rat		
		kangaroo rat
Leporidae – Hares and Rabbits		
	Lepus californicus bennettii†	San Diego black-tailed jackrabbit
	Sylvilagus audubonii	desert cottontail (including scat)
Mustelidae – Weasels, Martens, Otters, Badgers, and Skunks		
	Mephitis mephitis	striped skunk
Sciuridae – Squirrels, Chipmunks, and Marmots		
	Spermophilus beecheyi	California ground squirrel
Introduced Species		
Bovine		
	Bos taurus	cow (observed)
Equine		
	Equus caballus	horse (track)

†Sensitive species

Appendix G

EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES

Appendix G
EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES

FEDERAL, STATE, AND COUNTY CODES

U.S. Fish and Wildlife Service (USFWS)

FE Federally listed endangered
FT Federally listed threatened
BGEPA Bald and Golden Eagle Protection Act (see more information below)
BCC Birds of Conservation Concern (see more information below)

USFWS Bald and Golden Eagle Protection Act (BGEPA)

In 1782, Continental Congress adopted the bald eagle as a national symbol. During the next one and a half centuries, the bald eagle was heavily hunted by sportsmen, taxidermists, fisherman, and farmers. To prevent the species from becoming extinct, Congress passed the Bald Eagle Protection Act in 1940. The Act was extremely comprehensive, prohibiting the take, possession, sale, purchase, barter, or offer to sell, purchase, or barter, export or import of the bald eagle "at any time or in any manner."

In 1962, Congress amended the Eagle Act to cover golden eagles, a move that was partially an attempt to strengthen protection of bald eagles, since the latter were often killed by people mistaking them for golden eagles. The golden eagle, however, is accorded somewhat lighter protection under the Act than the bald eagle. Another 1962 amendment authorizes the Secretary of the Interior to grant permits to Native Americans for traditional religious use of eagles and eagle parts and feathers.

USFWS Birds of Conservation Concern (BCC)

The primary legal authority for Birds of Conservation Concern (2002) is the Fish and Wildlife Conservation Act of 1980 (FWCA), as amended. Other authorities include the Endangered Species Act, Fish and Wildlife Act (1956) and 16 USC §701. A FWCA 1988 amendment (Public Law 100-653, Title VIII) requires the Secretary of the Interior through the USFWS to "identify species, subspecies, and populations of all migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973." The BCC report is the most recent effort by the USFWS to carry out this proactive conservation mandate.

The BCC report aims to identify accurately the migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that represent the USFWS' highest conservation priorities and draw attention to species in need of conservation action. The USFWS hopes that by focusing attention on these highest priority species, the report will promote greater study and protection of the habitats and ecological communities upon which these species depend, thereby ensuring the future of healthy avian populations and communities. The report is available online at http://www.fws.gov/migratorybirds/reports/BCC2002.pdf.

EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES

FEDERAL, STATE, AND COUNTY CODES (cont.)

California Department of Fish and Wildlife (CDFW)

SE State listed endangered
ST State listed threatened
SR State listed rare
SSC State species of special concern
WL Watch list
Fully Protected Fully Protected species may not be taken or possessed without a permit from the Fish and Game Commission and/or CDFG.

County of San Diego

Plant Sensitivity

List A Plants rare, threatened or endangered in California or elsewhere
List B Plants rare, threatened or endangered in California but more common elsewhere
List C Plants that may be quite rare, but more information is needed to determine rarity status
List D Plants of limited distribution and are uncommon, but not presently rare or endangered

Animal Sensitivity

Group 1 Animals that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirements.

Group 2 Animal species that are becoming less common, but are not yet so rare that extirpation or extinction is imminent without immediate action. These species tend to be prolific within their suitable habitat types.

OTHER CODES AND ABBREVIATIONS

Multiple Species Conservation Program (MSCP) Covered

MSCP covered species for which County and City have take authorization within the MSCP area.

MSCP Narrow Endemic (NE) Species

Some native species (primarily plants with restricted geographic distributions, soil affinities, and/or habitats) are referred to as a narrow endemic species. For vernal pools and identified narrow endemic species, the jurisdictions will specify measures in their respective subarea plans to ensure that impacts to these resources are avoided to the maximum extent practicable.

Appendix G (cont.)
EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES

California Native Plant Society (CNPS) Codes

California Rare Plant Rank

1A = Presumed extirpated in California and either rare or extinct elsewhere.

1B = Rare, threatened, or endangered in California and elsewhere.

2A= Presumed extirpated in California but more common elsewhere.

2B= Rare, threatened, or endangered in California but more common elsewhere.

3 = More information is needed.

4 = A watch list for species of limited distribution.

Threat Rank

.1 = Seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)

.2 = Moderately endangered in California (20 to 80 percent occurrences threatened/moderate degree and immediacy of threat)

.3 = Not very threatened in California (less than 20 percent of occurrences threatened/ low degree and immediacy of threat or no current threats known)

Appendix H

CNDDB FORMS

PLANT SPECIES

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work *mm/dd/yyyy:* _____

Reset | Send Form

California Native Species Field Survey Form

Scientific Name: *Achnathrerum diegoensis*

Common Name: San Diego County Needlegrass

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals _____ Subsequent Visit? ☑ yes ☐ no
Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T____ R ___ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27 ☐ NAD83 ☑ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The San Diego Needlegrass was observed in the Diegan Coastal Sage Scrub habitat on site. Dominant plant species include California sagebrush, lemonadeberry, California buckwheat, and laurel sumac.

Other rare taxa seen at THIS site on THIS date: Tecate Cypress, Western Dichondra, Variegated Dudleya, SD Barrel Cactus, SD Marsh Elder, SD Goldenstar, Rush-like Bristleweed, Ashy Spike-moss, Munz's Sage, SD Sunflower

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Larry Sward, Sally Trnka, Fred Sproul, Brian Parker, Dale Ritenour
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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Date of Field Work mm/dd/yyyy: _____

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California Native Species Field Survey Form

Send Form

Scientific Name: *Cupressus forbesii*

Common Name: Tecate Cypress

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals _____ Subsequent Visit? ☑ yes ☐ no
Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T____ R __ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Tecate Cypress were observed in the Southern Interior Cypress Forest habitat (dominated by piute cypress, Tecate cypress, or Arizona cypress) and the Coastal Sage-Chaparral Scrub transition habitat.

Other rare taxa seen at THIS site on THIS date: SC County Needlegrass, Western Dichondra, Variegated Dudleya, SD Barrel Cactus, SD Marsh Elder, SD Goldenstar, Ashy Spike-moss, Munz's Sage, SD Sunflower

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Larry Sward, Sally Trnka, Fred Sproul, Brian Parker
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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EO Index No. _____ Map Index No. _____

Date of Field Work *mm/dd/yyyy:* _____

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California Native Species Field Survey Form

Scientific Name: *Deinandra conjugens*

Common Name: Otay Tarplant

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 20+ Subsequent Visit? ☑ yes ☐ no
Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T____ R __ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. All Otay tarplant individuals were observed in the Non-Native Grassland on 05/18/2000, 05/22/2000, and 03/08/2003.

Other rare taxa seen at THIS site on THIS date: Variegated dudleya, San Diego goldenstar, San Diego marsh elder, San Diego barrel cactus, southwestern spiny rush, San Diego sunflower, and ashy spike moss.

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Larry Sward, Sally Trnka, Derek Langsford, Greg Mason, Amy Bridgeman, and Patrick McNicholas
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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Date of Field Work mm/dd/yyyy: _____

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California Native Species Field Survey Form

Scientific Name: *Dichondra occidentalis*

Common Name: Western Dichondra

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals _____ Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir

Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476

E-mail Address: heatherh@helixepi.com

Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

breeding	wintering	burrow site	rookery	nesting	other
☐	☐	☐	☐	☐	☑

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____

Quad Name: Otay Mesa Elevation: _____

T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map

T 18S R 1E Sec 32 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____

Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐

Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Western Dichondra was observed in the Diegan Coastal Sage Scrub habitat on site. Dominant plant species include California sagebrush, lemonadeberry, California buckwheat, and laurel sumac.

Other rare taxa seen at THIS site on THIS date: Tecate Cypress, SD County Needlegrass, Variegated Dudleya, SD Barrel Cactus, SD Marsh Elder, SD Goldenstar, Rush-like Bristleweed, Ashy Spike-moss, Munz's Sage, SD Sunflower

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☑ By another person (name): Larry Sward, Sally Trnka, Fred Sproul, Brian Parker, and Greg Mason
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work *mm/dd/yyyy:* _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Dudleya variegata*

Common Name: Variegated Dudleya

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals _____ Subsequent Visit? ☐ yes ☐ no
Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of _____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T____ R __ Sec ____ , ____ ¼ of _____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Variegated Dudleya was observed in the Diegan Coastal Sage Scrub habitat and Coastal Sage-Chaparral transition habitat on site. Dominant plant species include CA sagebrush, lemonadeberry, CA buckwheat, laurel sumac, scrub oak, and chamise.

Other rare taxa seen at THIS site on THIS date: Tecate Cypress, Western Dichondra, SD County Needlegrass, SD Barrel Cactus, SD Marsh Elder, SD Goldenstar, Ashy Spike-moss, Munz's Sage, SD Sunflower

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*
- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☑ By another person (name): Larry Sward, Sally Trnka, Fred Sproul, Brian Parker
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work *mm/dd/yyyy:* _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Ferocactus viridescens*

Common Name: San Diego Barrel Cactus

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals _____ Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir

Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476

E-mail Address: heatherh@helixepi.com

Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description *(please attach map AND/OR fill out your choice of coordinates, below)*

County: San Diego Landowner / Mgr.: _____

Quad Name: Otay Mesa Elevation: _____

T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map

T 18S R 1E Sec 32 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____

Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐

Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The San Diego barrel cactus was observed in the Diegan Coastal Sage Scrub and Non-Native Grassland habitats on site.

Other rare taxa seen at THIS site on THIS date: Tecate Cypress, Western Dichondra, Variegated Dudleya, SD County Needlegrass SD Marsh Elder, SD Goldenstar, Rush-like Bristleweed, Ashy Spike-moss, Munz's Sage, SD Sunflower, Southwestern Spiny Rush

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: Roger Ditrick, Brian Parker, Sally Trnka,
- ☑ By another person (name): Peter Allen, Ted Grantham, Amy Bridgeman,
- ☐ Other: Greg Mason, Patrick McNicholas, Larry Sward, Fred Sproul, Justin Fishbeck

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐yes ☐no

FG/WHDAB/1747 Rev.10/20/03

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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EO Index No. _____ Map Index No. _____

Date of Field Work *mm/dd/yyyy:* _____

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Scientific Name: *Iva hayesiana*

Common Name: San Diego Marsh Elder

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 20+ Subsequent Visit? ☐ yes ☐ no
Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T____ R __ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The San Diego Marsh Elder was observed in the Diegan Coastal Sage Scrub habitat on site. Dominant plant species include California sagebrush, lemonadeberry, California buckwheat, and laurel sumac.

Other rare taxa seen at THIS site on THIS date: Tecate Cypress, Western Dichondra, Variegated Dudleya, SD Barrel Cactus, SD County Needlegrass, SD Goldenstar, Southwestern Spiny Rush, Ashy Spike-moss, Munz's Sage, SD Sunflower

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Sally Trnka, Peter Allen, Larry Sward, Derek Langsford,
☐ Other: Amy Bridegman, Fred Sproul, Brian Parker, and Dale Ritenour

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Scientific Name: *Juncas acutus ssp. leopoldii*

Common Name: Southwestern Spiny Rush

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 334+ Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir

Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476

E-mail Address: heatherh@helixepi.com

Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: San Diego Landowner / Mgr.: _____

Quad Name: Otay Mesa Elevation: _____

T 18 S R 1E Sec ____ , ____ ¼ of _____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map

T____ R ___ Sec ____ , ____ ¼ of _____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____

Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude) ☐

Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Southwestern Spiny Rush was observed in the Diegan Coastal Sage Scrub habitat on site. Dominant plant species include California sagebrush, lemonadeberry, California buckwheat, and laurel sumac.

Other rare taxa seen at THIS site on THIS date: San Diego Marsh Elder, San Diego Needlegrass, Ashy Spike-moss, Munz's Sage, and San Diego sunflower.

Site Information

Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: (check one or more, and fill in blanks)

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☑ By another person (name): Sally Trnka, Peter Allen, Larry Sward, Derek Langsford
- ☐ Other: Amy Bridgeman, Dale Ritenour

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Scientific Name: *Muilla clevelandii*

Common Name: San Diego Goldenstar

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 7,000+ Subsequent Visit? ☐ yes ☐ no
Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T 18S R 1E Sec 32 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The San Diego Goldenstar was observed in the Diegan Coastal Sage Scrub, Disturbed Diegan Coastal Sage Scrub, and Non-Native Grassland habitats on site.

Other rare taxa seen at THIS site on THIS date: Tecate Cypress, Western Dichondra, Variegated Dudleya, SD Barrel Cactus, SD County Needlegrass, Otay Tarplant, SD Marsh Elder, Southwestern Spiny Rush, Ashy Spike-moss, Munz's Sage, SD Sunflower

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Sally Trnka, Scott Taylor, Derek Langsford
☐ Other: Amy Bridgeman, Larry Sward, Fred Sproul

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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Date of Field Work *mm/dd/yyyy:* 05/24/2004

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California Native Species Field Survey Form

Scientific Name: *Machaeranthera juncea*

Common Name: Rush-like Bristleweed

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals _____ Subsequent Visit? ☐ yes ☐ no
Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T____ R ___ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Rush-like Bristleweed was observed in the Diegan Coastal Sage Scrub habitat on site. Dominant plant species include California sagebrush, lemonadeberry, California buckwheat, and laurel sumac.

Other rare taxa seen at THIS site on THIS date: Ashy Spike-moss, San Diego Needlegrass, Western Dichondra, San Diego Barrel Cactus, and San Diego Sunflower

Site Information

Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Brain Parker, Sally Trnka, Fred Sproul
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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Scientific Name: *Selaginella cinerascens*

Common Name: Ashy Spike-moss

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 45+ Subsequent Visit? ☐ yes ☐ no
Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T 18S R 1E Sec 32 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27 ☐ NAD83 ☑ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Ashy Spike-moss was observed in the Diegan Coastal Sage Scrub habitat on site. Dominant plant species include California sagebrush, lemonadeberry, California buckwheat, and laurel sumac.

Other rare taxa seen at THIS site on THIS date: Tecate Cypress, Western Dichondra, Variegated Dudleya, SD Barrel Cactus, SD County Needlegrass, SD Goldenstar, Southwestern Spiny Rush, Ashy Spike-moss, Munz's Sage, SD Sunflower, Otay Tarplant, SD Marsh Elder, Rush-like Bristlyweed

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Sally Trnka, Peter Allen, Larry Sward, Derek Langsford
☐ Other: Amy Bridegman, Fred Sproul, Brian Parker, Greg Mason, and Dale Ritenour

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Department of Fish and Game
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Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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Date of Field Work mm/dd/yyyy: _____

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California Native Species Field Survey Form

Scientific Name: *Salvia munzii*

Common Name: Munz's Sage

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals _____ Subsequent Visit? ☐ yes ☐ no
Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T 18S R 1E Sec 32 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Munz's Sage was observed in the Chamise Chaparral and Coastal Sage-Chaparral Transition habitats.

Other rare taxa seen at THIS site on THIS date: Tecate Cypress, Western Dichondra, Variegated Dudleya, SD Barrel Cactus, SD County Needlegrass, SD Goldenstar, Southwestern Spiny Rush, Ashy Spike-moss, Munz's Sage, SD Sunflower, SD Marsh Elder

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: Patrick McNicholas, Roger Ditrick,
- ☑ By another person (name): Sally Trnka, Scott Taylor, Larry Sward, Justin Fischbeck
- ☐ Other: Amy Bridegman, Fred Sproul, Brian Parker, Greg Mason, and Dale Ritenour

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Scientific Name: *Viguiera laciniata*

Common Name: San Diego Sunflower

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 8,000+ Subsequent Visit? ☐ yes ☐ no
Is this an existing NDDB occurrence? _____ ☐ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T 18S R 1E Sec 32 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27 ☐ NAD83 ☑ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The San Diego Sunflower was observed in the Diegan Coastal Sage Scrub, Coastal Sage-Chaparral Scrub, Disturbed Coastal Sage Scrub, Chamise Chaparral, and Non-Native Grassland habitats on site.

Other rare taxa seen at THIS site on THIS date: Tecate Cypress, Western Dichondra, Variegated Dudleya, SD Barrel Cactus, SD County Needlegrass, SD Goldenstar, Southwestern Spiny Rush, Ashy Spike-moss, Munz's Sage, SD Sunflower, Otay Tarplant, SD Marsh Elder, Rush-like Bristlegrass

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: Scott Taylor, Ted Grantham, Greg Mason,
☑ By another person (name): Sally Trnka, Larry Sward, Derek Langsford,
☐ Other: Amy Bridegman, Fred Sproul, Brian Parker, Roger Ditrick, Patrick McNicholas

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

ANIMAL SPECIES

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1807 13th Street, Suite 202
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Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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EO Index No. _____ Map Index No. _____

Date of Field Work *mm/dd/yyyy:* 06/13/2000

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California Native Species Field Survey Form

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Scientific Name: *Tyto alba*

Common Name: Barn Owl

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 1 Subsequent Visit? ☐ yes ☐ no
Is this an existing NDDB occurrence? _____ ☑ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
1				

☐ breeding ☐ wintering ☐ burrow site ☑ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T____ R __ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27 ☐ NAD83 ☑ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Barn Owl was in the Non-Native Grasslands, dominated by oat species, red brome, and wild mustard. Barn owl pellets were also discovered.

Other rare taxa seen at THIS site on THIS date: 1 Southern California Rufous-crowned Sparrow, 1 Grasshopper Sparrow, 1 California Horned Lark, Mountain lion (tracks), and two San Diego Black-tailed Jackrabbits.

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Debbie Leonard, Peter Allen
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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Date of Field Work *mm/dd/yyyy:* _____

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California Native Species Field Survey Form

Send Form

Scientific Name: *Athene cunicularia*

Common Name: Burrowing Owl

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 6 Subsequent Visit? ☐ yes ☐ no
Is this an existing NDDB occurrence? _____ ☑ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

6 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☑ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T____ R __ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase. The Western Burrowing Owls were observed in the Diegan Coastal Sage Scrub habitat on site. On two occasions a single bird was observed. On 5/24/2004 , three individuals were observed at one burrow and the fourth was less than 200 feet away. Dominant plant species include California sagebrush, lemonadeberry, California buckwheat, and laurel sumac.

Other rare taxa seen at THIS site on THIS date: On 05/24/2004 and Coastal Whiptail was also observed and on 05/25/2004 a San Diego Black-tailed Jackrabbit and a pair of Golden Eagles were also observed.

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Greg Mason, Sally Trnka, Brian Parker, and Fred Sproul
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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Date of Field Work *mm/dd/yyyy:* 03/22/2002

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California Native Species Field Survey Form

Scientific Name: *Polioptila californica californica*

Common Name: Coastal California Gnatcatcher

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 1 Subsequent Visit? ☑ yes ☐ no
Is this an existing NDDB occurrence? _____ ☑ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

1 # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T____ R ___ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Coastal California Gnatcatcher was observed in the Diegan Coastal Sage Scrub habitat on site. Dominant plant species include California sagebrush, lemonadeberry, California buckwheat, and laurel sumac.

Other rare taxa seen at THIS site on THIS date:

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Sally Trnka
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work mm/dd/yyyy: _____

Reset

California Native Species Field Survey Form

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Scientific Name: *Lichanura trivirgata roseofusca*

Common Name: Coastal Rosy Boa

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 1 Subsequent Visit? ☐ yes ☐ no
Is this an existing NDDB occurrence? _____ ☑ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

1 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____

Quad Name: Otay Mesa Elevation: -1,500 feet a

T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map

T____ R ___ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____

Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐

Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Coastal Rosy Boa was observed in the Diegan Coastal Sage Scrub habitat on site. Dominant plant species include California sagebrush, lemonadeberry, California buckwheat, and laurel sumac.

Other rare taxa seen at THIS site on THIS date:

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments:

Determination: *(check one or more, and fill in blanks)*
- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☑ By another person (name): _____
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐yes ☐no

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1807 13th Street, Suite 202
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EO Index No. _____ Map Index No. _____

Date of Field Work *mm/dd/yyyy:* _____

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California Native Species Field Survey Form

Scientific Name: *Cnemidophorus tigris stejnegeri*

Common Name: Coastal Whiptail

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 5 Subsequent Visit? ☐ yes ☐ no
Is this an existing NDDB occurrence? _____ Yes, Occ. # ☑ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

5 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T 18S R 1E Sec 32 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27 ☐ NAD83 ☑ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Coastal Whiptails were observed in the Diegan Coastal Sage Scrub habitat on site. Dominant plant species include California sagebrush, lemonadeberry, California buckwheat, and laurel sumac.

Other rare taxa seen at THIS site on THIS date: On sighting of 03/08/2003 and 05/24/2003 Western Burrowing Owls (Athene cunicularia) were also observed.

Site Information Overall site quality: ☑ Excellent ☐ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*
- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☑ By another person (name): Scott Taylor, Debbie Leonard, Peter Allen, Greg Mason,
- ☐ Other: Sally Trnka, Fred Sproul, Brian Parker, Dale Ritenour, Larry Sward

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Date of Field Work mm/dd/yyyy: _____

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California Native Species Field Survey Form

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Scientific Name: *Aquila chrysaetos*

Common Name: Golden Eagle

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 3 Subsequent Visit? ☑ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☑ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir

Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476

E-mail Address: heatherh@helixepi.com

Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
3				

breeding	wintering	burrow site	rookery	nesting	other
☑	☐	☐	☐	☐	☑

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____

Quad Name: Otay Mesa Elevation: _____

T 18 S R 1E Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐

T____ R ___ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐

Datum: NAD27☐ NAD83☑ WGS84☐

Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐

Coordinates: Easting/Longitude _____ Northing/Latitude _____

Source of Coordinates (GPS, topo. map & type): USGS map

GPS Make & Model _____

Horizontal Accuracy _____ meters/feet

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. A single Golden Eagle was seen flying overhead on 04/10/2003 and a pair was observed in flight together on 5/25/2004.

Other rare taxa seen at THIS site on THIS date: On 04/10/2003 a San Diego Horned Lizard was observed and 5/25/2004 a Burrowing Owl and Mule Deer were also observed.

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☑ By another person (name): Sally Trnka and Fred Sproul
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work *mm/dd/yyyy:* _____

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California Native Species Field Survey Form

Scientific Name: *Ammodramus savannarum*

Common Name: Grasshopper Sparrow

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 7 Subsequent Visit? ☑ yes ☐ no
Is this an existing NDDB occurrence? _____ ☑ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
7				

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T 18 S R 1 E Sec 32 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27 ☐ NAD83 ☑ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. Grasshopper Sparrows were observed in the Diegan Coastal Sage Scrub and the nearby Non-Native Grasslands. Some of the observations may have been the same individuals. Only the observations thought to be separate individuals are recorded on the map.

Other rare taxa seen at THIS site on THIS date: On 06/13/2000 1 Horned Lark, 1 Rufous-crowned Sparrow, 1 Barn Owl (and owl pellets), Mountain Lion tracks, and 2 San Diego Black-tailed Jackrabbits..

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Debbie Leonard, Peter Allen, and Sally Trnka
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

Mail to:
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Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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EO Index No. _____ Map Index No. _____

Date of Field Work *mm/dd/yyyy:* _____

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California Native Species Field Survey Form

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Scientific Name: *Eremophila alpestris actia*

Common Name: California Horned Lark

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 6 Subsequent Visit? ☑ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ no ☑ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir

Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476

E-mail Address: heatherh@helixepi.com

Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

6 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____

Quad Name: Otay Mesa Elevation: _____

T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map

T 18 S R 1 E Sec 32 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____

Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐

Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The California Horned Larks were all observed in the Diegan Coastal Sage Scrub habitat on site. Some of the observations may have been the same individuals. Only the observations thought to be separate individuals are recorded on the map.

Other rare taxa seen at THIS site on THIS date: On 06/13/2000 1 Southern California Rufous-crowned Sparrow, 1 Grasshopper Sparrow, 1 Barn Owl (and owl pellets), Mountain Lion tracks, and 2 San Diego Black-tailed Jackrabbits..

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☑ By another person (name): Debbie Leonard, Peter Allen, Sally Trnka, and Scott Tayler
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

Mail to:
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Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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Date of Field Work *mm/dd/yyyy:* _____

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California Native Species Field Survey Form

Scientific Name: *Lanius ludovisianus*

Common Name: Loggerhead Shrike

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 9 Subsequent Visit? ☑ yes ☐ no
Is this an existing NDDB occurrence? _____ ☑ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
9				

breeding	wintering	burrow site	rookery	nesting	other
☑	☐	☐	☐	☐	☑

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T 18 S R 1 E Sec 32 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27 ☐ NAD83 ☑ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. A fire swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. Loggerhead Shrikes were observed in Diegan Coastal Sage Scrub, Chamise Chaparral, and Non-Native Grasslands. On 4/25/2000 a pair was seen flying together, but all other observations are of single individuals. Some of the observations may have been the same individuals. Only the observations thought to be separate individuals are recorded on the map.

Other rare taxa seen at THIS site on THIS date:

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*
- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☑ By another person (name): Sally Trnka, Debbie Leonard, Peter Allen, and Scott Tayler
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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EO Index No. _____ Map Index No. _____

Date of Field Work mm/dd/yyyy: 06/13/2000

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California Native Species Field Survey Form

Scientific Name: *Felis concolor*

Common Name: Mountain Lion

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 1 Subsequent Visit? ☐ yes ☐ no
Is this an existing NDDB occurrence? _____ ☑ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
				1

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description *(please attach map AND/OR fill out your choice of coordinates, below)*

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T____ R __ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Mountain Lion tracks were observed in the Diegan Coastal Sage Scrub habitat on site. Dominant plant species include California sagebrush, lemonadeberry, California buckwheat, and laurel sumac.

Other rare taxa seen at THIS site on THIS date: 1 Rufous-crowned Sparrow, 1 Grasshopper Sparrow, 1 California Horned Lark, 1 Barn Owl (and owl pellets), 1 Red-diamond Rattlesnake, and and 2 San Diego Black-tailed Jackrabbits..

Site Information

Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Debbie Leonard and Peter Allen
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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Date of Field Work *mm/dd/yyyy:* 05/25/2004

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California Native Species Field Survey Form

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Scientific Name: *Odocoileus hemionus fuliginata*

Common Name: Southern Mule Deer

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 1 Subsequent Visit? ☐ yes ☐ no
Is this an existing NDDB occurrence? _____ Yes, Occ. # ☑ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

1 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T____ R ___ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Southern Mule Deer was observed in the Diegan Coastal Sage Scrub habitat on site. Dominant plant species include California sagebrush, lemonadeberry, California buckwheat, and laurel sumac.

Other rare taxa seen at THIS site on THIS date:

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Sally Trnka, Fred Sproul, and Brian Parker
☐ Other: _____

Photographs: *(check one or more)* Slide Print Digital
Plant / animal ☐ ☐ ☐
Habitat ☐ ☐ ☐
Diagnostic feature ☐ ☐ ☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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EO Index No. _____ Map Index No. _____

Date of Field Work mm/dd/yyyy: 03/08/2003

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California Native Species Field Survey Form

Scientific Name: *Circus cyaneus*

Common Name: Northern Harrier

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 3 Subsequent Visit? ☑ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☑ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
3				

breeding	wintering	burrow site	rookery	nesting	other
☑	☐	☐	☐	☑	☑

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____

Quad Name: Otay Mesa Elevation: _____

T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map

T____ R ___ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____

Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐

Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. A single Northern Harrier was observed multiple times in March and April of 2000. In 2003 a pair of Northern Harriers were observed in flight over the Diegan Coastal Sage Scrub habitat on site.

Other rare taxa seen at THIS site on THIS date: 1 Coastal Whiptail (Cnemidophorus tigris stejnegeri) on 03/08/2003

Site Information Overall site quality: ☑ Excellent ☐ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments:

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☑ By another person (name): Greg Mason and Sally Trnka
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Sacramento, CA 95814
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Date of Field Work *mm/dd/yyyy:* _____

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Scientific Name: *Euphydryas editha quino*

Common Name: Quino Checkerspot Butterfly

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 28 Subsequent Visit? ☐ yes ☐ no
Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

28 # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T 18S R 1E Sec 32 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. Quino were observed on two hilltops, along two major ridgelines, and along a dirt road.

Other rare taxa seen at THIS site on THIS date: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF RARE TAXA SEEN ON ALL DATES.

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*
- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☑ By another person (name): Sally Trnka, Ted Grantham, Amy Bridgeman, and
- ☐ Other: Roger Ditrick

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☑	☑
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Date of Field Work mm/dd/yyyy: _____

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California Native Species Field Survey Form

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Scientific Name: *Aimophila ruficeps canescens*

Common Name: Southern California Rufous-crowned Sparrow

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 16 Subsequent Visit? ☑ yes ☐ no ☐ unk.

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ no ☑ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir

Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476

E-mail Address: heatherh@helixepi.com

Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

16 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____

Quad Name: Otay Mesa Elevation: _____

T 18 S R 1 E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map

T 18 S R 1 E Sec 32 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____

Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐

Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Southern California Rufus-crowned Sparrows were all observed in the Diegan Coastal Sage Scrub habitat on site. Some of the observations may have been the same individuals. Only the observations thought to be separate individuals are recorded on the map.

Other rare taxa seen at THIS site on THIS date: On 06/13/2000 1 Horned Lark, 1 Grasshopper Sparrow, 1 Barn Owl (and owl pellets), Mountain Lion tracks, and 2 San Diego Black-tailed Jackrabbits..

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☑ By another person (name): Debbie Leonard, Peter Allen, Scott Taylor, Sally Tmka
- ☐ Other: Fred Sproul, and Brian Parker

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: WHDAB@dfg.ca.gov

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Scientific Name: *Crotalus ruber*

Common Name: Red-diamond Rattlesnake

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 4 Subsequent Visit? ☑ yes ☐ no
Is this an existing NDDB occurrence? _____ ☑ no ☐ unk.
Yes, Occ. #

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
4				

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 32 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T____ R __ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☑ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Northern Red-diamond Rattlesnakes were both observed in the Diegan Coastal Sage Scrub habitat on site. Some of the observations may have been the same individuals. Only the observations thought to be separate individuals are recorded on the map.

Other rare taxa seen at THIS site on THIS date: On 06/13/2000, 1 Rufous-crowned Sparrow, 1 Grasshopper Sparrow, 1 California Horned Lark, 1 Barn Owl (and owl pellets), 1 Red-diamond Rattlesnake, and and 2 Black-tailed Jackrabbits.

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Sally Trnka and Peter Allen
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Scientific Name: *Amphispiza belli*

Common Name: Bell's Sage Sparrow

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 3 Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☑ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir

Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476

E-mail Address: heatherh@helixepi.com

Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
3				

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____

Quad Name: Otay Mesa Elevation: _____

T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map

T____ R __ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____

Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐

Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. The Bell's Sage Sparrows were observed in the Diegan Coastal Sage Scrub habitat on site. Dominant plant species include California sagebrush, lemonadeberry, California buckwheat, and laurel sumac.

Other rare taxa seen at THIS site on THIS date: 1 Loggerhead Shrike, 4 Rufous-crowned Sparrows, 1 Coastal Whiptail, and 1 San Diego Black-tailed Jackrabbit on 06/28/2000.

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments:

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☑ By another person (name): Scott Taylor, Debbie Leonard, Peter Allen
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Scientific Name: *Lepus californicus bennettii*

Common Name: San Diego Black-tailed Jackrabbit

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 20 Subsequent Visit? ☑ yes ☐ no
Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ no ☑ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

20 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T 18 S R 1 E Sec 32 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27 ☐ NAD83 ☑ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. San Diego Black-tailed Jackrabbits were observed in Diegan Coastal Sage Scrub and Non-Native Grasslands. Some of the observations may have been the same individuals. Only the observations thought to be separate individuals are recorded on the map.

Other rare taxa seen at THIS site on THIS date:

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments: PLEASE SEE ATTACHED TABLE FOR COMPLETE LIST OF DATES OBSERVED AND BIOLOGISTS REPORTING THEIR OBSERVATIONS.

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☑ By another person (name): Sally Trnka, Scott Taylor, Debbie Leonard, Peter Allen,
☐ Other: _____ Ted Grantham, Fred Sproul, and Brian Parker

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Scientific Name: *Phrynosoma coronatum blainvillei*

Common Name: San Diego Horned Lizard

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 3 Subsequent Visit? ☑ yes ☐ no ☐ unk.

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ no ☑ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

3 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____

Quad Name: Otay Mesa Elevation: _____

T 18 S R 1E Sec 29 , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map

T____ R ___ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____

Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet

Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude) ☐

Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species. San Diego Horned Lizards were observed in Diegan Coastal Sage Scrub and Non-Native Grasslands. One San Diego Horned Lizard was found dead on a dirt road and is not recorded in this report.

Other rare taxa seen at THIS site on THIS date:

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments:

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☑ By another person (name): Sally Trnka, Scott Taylor, and Ted Grantham
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Scientific Name: *Accipiter striatus*

Common Name: Sharp-shinned Hawk

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 1 Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☑ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Heather Haney of HELIX Environmental Plannir
Address: 8100 La Mesa Blvd., Suite 150
La Mesa, CA 91941-6476
E-mail Address: heatherh@helixepi.com
Phone: (619) 462-1515

Plant Information

Phenology: _____ % vegetative _____ % flowering _____ % fruiting

Animal Information

1 # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: San Diego Landowner / Mgr.: _____
Quad Name: Otay Mesa Elevation: _____
T 18 S R 1E Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): USGS map
T____ R ___ Sec ____ , ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
Datum: NAD27☐ NAD83☑ WGS84☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10☐ UTM Zone 11☐ *OR* Geographic (Latitude & Longitude)☐
Coordinates: Easting/Longitude _____ Northing/Latitude _____

Habitat Description *(plant communities, dominants, associates, substrates/soils, aspects/slope):*

Undeveloped area at the western foothills to the San Ysidro Mountains. The site has a diverse topography consisting of multiple canyons and ridge lines. Soils on site are almost entirely of San Miguel-Exchequer rocky silt loam. The site was burned during a fire that swept through the area in the late 1990's. Vegetation is still in recovery phase with small shrubs and sparse to moderate cover by perennial species.

Other rare taxa seen at THIS site on THIS date:

Site Information Overall site quality: ☐ Excellent ☑ Good ☐ Fair ☐ Poor

Current / surrounding land use: Site is undeveloped open space, crisscrossed with dirt roads. To the North and East of the site is undeveloped open space. To the West and South to the United States border is agriculture fields.

Visible disturbances: Dirt roads

Threats: Proposed establishment of a construction aggregates extraction operation operation and associated end-products.

Comments:

Determination: *(check one or more, and fill in blanks)*
- ☐ Keyed (cite reference): _____
- ☐ Compared with specimen housed at: _____
- ☐ Compared with photo / drawing in: _____
- ☑ By another person (name): Sally Trnka
- ☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ☐ yes ☐ no

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Appendix I

SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR

Appendix I SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR					
Species	**Sensitivity Codes and Status***	**Habitat Preference/ Requirements**	**Verified on Site**	**Potential to Occur on Site**	**Factual Basis for Determination of Occurrence Potential**
San Diego thorn-mint (*Acanthomintha ilicifolia*)	FT/SE CNPS RPR 1B.1 County List A MSCP Narrow Endemic (NE)	Ranges form San Diego County to Baja California, Mexico (Baja). Prefers heavy clay soils near vernal pools, in grasslands, and in chaparral and coastal sage scrub.	No	Very low	No vernal pools found on site, but suitable soils are present.
San Diego needlegrass (*Achnatherum diegoense*)	--/-- CNPS RPR 4.2 County List D	Ranges from south San Diego County into northern Baja. Found along vernal streams and on clay slopes within chaparral and coastal sage scrub.	Yes	Observed	
California adolphia (*Adolphia californica*)	--/-- CNPS RPR 2.1 County List B	Found in coastal San Diego County south to Baja. Generally occurs in coastal sage scrub but also found in chaparral.	No	Low	Shrub that would have been observed if present.
Shaw's agave (*Agave shawii*)	--/-- CNPS RPR 2.1 County List B MSCP NE	Found in San Diego County and Baja. Occurs in coastal sage scrub and maritime succulent scrub, often on volcanic soils.	No	Low	Site may be too far inland for species.
San Diego bur-sage (*Ambrosia chenopodiifolia*)	--/-- CNPS RPR 2.1 County List B	Found in southern San Diego County south into Baja. Found in low, open coastal sage scrub.	No	Low	Shrub known from several sites in Otay Mesa; would have been observed if present.
San Diego ambrosia (*Ambrosia pumila*)	FE/-- CNPS RPR 1B.1 County List A MSCP NE	Ranges from coastal San Diego County, western Riverside County, and Baja. Occurs along riparian scrub, or open riparian forest.	No	Low	Riparian habitat on site extremely limited.
Otay manzanita (*Arctostaphylos otayensis*)	--/-- CNPS RPR 1B.2 CA Endemic County List A MSCP Covered	Occurs in San Diego County. Grows in chaparral on metavolcanic peaks. On San Miguel and Otay Mountain, soil is mapped as San Miguel-Exchequer rocky silt loam. Typically, the xeric chaparral is a dense tangle of shrubs with a height of perhaps 5 to 6 feet.	No	Low	Populations found on adjacent parcels. Shrub that would have been observed if present.

Appendix I SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR					
Species	**Sensitivity Codes and Status***	**Habitat Preference/ Requirements**	**Verified on Site**	**Potential to Occur on Site**	**Factual Basis for Determination of Occurrence Potential**
Golden-spined cereus (*Bergerocactus emoryi*)	--/-- CNPS RPR 2.2 County List B	Found on San Clemente and Santa Catalina islands and in southern San Diego County. Maritime succulent scrub is primary habitat of this coastal cactus. Moist ocean breezes may be key to habitat requirements. In Baja, this is sometimes a dominant shrub of ocean-facing slopes overlooking the coastal strand. *Euphorbia misera* and *Agave shawii* may be plant associates.	No	Low	Known from the vicinity of the site; would have been observed if present.
Orcutt's brodiaea (*Brodiaea orcuttii*)	--/-- CNPS RPR 1B.1 County List A	Found in Riverside, San Bernardino, Orange, and San Diego counties and Baja. Vernally moist grasslands, mima-mound topography, and the periphery of vernal pools are all preferred habitat for this corm.	No	Low	Known from the vicinity of the site; however, no vernal pools or mima-mound topography occur on site. Never observed on site.
Dunn's mariposa lily (*Calochortus dunnii*)	--/SR CNPS RPR 1B.2 County List A County MSCP NE	Found in San Diego County and Baja. Rocky openings in chaparral or grassland/chaparral ecotone are preferred habitat of this species, which seems restricted to metavolcanic- and gabbroic-derived soils.	Yes	Observed	
Wart-stemmed ceanothus (*Ceanothus verrucosus*)	--/-- CNPS RPR 2.2 County List B MSCP Covered	Found in San Diego County and Baja. Occurs largely in coastal chaparral communities.	No	Low	Would have been observed if present.
Summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)	--/-- CNPS RPR 1B.2 County List A	Found in San Diego, Riverside, and Orange counties and Baja. Southern mixed chaparral (usually on mesic north-facing slopes) is preferred habitat.	Yes	Observed	
Orcutt's bird's beak (*Cordylanthus orcuttianus*)	--/-- CNPS RPR 2.1 County List B MSCP Covered	Found in seasonal drainages, riparian areas, and often in adjacent upland scrub habitats.	Yes	Observed	
Tecate cypress (*Hesperocyparis [Cupressus] forbesii*)	--/-- CNPS RPR 1B.1 County List A MSCP Covered	Found from southern San Diego County south to Baja. Occurs in chaparral along foothills or in canyons and valleys along drainages or on north-facing slopes.	Yes	Observed	

Appendix I SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR					
Species	**Sensitivity Codes and Status***	**Habitat Preference/ Requirements**	**Verified on Site**	**Potential to Occur on Site**	**Factual Basis for Determination of Occurrence Potential**
Snake cholla (*Cylindropuntia californica* var. *californica*)	--/-- CNPS RPR 1B.1 County List A MSCP NE	Occurs in chaparral and coastal sage scrub from Point Loma south to Chula Vista and Baja.	No	Low to moderate	Would likely have been observed if present.
Otay tarplant (*Deinandra conjugens*)	FT/SE CNPS RPR 1B.1 County List A County MSCP NE	Found in San Diego County and Baja. Prefers clay slopes and mesas.	Yes	Observed	
Western dichondra (*Dichondra occidentalis*)	--/-- CNPS RPR 4.2 County List D	Ranges from Sonoma and Marin counties (questionable) disjunct to San Barbara County south and along the coast to Baja. Found in understory of chaparral and other shaded places, along foothills and coastal areas.	Yes	Observed	
Orcutt's dudleya (*Dudleya attenuata* ssp. *orcuttii*)	--/-- CNPS RPR 2.1 County List B	Found only in San Diego County and Baja. Occurs in coastal bluff scrub, chaparral, and sage scrub communities near the coast.	No	Low	Site is likely too far inland.
Variegated dudleya (*Dudleya variegata*)	--/-- CNPS RPR 1B.2 County List A County MSCP NE	Found in San Diego County and Baja. Occurs on dry hillsides and mesas in both foothill and coastal areas.	Yes	Observed	
Palmer's goldenbush (*Ericameria palmeri*)	--/-- CNPS RPR 2.2 County List B MSCP NE	Found along drainages through chaparral and coastal sage scrub vegetation.	No	Very low	Known in California from only three sites.
San Diego button-celery (*Eryngium artistultum*)	FE/SE CNPS RPR 1B.1 County List A MSCP Covered	Occurs in Riverside and San Diego Counties as well as Baja. Vernal pools or mima mound areas with vernally moist conditions are species' preferred habitat.	No	Very low	Appropriate habitat does not occur on site.
San Diego barrel cactus (*Ferocactus viridescens*)	--/-- CNPS RPR 2.1 County List B County MSCP Covered	Ranges from San Diego County into Baja. Prefers dry slopes in coastal sage scrub.	Yes	Observed	

Appendix I SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR					
Species	**Sensitivity Codes and Status***	**Habitat Preference/ Requirements**	**Verified on Site**	**Potential to Occur on Site**	**Factual Basis for Determination of Occurrence Potential**
Palmer's grapplinghook (*Harpagonella palmeri*)	--/-- CNPS RPR 4.2 County List B	Ranges from Arizona and New Mexico to southern California. Annual herb that occurs on clay soils in chaparral, coastal sage scrub, and grasslands.	Yes	Observed	
Graceful tarplant (*Holocarpha virgata* ssp. *elongata*)	--/-- CNPS RPR 4.2 CA Endemic County List D	Found in San Diego, Riverside, and Orange counties in grasslands and open areas.	Yes	Observed	
San Diego marsh-elder (*Iva hayesiana*)	--/-- CNPS RPR 2.2 County List B	Found in San Diego County and Baja. Prefers moist or alkaline places areas along the coast, typically along drainages.	Yes	Observed	
Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)	--/-- CNPS RPR 4.2 County List D	Ranges from Los Angeles, San Bernardino, San Luis Obispo, Ventura, and San Diego counties into Baja. Prefers moist, saline, or alkaline soils.	Yes	Observed	
Heart-leaved pitcher sage (*Lepechinia cardiophylla*)	--/-- CNPS RPR 1B.2 County List A MSCP NE	Found in Riverside, Orange, and San Diego counties and Baja. Generally found in cismontane woodland, coniferous forest, and dry chaparral areas.	No	Low	Habitat on site marginally suitable.
Gander's pitcher sage (*Lepechinia ganderi*)	--/-- CNPS RPR 1B.3 County List A MSCP NE	Occurs in San Diego County and Baja. Grows in low-growing but relatively dense chaparral, typically on gabbro or metavolcanic soils.	No	Low to moderate	Not observed during surveys.
Willowy monardella (*Monardella viminea*)	FE/SE CNPS RPR 1B.1 CA Endemic County List A MSCP NE	Found only in San Diego County and possibly Baja. Generally found in riparian scrub with sandy soils.	No	Low	Habitat on site only marginally suitable.
San Diego goldenstar (*Muilla clevelandii*)	--/-- CNPS RPR 1B.1 County List A County MSCP Covered	Found from southwestern San Diego County to northwestern Baja. Prefers clay soils on dry mesas and hillsides in coastal sage scrub or chaparral.	Yes	Observed	

Appendix I SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR					
Species	**Sensitivity Codes and Status***	**Habitat Preference/ Requirements**	**Verified on Site**	**Potential to Occur on Site**	**Factual Basis for Determination of Occurrence Potential**
Little mousetail (*Myosurus minimus* ssp. *apus*)	--/-- CNPS RPR 3.1 County List A	Ranges from Oregon south through San Diego County into Baja. Found in vernal pools and alkaline marshes.	No	Very low	Vernal pools do not occur on site; alkali marsh is limited.
Spreading navarretia (*Navarretia fossalis*)	FT/-- CNPS RPR 1B.1 County List A	Range from western Riverside through southwestern San Diego counties into Baja. Vernal pools and vernal swales preferred habitat of this small annual. Population size strongly correlated with rainfall; during drought years, numbers may be drastically reduced.	No	Very low	Vernal pools do not occur on site.
Dehesa bear grass (*Nolina interrata*)	--/SE CNPS RPR 1B.1 County List A MSCP NE	Occurs in open chaparral habitats in San Diego County and Baja.	No	Low	Not reported for the project vicinity.
California Orcutt grass (*Orcuttia californica*)	FE/SE CNPS RPR 1B.1 County List A MSCP Covered	Ranges from Riverside County south into Baja. Generally associated with vernal pools.	No	Very low	No vernal pools occur on site.
Otay Mesa mint (*Pogogyne nudiuscula*)	FE/SE CNPS RPR 1B.1 County List A MSCP Covered	This small annual is restricted to vernal pools. Found nearby during a 1991 rare plant study.	No	Low	No vernal pools occur on site.
Nuttall's scrub oak (*Quercus dumosa*)	--/-- CNPS RPR 1B.1 County List A	Generally found in open chaparral communities in coastal areas of San Diego, Orange, and Santa Barbara counties and Baja.	No	Very low	Not known from project site, which is likely too far inland. Would have been observed if present.
Coulter's matilija poppy (*Romneya coulteri*)	--/-- CNPS RPR 4.2 CA Endemic County List D	Found in San Diego, Orange, Los Angeles, and Riverside counties. This suffruticose perennial is a fire follower, which may occur in areas of sage scrub or more typically in chaparral or along rocky watercourses.	Yes	Observed	
Munz's sage (*Salvia munzii*)	--/-- CNPS RPR 2.2 County List B	Ranges from the San Miguel Mountains to northern Baja. Prefers sage scrub and chaparral along southern foothills and coastal areas.	Yes	Observed	
Ashy spike-moss (*Selaginella cinerascens*)	--/-- County List D	Ranges from Orange and San Diego counties into northwestern Baja. Found on flat mesas in coastal sage scrub and chaparral.	Yes	Observed	

Appendix I SENSITIVE PLANT SPECIES WITH POTENTIAL TO OCCUR					
Species	**Sensitivity Codes and Status***	**Habitat Preference/ Requirements**	**Verified on Site**	**Potential to Occur on Site**	**Factual Basis for Determination of Occurrence Potential**
Parry's tetracoccus (*Tetracoccus dioicus*)	--/-- CNPS RPR 1B.2 County List A MSCP Covered	Mostly found in northern San Diego County. Species is a deciduous shrub occurring in low-growing chaparral and coastal sage scrub.	No	Very low	Site may be too far south for species.
San Diego viguiera (*Viguiera laciniata*)	--/-- CNPS RPR 4.2 County List D	Found in San Diego County and Baja. Generally occurs between approximately below 4,000 feet within chaparral and rocky slopes.	Yes	Observed	
Rush-like bristleweed (*Xanthisma junceum*)	--/-- CNPS RPR 4.3 County List D	Occurs in San Diego County and Baja. A xeric, low-growing chamise chaparral or Diegan coastal sage scrub is preferred habitat of this inconspicuous subshrub (Reiser 2001).	No	Low	Not known from project vicinity. Perennial species never observed on site.

*Refer to Appendix G for an explanation of status codes.

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Appendix J

SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR

Appendix J SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR					
Species	**Sensitivity Codes and Status***	**Habitat Preference/Requirements**	**Verified on Site**	**Potential to Occur on Site**	**Factual Basis for Determination of Occurrence Potential**
INVERTEBRATES					
Quino checkerspot butterfly (*Euphydryas editha quino*)	FE/-- County Group 1 MSCP Rare, Narrow Endemic (NE)	Currently, populations are known to exist only as several (probably isolated) colonies in southwestern Riverside and southern San Diego counties as well as northern Baja. The principal larval host plant of this species in San Diego is dwarf plantain. Potential QCB habitat in the region includes vegetation communities with relatively open areas that typically include patches of dwarf plantain, purple owl's clover, and nectaring plants. These habitats include open coastal sage scrub, vernal pools, lake margins (Emmel and Emmel 1973), non-native grassland, perennial grassland, disturbed habitat, disturbed wetlands, and open areas within shrub communities.	Yes	Observed/ Detected	
Harbison's dun skipper (*Euphyes vestris harbisoni*)	--/-- MSCP Covered MSCP Rare, NE County Group 1	Typically not found within 10 miles of the coast. Restricted to chaparral and oak riparian areas with narrow drainages, particularly where the larval host plant (San Diego sedge [*Carex spissa*]) occurs.	No	Very low	Although San Diego sedge was observed on site, site likely too far inland for species.

Appendix J (cont.) **SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**					
Species	**Sensitivity Codes and Status***	**Habitat Preference/Requirements**	**Verified on Site**	**Potential to Occur on Site**	**Factual Basis for Determination of Occurrence Potential**
INVERTEBRATES					
Hermes copper (*Lycaena hermes*)	--/-- MSCP Rare, NE County Group 1	Distribution is from approximately 18 miles south of Santo Tomas in Baja California, Mexico north to Fallbrook in San Diego County and from the coast to about 40 miles inland. Hermes copper butterfly larvae utilize spiny redberry (*Rhamnus crocea*) as a food plant.	No	Very low	Spiny redberry was observed on site; however, species was not observed during many surveys.
Thorne's hairstreak butterfly (*Mitoura thornei*)	--/-- MSCP Covered County Group 1	Closely tied with larval host plant Tecate cypress (*Cupressus forbesii*).	No	Very low	Tecate cypress was observed on site; however, species was not observed during many surveys.
VERTEBRATES					
Amphibians					
Arroyo toad (*Anaxyrus californicus*)	FE/SSC MSCP Covered MSCP Rare, NE County Group 1	Breeds in slow-moving streams within open-canopy riparian habitats. May also be found in upland scrub habitats adjacent to these areas.	No	None	Appropriate habitat not found on site.
Western spadefoot (*Spea hammondii*)	--/SSC County Group 2	Prefers floodplains, washes, and low hills. Southern California habitats include coastal sage scrub, chaparral, and grassland. Important habitat components include temporary pools (which form during winter and spring rains) for breeding and friable soils for burrowing.	No	Low	Appropriate habitat does not occur on site. Would have been observed/detected if present.

Appendix J (cont.) **SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**					
Species	**Sensitivity Codes and Status***	**Habitat Preference/Requirements**	**Verified on Site**	**Potential to Occur on Site**	**Factual Basis for Determination of Occurrence Potential**
VERTEBRATES (cont.)					
Reptiles					
California legless lizard (*Anniella pulchra pulchra*)	--/SSC County Group 2	Burrows in loose soils, sandy washes, or leaf litter. Occurs in moist areas of chaparral, pine, and oak woodlands, and riparian streamside growth.	No	Low	Appropriate habitat limited on site.
Belding's orange-throated whiptail (*Aspidoscelis hyperythra*)	--/SSC MSCP Covered County Group 2	Occurs in coastal sage scrub and chaparral, particularly washes and other sandy areas with patches of brush and rocks for cover.	No	High	Abundant suitable habitat is found on site.
Coastal whiptail (*Aspidoscelis tigris stejnegeri*)	--/-- County Group 2	Open coastal sage scrub, chaparral, and woodlands. Frequently found along edges of dirt roads traversing its habitats. Important habitat components include open, sunny areas, shrub cover with accumulated leaf litter and an abundance of invertebrate prey, particularly termites (*Reticulitermes* sp.).	Yes	Observed/ Detected	
Red-diamond rattlesnake (*Crotalus ruber ruber*)	--/SSC County Group 2	Favors rocky outcrops in coastal sage scrub, chaparral, creosote bush scrub, and areas dominated by cactus. Also encountered along rocky canyon bottoms and on the flats adjacent to rocky, desert foothills.	Yes	Observed/ Detected	
Coronado skink (*Eumeces skiltonianus interparietalis*)	--/SSC County Group 2	Prefers coastal sage scrub, grassland, and ruderal habitats, particularly near streams.	No	Moderate	Habitat on site is marginally suitable.
Coastal rosy boa (*Lichanura trivirgata roseofusca*)	--/-- County Group 2	Found in dry, rocky brushlands and arid habitats, usually near intermittent streams but does not require permanent water.	No	High	Known from project vicinity.

Appendix J (cont.) **SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**					
Species	**Sensitivity Codes and Status***	**Habitat Preference/Requirements**	**Verified on Site**	**Potential to Occur on Site**	**Factual Basis for Determination of Occurrence Potential**
VERTEBRATES (cont.)					
Reptiles					
Coast horned lizard (*Phrynosoma blainvillii*)	--/SSC MSCP Covered County Group 2	Frequents a variety of habitats from sage scrub and chaparral to coniferous and broadleaf woodlands. Habitat requirements include open areas for sunning, bushes for cover, fine loose soil for rapid burial, and native ant species such as harvester ants (*Pogonomyrmex* sp.).	Yes	Observed/ Detected	
Coast patch-nosed snake (*Salvadora hexalepis virgultea*)	--/SSC County Group 2	This species prefers brushy or shrubby vegetation, such as chaparral with low shrub structure of minimum density.	No	High	Known from project vicinity.
Birds					
Cooper's hawk (*Accipiter cooperi*)	--/WL MSCP Covered County Group 1	Nests in open woodlands or riparian areas.	No	Low to moderate	Would likely have been observed if present.
Tricolored blackbird (*Agelaius tricolor*)	BCC/SSC MSCP Rare, NE County Group 1	Highly colonial species occurring mostly in coastal lowland grasslands near open water sources for foraging.	No	Low	No open water sources on site, and colony would have been detected during surveys if present.
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	--/WL MSCP Covered County Group 1	Coastal sage scrub where it occurs on rocky hillsides and in canyons but also may be found in open sage scrub/grassy areas of successional growth (i.e., after a fire).	Yes	Observed/ Detected	

Appendix J (cont.)
SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR

Species	Sensitivity Codes and Status*	Habitat Preference/Requirements	Verified on Site	Potential to Occur on Site	Factual Basis for Determination of Occurrence Potential
VERTEBRATES (cont.)					
Birds (cont.)					
Grasshopper sparrow (*Ammodramus savannarum*)	--/SSC County Group 1	Grassland with sparse brush.	Yes	Observed/ Detected	
Bell's sage sparrow (*Amphispiza belli belli*)	BCC/WL County Group 1	Occurs in sunny, dry stands of coastal sage scrub and chaparral.	Yes	Observed/ Detected	
Golden eagle (*Aquila chrysaetos*)	Nesting and wintering; BCC, BGEPA/ WL, Fully Protected MSCP Rare, NE County Group 1	Forage in grassy and open, shrubby habitats. Nest most often on cliffs, less often in trees. Tend to require places of solitude and are usually found at a distance from human habitation.	Yes	Observed/ Detected	
Burrowing owl (*Athene cunicularia*)	BCC/SSC (burrow sites) MSCP Rare, NE County Group 1	Open areas such as grasslands, pastures, coastal dunes, desert scrub, and edges of agriculture fields.	Yes	Observed/ Detected	
Coastal cactus wren (*Campylorhynchus brunneicapillus couesi*)	BCC/SSC MSCP Rare, NE County Group 1	Occurs in coastal sage scrub with large stands of cactus. Preferred habitat not present.	No	Low	Would have been observed if present.
Turkey vulture (*Cathartes aura*)	--/-- County Group 1	Foraging habitat includes most open habitats with breeding occurring in crevices among boulders.	Yes	Observed/ Detected	
Northern harrier (*Circus cyaneus*)	--/SSC MSCP Covered County Group 1	Marshes and open grasslands but often seen flying over shrub-covered hillsides	Yes	Observed/ Detected	

Appendix J (cont.)
SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR

Species	Sensitivity Codes and Status*	Habitat Preference/Requirements	Verified on Site	Potential to Occur on Site	Factual Basis for Determination of Occurrence Potential
VERTEBRATES (cont.)					
Birds (cont.)					
White-tailed kite (*Elanus leucurus*)	Nesting; --/Fully Protected County Group 1	Resident in coastal and interior California, Arizona, and southern Texas. Prefers open country and farmlands with scattered trees; forages over grasslands or marshes.	No	Moderate	Suitable habitat occurs on site.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	FE/SE MSCP Covered MSCP Rare, NE County Group 1	Breeds within thickets of willows or other riparian understory, usually along streams, ponds, lakes, or in canyon drainage bottoms.	No	None	Suitable habitat does not occur on site.
California horned lark (*Eremophila alpestris actia*)	--/WL County Group 2	Sandy beaches, agricultural fields, grasslands, and open areas	Yes	Observed/ Detected	
Loggerhead shrike (*Lanius ludovicianu*	BCC/SSC County Group 1	Found in open habitats including grasslands, shrublands, and ruderal vegetation with adequate perching locations.	Yes	Observed/ Detected	
Coastal California gnatcatcher (*Polioptila californica californica*)	FT/SSC County Group 1 MSCP Covered	Coastal sage scrub in the coastal belt of southern California.	Yes	Observed/ Detected	
Common barn owl (*Tyto alba*)	--/-- County Group 2	Open country, forest edges and clearings, cultivated areas, and cities	Yes	Observed/ Detected	
Least Bell's vireo (*Vireo bellii pusillus*)	FE, BCC/SE MSCP Covered MSCP Rare, NE County Group 1	Prefers riparian woodland and is frequent in areas that combine an understory of willows (*Salix* spp.) and mule fat.	No	None	Habitat on site insufficient to support vireos.

Appendix J (cont.) **SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**					
Species	**Sensitivity Codes and Status***	**Habitat Preference/Requirements**	**Verified on Site**	**Potential to Occur on Site**	**Factual Basis for Determination of Occurrence Potential**
VERTEBRATES (cont.)					
Mammals					
Pallid bat (*Antrozous pallidus pacificus*)	--/SSC County Group 2	Roosts in caves, mines, bridges, crevices, abandoned buildings, and trees.	No	Low	Could forage throughout study area, but few potential roosting sites.
Greater western mastiff bat (*Eumops perotis californicus*)	--/SSC County Group 2	Occurs in chaparral and oak woodland with coast live oaks and arid, rocky areas. Roosts in buildings, crevices in cliffs, in trees, and in tunnels.	No	Low	Suitable roosting areas not found on site.
Mountain lion (*Puma concolor*)	--/-- MSCP Covered County Group 2	Originally varied; now generally mountainous, semi-arid terrain and subtropical and tropical forests and swamps.	No	High	Known from project vicinity.
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	--/SSC County Group 2	Occurs primarily in open habitats including open coastal sage scrub, chaparral, grasslands, croplands, and disturbed areas (if at least some shrub cover present).	Yes	Observed/ Detected	
California leaf-nosed bat (*Macrotus californicus*)	--/SSC County Group 2	Found in arid scrub communities, often near streams or drainages. Roosts in caves or mines.	No	Low	Suitable roosting areas not found on site.
Long-eared myotis bat (*Myotis evotis*)	--/SSC County Group 2	Prefers thinly forested areas and is found around buildings or trees, but is occasionally found in caves. Found from Mexico to Canada.	No	Low	Not reported for the project vicinity.
Fringed myotis bat (*Myotis thysanodes*)	--/SSC County Group 2	Generally in pinyon-juniper or conifer woodlands. Within San Diego County, known from Cleveland National Forest.	No	Low	No appropriate habitat occurs on site.
Yuma myotis bat (*Myotis yumanensis*)	--/SSC County Group 2	Occurs in arid areas. Roosts in buildings, mines, caves, and crevices.	No	Very low	Site is likely outside species' range.

Appendix J (cont.) **SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**					
Species	**Sensitivity Codes and Status***	**Habitat Preference/Requirements**	**Verified on Site**	**Potential to Occur on Site**	**Factual Basis for Determination of Occurrence Potential**
VERTEBRATES (cont.)					
Mammals (cont.)					
San Diego desert woodrat (*Neotoma lepida intermedia*)	--/SSC County Group 2	Trapping necessary for detection but not warranted due to the species low sensitivity.	No	Low	Nests are usually observed if present, but may have escaped view in thicker vegetated areas.
Southern mule deer (*Odocoileus hemionus fuliginata*)	--/-- MSCP Covered County Group 2	Coastal sage scrub, riparian and montane forests, chaparral, grasslands, croplands, and open areas if some scrub cover present. Crepuscular activity and movements along routes with greatest amount of protective cover.	Yes	Observed/ Detected	
Southern grasshopper mouse (*Onychomys torridus ramona*)	--/SSC County Group 2	Occurs in open, arid habitats, including coastal sage scrub and chaparral, particularly in sandy soils.	No	Low	Not reported in project vicinity.
Dulzura California pocket mouse (*Perognathus californicus femoralis*)	--/SSC County Group 2	Occurs in chaparral and coastal sage scrub, often adjacent to grassland. Suitable habitat is found on site.	No	Low	Not reported for project vicinity.
San Diego pocket mouse (*Perognathus fallax fallax*)	--/SSC County Group 2	Inhabits sandy, herbaceous areas, usually in association with rocks or coarse gravel.	No	Very low	Not reported near the project vicinity.

Appendix J (cont.) **SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**					
Species	**Sensitivity Codes and Status***	**Habitat Preference/Requirements**	**Verified on Site**	**Potential to Occur on Site**	**Factual Basis for Determination of Occurrence Potential**
VERTEBRATES (cont.)					
Mammals (cont.)					
Pacific pocket mouse (*Perognathus longimembris pacificus*)	FE/SSC MSCP Rare, NE County Group 1	Found in coastal sage scrub, but more often in sandy washes. Known currently from one location in Orange County and one on Camp Pendleton.	No	Low	Site outside of known range.
Townsend's big-eared bat (*Plecotus townsendii pallescens*)	--/SSC County Group 2	Roosts in caves, mines, and buildings.	No	Very low	Appropriate habitat absent.

*Refer to Appendix G for an explanation of status codes

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Appendix K

HABITAT CONSERVATION PLAN

HELIX Environmental Planning

Otay Hills Project

Habitat Conservation Plan

June 2020

Prepared for:
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Prepared by:
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Habitat Conservation Plan for the Otay Hills Project: A Major Amendment to the Multiple Species Conservation Program County of San Diego Subarea Plan

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LIST OF ACRONYMS AND DEFINITIONS

AMA	Additional Management Area
AMSL	Above Mean Sea Level
APCD	Air Pollution Control District
BACT	Best Available Control Technology
BLM	Bureau of Land Management
BMO	Biological Mitigation Ordinance
BRCA	Biological Resource Core Area
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
City	City of San Diego
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	County of San Diego
dBA	A-weighted decibel
EA	Environmental Assessment
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ELM	Estimate for Long-term Management
Federal Act	Federal Endangered Species Act
HCP	Habitat Conservation Plan
HELIX	HELIX Environmental Planning, Inc.
I	Interstate
IA	Implementing Agreement
IDEFO	Inert Debris Engineered Fill Operations
Leq	equivalent continuous
MHPA	Multi-habitat Planning Area
MSCP	Multiple Species Conservation Program
MUP	Major Use Permit
NCCP	Natural Community Conservation Planning
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act

LIST OF ACRONYMS AND DEFINITIONS (CONT.)

OHCA	Otay Hills Conservation Area
OHV	Off-highway Vehicle
PAR	Property Analysis Record
PRC	Public Resources Code
QCB	Quino Checkerspot Butterfly
QMU	Quino Checkerspot Butterfly Management Unit
RMP	Resource Management Plan
RPR	Rare Plant Rank
SDCWA	San Diego County Water Authority
SDMMP	San Diego Management and Monitoring Program
SDG&E	San Diego Gas and Electric
SHPO	State Historic Preservation Office
SMARA	Surface Mining and Reclamation Act
SPA	Specific Plan Amendment
SR	State Route
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
Wildlife Agencies	USFWS and CDFW

Biological Resource Core Area – Under the County Biological Mitigation Ordinance (County 2010a), habitat is considered a BRCA if it meets one of the following criteria:

- It is considered a Pre-Approved Mitigation Area (PAMA) on the Wildlife Agencies' PAMA area map;
- It contains biological resources that support or contribute to the long-term survival of sensitive species and is adjacent to the pre-approved mitigation area;
- It is part of a regional linkage/corridor;
- It is mapped as Very High or High shown on the Habitat Evaluation Map and links significant patches of habitat;
- It is part of a patch of habitat greater than 500 acres in area that contributes to the conservation of sensitive species; or
- It supports a high number of sensitive species and is contiguous to undisturbed habitats.

LIST OF ACRONYMS AND DEFINITIONS (CONT.)

Hardline Preserve – Areas where landowners have negotiated with the Wildlife Agencies and the County to preserve land in perpetuity.

Major Amendment Areas – "have a high probability of supporting biological resources critical to the success of the MSHCP (either by location within core and linkage areas or by the resources identified on the site)" (County 2010c). Major Amendments require a formal amendment to the Subarea Plan.

Minor Amendment Areas – "contain habitat that could be partially or completely eliminated (with appropriate mitigation) without significantly affecting the overall goals of the County's MSCP Subarea Plan." (County 2010c). Minor Amendments require concurrence from the Wildlife Agencies.

Minor Amendment Areas Subject to Special Considerations – Transitional areas located between Major and Minor Amendment Areas that are subject to special requirements as spelled out in the County East Otay Mesa Specific Plan (County 1994) area. Minor Amendments for these areas require concurrence from the Wildlife Agencies.

MSCP Covered Species – Species for which the County has been issued take authorization from the USFWS and CDFW for the County MSCP Subarea Plan area.
Proposed Covered Species – The species proposed for coverage under this HCP, including 17 MSCP Covered Species and one non-MSCP Covered Species, the Quino checkerspot butterfly.

Take Authorized Area – Area where impacts are covered under the County MSCP Subarea Plan and no amendment process is required for development.

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1.0 INTRODUCTION

1.1 OVERVIEW AND BACKGROUND

The Multiple Species Conservation Program (MSCP; City of San Diego 1998) is a comprehensive, habitat conservation planning program that addresses the needs of multiple species and the preservation of natural vegetation communities in southwestern San Diego County (County). The overall goal of the MSCP 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 MSCP preserve system replaces fragmented, project-by-project mitigation areas, which by themselves, do not contribute adequately to the continued existence of sensitive species or to maintenance of natural biological diversity.

The MSCP addresses the potential impacts of urban growth, natural habitat loss, and species endangerment and is a plan to mitigate for the potential loss of certain species and their habitats due to the direct impacts of future development of both public and private lands within the MSCP area. The MSCP is implemented through local subarea plans. On March 17, 1998, the U.S. Fish and Wildlife Service (USFWS) issued a section 10(a)(1)(B) permit (PRT-840414) pursuant to the Federal Endangered Species Act of 1973 (Federal Act), as amended (16 U.S.C. 1531 *et seq*.) for the MSCP County of San Diego Subarea Plan ("Subarea Plan"; County et al. 1997). The California Department of Fish and Wildlife (CDFW) also issued Natural Community Conservation Plan Approval and Take Authorization per Section 2800 *et seq.*, of the California Fish and Game Code. The County's Subarea Plan and its associated Implementing Agreement and permits with the USFWS and CDFW (collectively referred to as the Wildlife Agencies) establish the conditions under which the County, for the benefit of itself and of public and private landowners and other land development project proponents within its Subarea Plan boundaries, receives take authorizations for 85 MSCP Covered Species incidental to land development and other lawful land uses, that are authorized by the County and are covered by the permits (i.e. covered activities). The Biological Mitigation Ordinance (BMO; County 2010a) is the implementing ordinance for the County's Subarea Plan. Compliance with this ordinance allows the County to issue Incidental Take Permits for MSCP Covered Species.

The County's Subarea Plan is divided into three segments. Within the South County Segment, certain lands were designated as "Major or Minor Amendment" areas where the location of the preservation and development was not resolved prior to permit issuance. For lands designated as "Major or Minor Amendment" areas, the County's take authorizations do not apply until the major or minor amendment process has been completed. The proposed Otay Hills Construction Aggregate and Inert Debris Engineered Fill Operation Project (Project) occurs within both "Major and Minor Amendment" areas; thus, the County (Applicant) is requesting an amendment to their Subarea Plan consistent with section 1.14.2 of the Subarea Plan. All major and minor amendments must conform to the MSCP and Subarea Plan requirements, and requests for amendments must be processed by the Wildlife Agencies in conformity with all applicable laws and regulations (including the National Environmental Policy Act [NEPA], the California Environmental Quality Act [CEQA], the Federal Act, and California Natural Community Conservation Planning [NCCP] Act) in effect at the time the request for an amendment is received.

1.2 PURPOSE AND NEED OF THE PROPOSED ACTION

Superior Ready Mix Concrete L.P. (Project Proponent) is proposing development of a hard rock quarry and inert landfill and associated activities on approximately 102.7 acres of Otay Mesa within an amendment area of the South County Segment of the County's MSCP Subarea Plan. An additional 2.4 acres along the southern boundary of the quarry and landfill site contains an easement and will not be impacted by the development but will be included in the Major Use Permit (MUP) area. The easement area is considered "impact neutral" and will result in a total MUP project area of approximately 105 acres. "Impact neutral" is defined as not impacted but also not proposed to be dedicated to open space. An additional 4.7 acres off site to the west is existing open space on the Otay Crossings Commerce Park project site that will be isolated by the quarry and landfill Project and is, therefore, considered part of the overall quarry and landfill site herein and impacted as part of the Project. Therefore, the total development (or impact) footprint of the Project is 107.4 acres. While considered impacted in this document, the 4.7-acre parcel would actually be proposed for future development separate from the quarry and landfill.

Approximately 77 acres within the development footprint of the Project are currently identified as a "Major Amendment" area, 4.7 acres are identified as Minor Amendment Area, and 25.2 acres are identified as "Minor Amendment Area Subject to Special Considerations" (there are also 0.2 acre of Take Authorized Area and 0.3 acre of Hardline Preserve in the development footprint). The Proposed Action is a major amendment to the County's Subarea Plan that would include designating "Hardline" development and preservation areas for the Project and providing take authorization within the development footprint for certain County MSCP Covered Species, and providing take authorization for the federal listed endangered Quino checkerspot butterfly (*Euphydryas editha quino*; QCB). The Proposed Action would result in permanent preservation of 304.6 acres of habitat that would contribute to the overall MSCP goal to maintain and enhance biological diversity in the region and conserve viable populations of endangered, threatened, and key sensitive species and their habitats.

The purpose in preparing this Habitat Conservation Plan (HCP) is to support an application to amend the County's existing incidental take permit, which is needed because the project will impact MSCP Covered Species and the QCB. The specific purposes of the Proposed Action are to:

- Respond to the Applicant's application to amend an incidental take permit for certain Proposed Covered Species related to project activities that have the potential to result in take, pursuant to Federal Act Section 10(a)(1)(B) and its implementing regulations and policies;

- Ensure the long-term survival of the Proposed Covered Species through the protection and management of the species and their habitats;

- Ensure consistency with the goals and objectives of the MSCP Subregional Plan and the County MSCP Subarea Plan;

- Ensure compliance with the Federal Act, NEPA, and other applicable federal laws and regulations; and

- Ensure compliance with the NCCP Act.

This HCP was prepared to support an amendment to the County's incidental take permit and Subarea Plan. The HCP describes the existing biological conditions of the subject property and evaluates the environmental consequences associated with the Proposed Action. This information provides the Wildlife Agencies and the County with current biological data to review the Proposed Action under NEPA, CEQA, and other applicable laws.

1.3 PERMIT HOLDER AND PERMIT DURATION

The County (Permit Holder) proposes to amend incidental take permit PRT-840414 and extend take authorization to Superior Ready Mix Concrete L.P. as a Third Party Beneficiary for the duration of the existing Subarea Plan permit (which is in effect until March 17, 2048; USFWS et al. 1998). It is anticipated that all direct physical take of habitat shall have occurred within this timeframe. Should additional take authorization be required and the MSCP permit is not extended, the Project Proponent would seek to extend take authorization through an independent permit process at that time.

1.4 PERMIT BOUNDARY

The total Project site encompasses: 1) a 102.7-acre development footprint; 2) 2.4 acres of "impact neutral;" 3) 4.7 acres off site on the Otay Crossings Commerce Park project; and 4) 304.6 acres that would be dedicated to open space as Hardline Preserve and is called the Otay Hills Conservation Area (OHCA). The total Project site is 414.4 acres. As stated previously, since the off-site Otay Crossings Commerce Park parcel would be functionally isolated from other conserved lands upon implementation of the Project, this parcel has been added to the Project site and development footprint herein and treated as fully developed. An additional 61-acre Additional Management Area (AMA) has an existing conservation easement in favor of the CDFW but lacks management funding and the Project is providing funding for management of this area. This AMA is not considered part of the Proposed Project site but is included in the description of areas being managed for conservation purposes.

The Project site consists of undeveloped land located in the foothills immediately east of Otay Mesa in southern San Diego County (Figure 1). The Project is 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). The Project is located approximately one mile north of the border with Baja California, Mexico, one mile northeast of the Otay Mesa border crossing, and east of the intersection of Otay Mesa and Alta Roads (Figure 3). The Project is made up of 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, and 648-080-25. The AMA is part of APN 648-050-17. The development footprint and the OHCA are shown on Figure 4 in relation to the Subarea Plan Designations. The detached parcel of the OHCA is accessible for authorized access from the south and west.

1.5 SPECIES COVERED BY MAJOR AMENDMENT

Table 1 includes a list of animal and plant species proposed for coverage under an amendment to the County's incidental take permit. The species proposed for coverage have been reported in or near the Project site. The species are alphabetized in each section or subsection of the table by scientific name. All of the species are County MSCP Covered Species except the QCB, a federal listed endangered species.

Table 1
PROPOSED COVERED SPECIES

SPECIES	FEDERAL STATUS	STATE STATUS[1]	COUNTY SUBAREA PLAN STATUS
ANIMALS			
Invertebrates			
Quino checkerspot butterfly (*Euphydryas editha quino*)	Endangered	--	Not Covered
Vertebrates			
Reptiles			
Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*)	--	Watch List	MSCP Covered Species
Coast horned lizard (*Phrynosoma blainvillii*)	--	Species of Special Concern	MSCP Covered Species
Birds			
Cooper's hawk (*Accipiter cooperii*)	--	Watch List	MSCP Covered Species
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	--	Watch List	MSCP Covered Species
Burrowing owl (*Athene cunicularia*)	Bird of Conservation Concern	Species of Special Concern	MSCP Covered Species

Table 1 (cont.) PROPOSED COVERED SPECIES			
SPECIES	**FEDERAL STATUS**	**STATE STATUS[1]**	**COUNTY SUBAREA PLAN STATUS**
ANIMALS (cont.)			
Vertebrates (cont.)			
Birds (cont.)			
Northern harrier (*Circus cyaneus*)	--	Species of Special Concern	MSCP Covered Species
Coastal California gnatcatcher (*Polioptila californica californica*)	Threatened	Species of Special Concern	MSCP Covered Species
Mammals			
Mountain lion (*Puma concolor*)	--	Specially Protected	MSCP Covered Species
Southern mule deer (*Odocoileus hemionus fuliginata*)	--	--	MSCP Covered Species
PLANTS			
San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*)	--	-- CNPS RPR 1B.1	MSCP Covered Species
Dunn's mariposa lily (*Calochortus dunnii*)	--	Rare CNPS RPR 1B.2	MSCP Covered Species Narrow Endemic
Orcutt's bird's beak (*Cordylanthus orcuttianus*)	--	-- CNPS RPR 2.1	MSCP Covered Species
Tecate cypress (*Hesperocyparis* [*Cupressus*] *forbesii*)	--	-- CNPS RPR 1B.1	MSCP Covered Species
Otay tarplant (*Deinandra conjugens*)	Threatened	Endangered CNPS RPR 1B.1	MSCP Covered Species Narrow Endemic
Variegated dudleya (*Dudleya variegata*)	--	-- CNPS RPR 1B.2	MSCP Covered Species Narrow Endemic
San Diego barrel cactus (Ferocactus viridescens)	--	-- CNPS RPR 2.1	MSCP Covered Species
Gander's pitcher sage (Lepechinia ganderi)	--	-- CNPS RPR 1B.3	MSCP Covered Species Narrow Endemic

[1]California Native Plant Society Rare Plant Rank (CNPS RPR) included herein where applicable.
[2] Narrow Endemic – Species with restricted geographic distributions, soil affinities, and/or habitats.

1.6 REGULATORY FRAMEWORK

1.6.1 Federal Endangered Species Act

Section 9 of the Federal Act and federal regulation pursuant to section 4(d) of the Federal Act prohibit the take of fish and wildlife species listed as endangered and threatened, respectively, without special exemption. Take, as defined by the Federal Act, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct." Harm is defined as "any act that kills or injures the species, including significant habitat modification." The Federal Act includes mechanisms that provide exceptions to the Section 9 take prohibitions. These are addressed in the Federal Act under Section 7 (federal actions) and section 10 (non-federal actions).

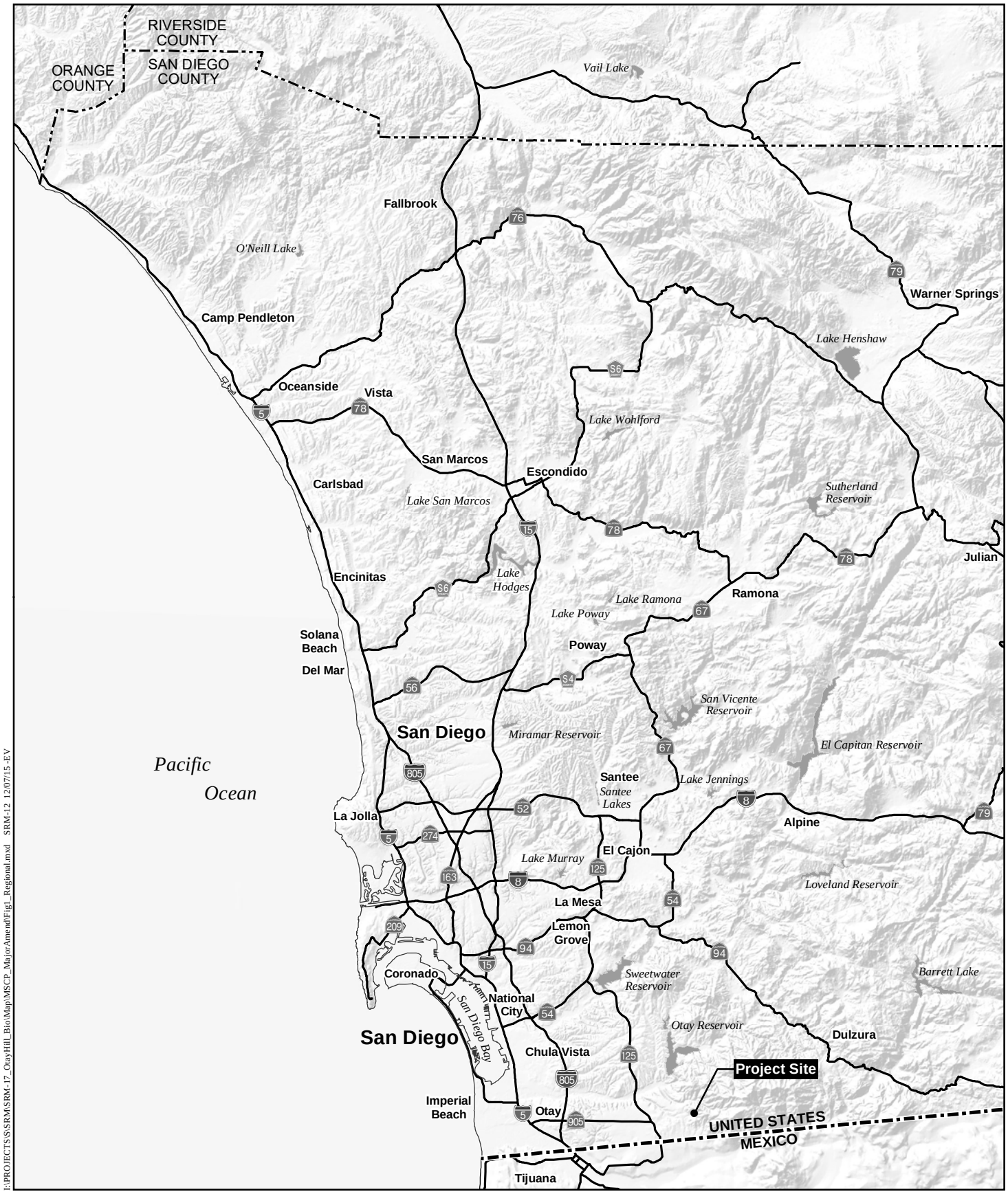
Individuals and state and local agencies (i.e., non-federal entities) proposing an action that is expected to result in take of federally listed species are encouraged to apply for an incidental take permit under section 10(a)(1)(B) of the Federal Act to be in compliance with the law. Such permits are issued by the USFWS when the take of federally listed fish and wildlife is not the intention of, and is incidental to, otherwise lawful activities.

The take prohibition for listed plants is more limited than for listed fish and wildlife. Under Section 9(a)(2)(B) of the Federal Act, endangered plants are protected from "removal, reduction to possession, and malicious damage or destruction" in areas that are under federal jurisdiction. Section 9(a)(2)(B) of the Federal Act also provides protection to plants from removal, cutting, digging up, damage, or destruction where the action takes place in violation of any state law or regulation or in violation of a state criminal trespass law. Thus, the Federal Act does not prohibit the incidental take of federally listed plants on private or other non-federal lands unless the take or action resulting in take is in violation of state law. Therefore, section 10 incidental take permits are necessary only for take of wildlife and fish species. Even though under the Federal Act there is no prohibition of take of plants on non-federal lands, the HCP covers many plants. Some plants are covered in order to meet regulatory obligations under Section 7 of the Federal Act. Plants are also included as Proposed Covered Species to provide no-surprises assurances for these species. The Section 7(a)(2) prohibition against jeopardy, however, applies to plants, and USFWS may not issue a Section 10(a)(1)(B) incidental take permit if the issuance of that permit would result in jeopardy to a listed plant species.

An application for an incidental take permit must be accompanied by a habitat conservation plan that specifies:

- The impact that will likely result from the taking of Proposed Covered Species;
- The steps the applicant will take to monitor, minimize, and mitigate such impacts; the funding that will be available to implement such steps; and the procedures to be used to deal with unforeseen circumstances1;

[1] Unforeseen circumstances are changes in circumstances affecting a Proposed Covered Species or geographic area covered by the HCP that could not reasonably have been anticipated by the plan developers, and that result in a substantial and adverse change in the status of a Proposed Covered Species.



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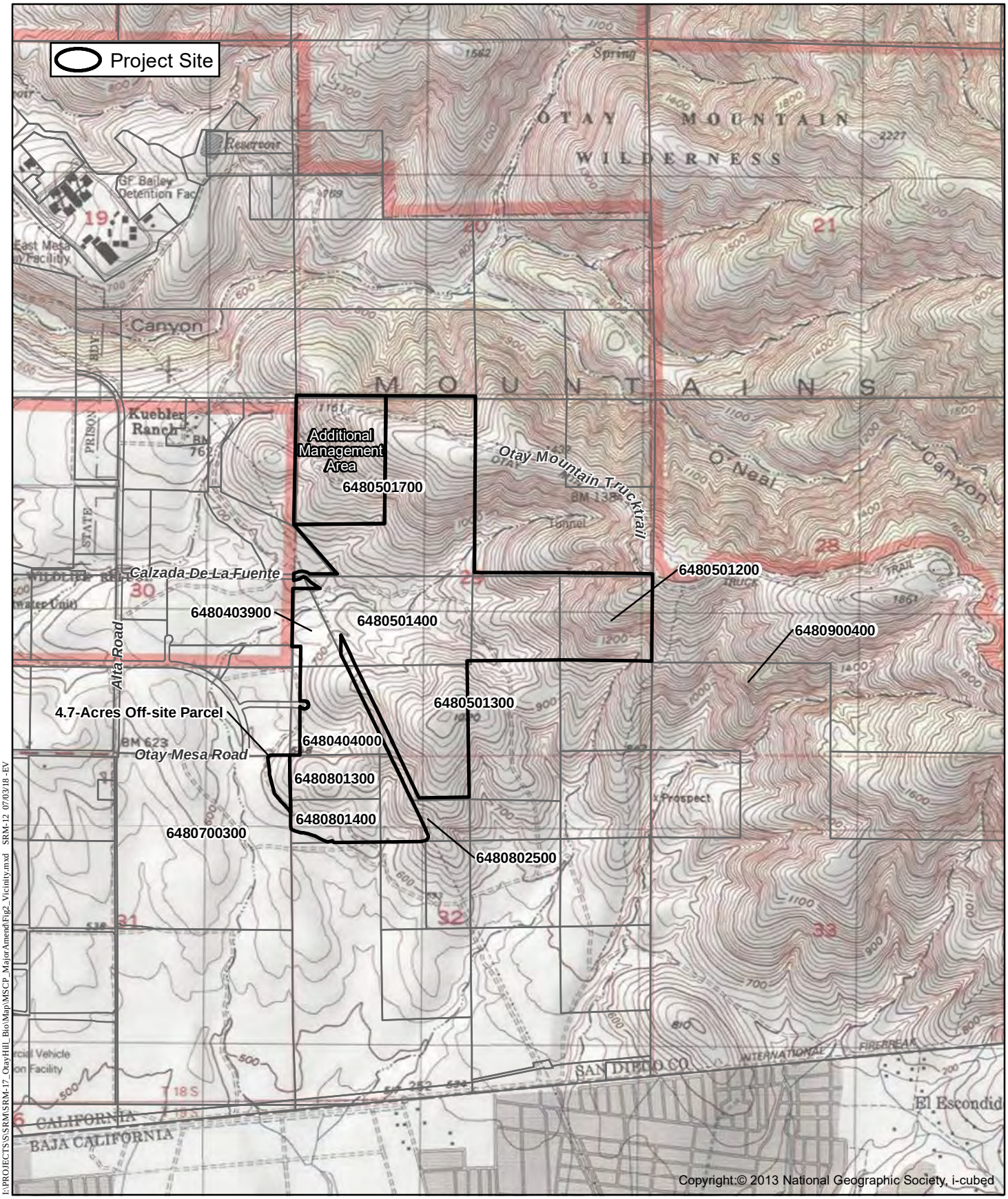
Regional Location

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 8 Miles

Figure 1



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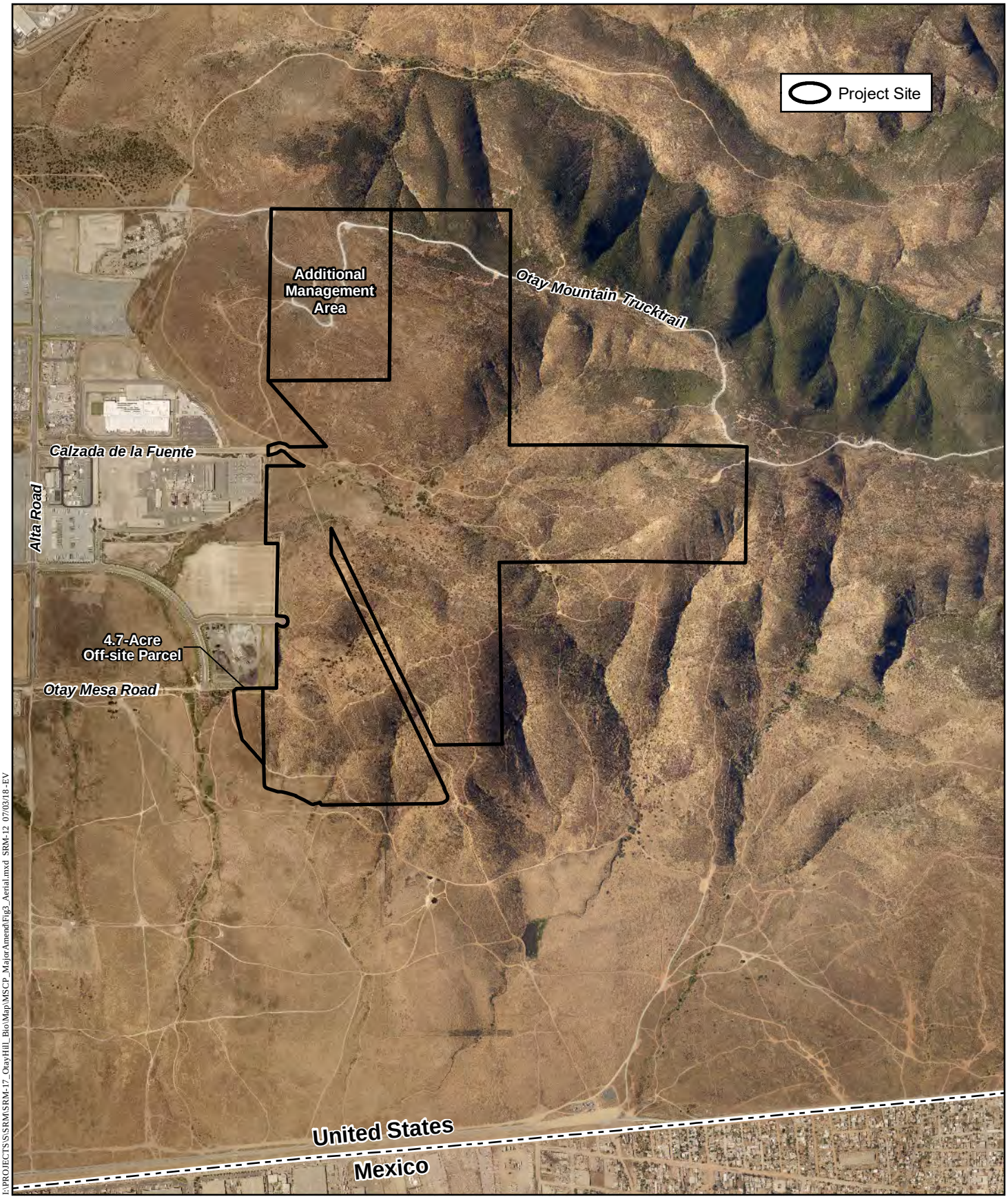
Project Vicinity Map

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 2,000 Feet

Figure 2



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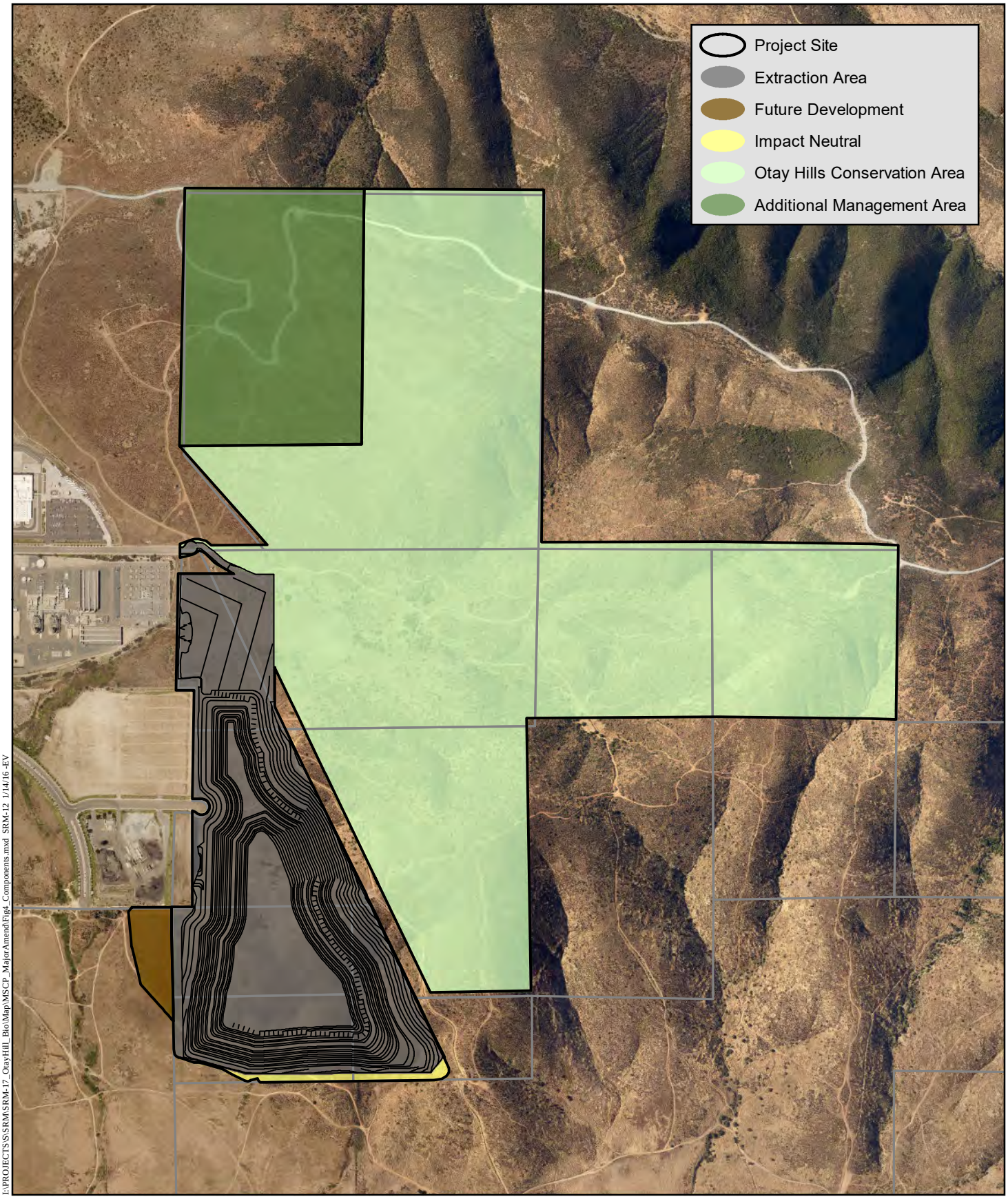
Project Location - Aerial

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 1,500 Feet

Figure 3



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Proposed Project Components

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 1,000 Feet

Figure 4

- The alternative actions to taking of Proposed Covered Species the applicant considered and the reasons why such alternatives are not proposed to be utilized; and

- Such other measures that the Secretary of Interior may require as being necessary or appropriate for purposes of the HCP.

To receive an incidental take permit, the following statutory criteria must be met:

1. The taking will be incidental to otherwise lawful activities.

2. The applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking.

3. The applicant will ensure adequate funding for the HCP and procedures to deal with unforeseen circumstances.

4. The taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild.

5. The applicant will ensure that other measures that the USFWS may require as being necessary or appropriate will be provided.

6. The USFWS have received such other assurances as may be required that the HCP will be implemented.

Section 7 of the Federal Act requires federal agencies to ensure that their actions do not jeopardize the continued existence of listed species or destroy or adversely modify listed species' critical habitat. Issuance of an incidental take permit under section 10(a)(1)(B) of the Federal Act by the USFWS constitutes a federal action subject to Section 7 of the Federal Act. As a federal agency issuing a discretionary permit, the USFWS is required to undertake an internal Section 7 consultation. Elements specific to the Section 7 process that are not required under the section 10 process (e.g., analysis of impacts on designated critical habitat, analysis of impacts on listed plant species, and analysis of indirect and cumulative impacts on listed species) are included in the HCP to meet the requirements of Section 7 and assist the USFWS with its internal consultation.

1.6.2 Natural Community Conservation Planning Act

The NCCP program is a cooperative effort to protect habitats and species. It began under the State's NCCP Act of 1991, legislation broader in its orientation and objectives than the Federal and State Endangered Species Acts. These laws are designed to identify and protect individual species that have already declined in number significantly. Although the NCCP Act of 2003 was subsequently passed, the NCCP Act of 1991 and the associated Southern California Coastal Sage Scrub NCCP Conservation Guidelines (California Department of Fish and Game [CDFG] 1993a), Southern California Coastal Sage Scrub NCCP Process Guidelines (CDFG 1993b), and NCCP General Process Guidelines (CDFG 1998) apply to the MSCP and thus to this Major Amendment.

The primary objective of the NCCP program is to conserve natural communities at the ecosystem level while accommodating compatible land use. The program seeks to anticipate and prevent the controversies and gridlock caused by species' listings by focusing on the long-term stability of wildlife and plant communities and including key interests in the process.

This voluntary program allows the state to enter into planning agreements with landowners, local governments, and other stakeholders to prepare plans that identify the most important areas for a threatened or endangered species, and the areas that may be less important. These NCCP plans may become the basis for a state permit to take threatened and endangered species, as well as non-listed species, in exchange for conserving their habitat. The Wildlife Agencies worked to combine the NCCP program with the federal HCP process to provide take permits for state and federal listed species. Under the NCCP, local governments, such as the County, can take the lead in developing these NCCP plans and become the recipients of state and federal take permits. The County's MSCP Subarea Plan (County et al. 1997) and the Implementing Agreement by and between the Wildlife Agencies and County (USFWS et al. 1998) provide coverage for 85 specific species (i.e., MSCP Covered Species).

1.6.3 County Multiple Species Conservation Program Subarea Plan

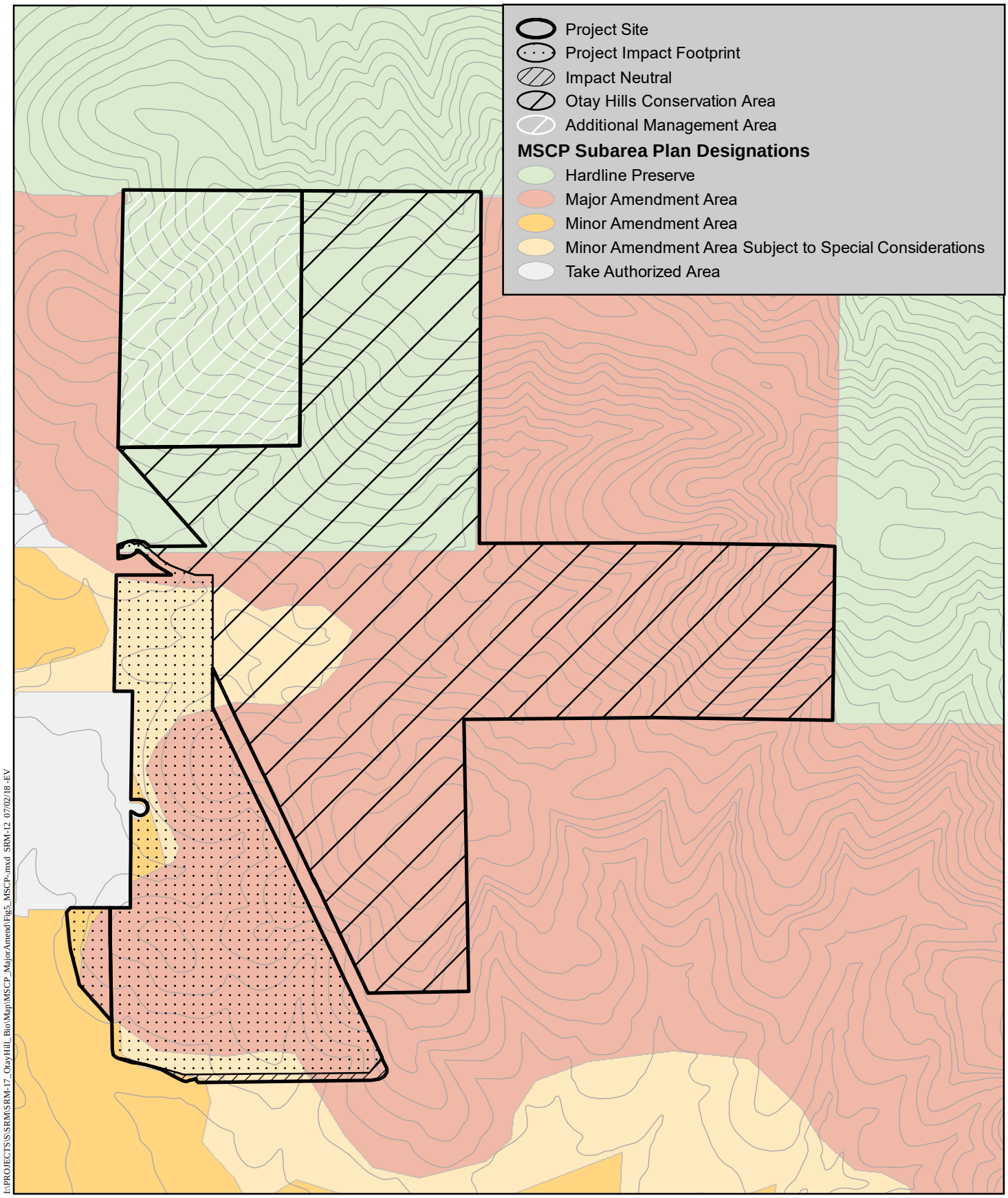
The Project is located within the South County Segment of the County's MSCP Subarea Plan. Five County MSCP Subarea Plan designations occur on the Project site: Major Amendment Area (291.7 acres), Minor Amendment Area (5.0 acres), Minor Amendment Area Subject to Special Considerations (42.2 acres), Take Authorized Area (0.5 acre), and Hardline Preserve (103.7 acres; Figure 5). The amendment designations are because the locations of preservation and development areas were not resolved during the MSCP process for all lands within the South County Segment. For lands designated as Major and Minor Amendment Areas, the County's take authorizations for MSCP Covered Species do not apply until the Major or Minor amendment process has been completed. See the List of Acronyms and Definitions at the beginning of this document for the definitions of these Subarea Plan designations. Requirements for processing Major and Minor Amendments to the County MSCP Subarea Plan are listed below.

Major Amendment Areas

Major Amendments must conform to the MSCP Subregional 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. Major Amendment Areas on the Project site are shown on Figure 5.

Minor Amendment Areas

Minor Amendments must meet the criteria and achieve the goals of linkages and corridors described in the County MSCP Subarea Plan (sections 4.2.1 and 4.2.2) and provide mitigation consistent with the BMO. Development within Minor Amendment Areas requires approval from the USFWS Field Office Supervisor, CDFW NCCP Program Manager, and County Board of Supervisors. Minor Amendment Areas on the Project site are shown on Figure 5.



MSCP Subarea Plan

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 1,000 Feet

Figure 5

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Minor Amendment Areas Subject to Special Considerations

In order to receive approval of a Minor Amendment that is Subject to Special Considerations, a Resource Conservation Plan addressing impacts to habitat and endangered species must be completed. Certain areas may be acquired or exacted as open space as a potential means of mitigating environmental impacts of development. Minor Amendment Areas Subject to Special Considerations on the Project site are shown on Figure 5.

The Proposed Action would:

1) Reclassify 77.1 acres from the Major Amendment Area to Take Authorized Area to allow for development;

2) Reclassify 4.7 acres in Minor Amendment Areas to Take Authorized Area;

3) Reclassify 25.2 acres in Minor Amendment Area Subject to Special Considerations to Take Authorized Area;

4) Reclassify 0.3 acre of Hardline Preserve to Take Authorized Area;

5) Reclassify 185.0 acres from the Major Amendment Area into Hardline Preserve;

6) Reclassify 15.8 acres of Minor Amendment Area Subject to Special Considerations to Hardline Preserve;
7) Reclassify 0.4 acre of Take Authorized Area to Hardline Preserve; and

8) Provide take authorization for the QCB (not an MSCP Subregional Plan or County MSCP Covered Species) and several other County MSCP Covered Species inside the development (or impact) footprint of the Project.

On the Project site, 0.3 acre already classified by the County's MSCP Subarea Plan as Take Authorized would be impacted by the project and 103.4 acres of private property already classified as Hardline Preserve (but not yet protected or managed) would be dedicated to open space in the OHCA.

In combination, these actions would result in permanent open space conservation (Hardline Preserve) of 304.6 acres on the Project site (not including the 2.4 acres of impact neutral area; see Section 1.2), of which 295.2 acres are high-quality habitat (the remainder consists of 8.7 acres of disturbed habitat and 0.7 acre of developed). Of these 304.6 acres, 103.4 acres are already designated as Hardline Preserve, and another 0.4 acre is considered Take Authorized but would be reclassified as Hardline Preserve. The preserved habitat would be connected to other conserved, high value habitat areas in the South County Segment of the County MSCP Subarea Plan that support listed and/or sensitive plant and animal species, which would contribute to the overall goals of the MSCP Subregional Plan and the County MSCP Subarea Plan. Management funding

provided for the AMA would further contribute to overall goals of the MSCP Subregional Plan and the County MSCP Subarea Plan.

1.6.4 National Environmental Policy Act

The purpose of NEPA is two-fold: to ensure that federal agencies examine environmental impacts of their actions (in this case, deciding whether to amend an incidental take permit) and to utilize public participation. The NEPA requires federal agencies to include in their decision-making process appropriate and careful consideration of all environmental effects of a proposed action and of possible alternatives. Documentation of the environmental impact analysis and efforts to avoid or minimize the adverse effects of proposed actions must be made available for public notice and review. This analysis is documented in either an environmental assessment (EA) or an environmental impact statement (EIS). Federal agencies must disclose in these documents whether the proposed action will adversely affect the human or natural environment. The NEPA requires disclosure of environmental effects and mitigation possibilities and serves as an analytical tool on direct, indirect, and cumulative impacts of the proposed project alternatives to help the USFWS decide whether to issue an incidental take permit. To satisfy NEPA, a draft EIS will be prepared for issuance of an amended incidental take permit for this HCP and circulated for public comment. After consideration of public comments, a final EIS will be prepared culminating in a record of decision which will document the USFWS' final decision.

National Historic Preservation Act

Compliance with the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.; NHPA), is required by law for all federal undertakings. An undertaking is defined in 36 CFR 800.16(y) of the NHPA's implementing regulations as "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those out with federal financial assistance; and those requiring a federal permit, license or approval." Under this definition, the USFWS issuance of a Federal Act section 10(a)(1)(B) incidental take permit for activities covered in a habitat conservation plan constitutes an undertaking and therefore must examine potential impacts to cultural resources pursuant to the NHPA. Thus, consultation with the State Historic Preservation Office (SHPO) and appropriate American Indian tribes may be required. All incidental take permit applicants are requested to submit a Request for Cultural Resources Compliance form to the USFWS. To complete compliance, the applicant may be required to contract for cultural resource surveys and possibly mitigation. The NHPA and the potential effects of the HCP on resources subject to the NHPA are discussed in detail in the EIR/EIS.

1.6.5 California Environmental Quality Act

The CEQA is a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. The CEQA applies to certain activities of state and local public agencies. A public agency must comply with CEQA when it undertakes an activity defined by CEQA as a project. A project is an activity undertaken by a public agency or a private activity which must receive some discretionary approval

(meaning that the agency has the authority to deny the requested permit or approval) from a government agency which may cause either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment.

Most proposals for physical development in California are subject to the provisions of CEQA, as are many governmental decisions that do not immediately result in physical development (such as adoption of a general or community plan). Every development project that requires a discretionary governmental approval will require at least some environmental review pursuant to CEQA, unless an exemption applies.

2.0 PROJECT DESCRIPTION/ACTIVITIES COVERED BY THE PROPOSED ACTION

2.1 PROJECT DESCRIPTION

The Project Proponent proposes to establish a mineral resource recovery and processing operation with associated activities on approximately 102.7 acres of the 414.4-acre Project site (Figure 4). With the inclusion of the 2.4-acre "impact neutral" area along the southern boundary of the site, the total MUP project area will be approximately 105 acres. During and after mineral resource recovery operations, the open pit would serve as a receiver site for inert debris such as concrete, asphalt, rock, and soil. Approximately 89.2 million tons of mineral resources would be extracted from the development footprint over an approximately 90-year period, and more than 32 million cubic yards of inert debris would be received over an approximately 120+-year period that overlaps the extraction period. Prior to commencing operations, the Project would require the approval of a Specific Plan Amendment (SPA), MUP, Reclamation Plan, and financial assurance. These requirements are set forth in the County of San Diego Grading Ordinance Chapter 87.700 et seq. and the California Surface Mining and Reclamation Act (SMARA) Public Resources Code (PRC) 2770(a) et seq. The Project Proponent proposes preservation of 304.6 acres of conservation area in the OHCA by dedicating a conservation easement and biological open space easement prior to impacts over the entire 304.6-acre OHCA (Figure 4) and phasing of the management and monitoring funding to coincide with the phases of construction.

Rock that has been processed for use in manufacturing other products (such as concrete or asphaltic concrete) is typically referred to as aggregate. Aggregates are necessary for the construction, maintenance, and renovation of buildings and existing homes, and construction of new homes and supporting infrastructure.

Hours of operation primarily would be from 5:00 a.m. to 10:00 p.m. Maintenance and exporting of aggregate by truck, however, could occur 24 hours per day. Following completion of resource recovery operations, the development footprint area would be reclaimed to a beneficial land use consistent with the underlying land use regulations. The proposed SPA would change the designation of approximately 36.3 acres of Mixed Industrial land to Conservation/Limited Open Space. In addition, approximately 81.1 acres of land currently designated Rural Residential would be designated as Mixed Industrial (Figures 6a and 6b). Slopes abutting the OHCA would be revegetated with native upland habitat as construction of the slopes is completed.

Mineral resource recovery operations would be conducted through the use of drilling and blasting to fracture rocks. Based on anticipated production levels of 0.6 to 1.6 million tons per year, blasting would occur approximately once each week. Blasting operations would be conducted by a licensed blasting contractor with all blasting materials transported to the development footprint area for each blasting sequence. No explosives would be stored at the site. A single drill rig would be used to drill a pattern of bore holes three to six inches in diameter. Typically, the pattern would be laid out in a 60- by 120-foot-wide grid with 45-foot-deep holes. A contractor would then load the holes with carefully metered explosives. The "shot" would be timed to detonate each hole(s) in sequence. This procedure minimizes the ground vibration and noise of the blast, while maximizing fracture of the rock. Some dust would be created as a result of the blast; however, the dust would be fully dissipated within 30 to 60 seconds following the shot, and additional dust control measures will be implemented as necessary. The goal of the blasting program would be to fracture the rock to sizes less than 18 inches in diameter.

Following blasting, the rock resource is fractured and can be moved with conventional earth-moving equipment. A front-end loader is used to load off-highway rock trucks for transport of fractured rock to the primary processing plant.

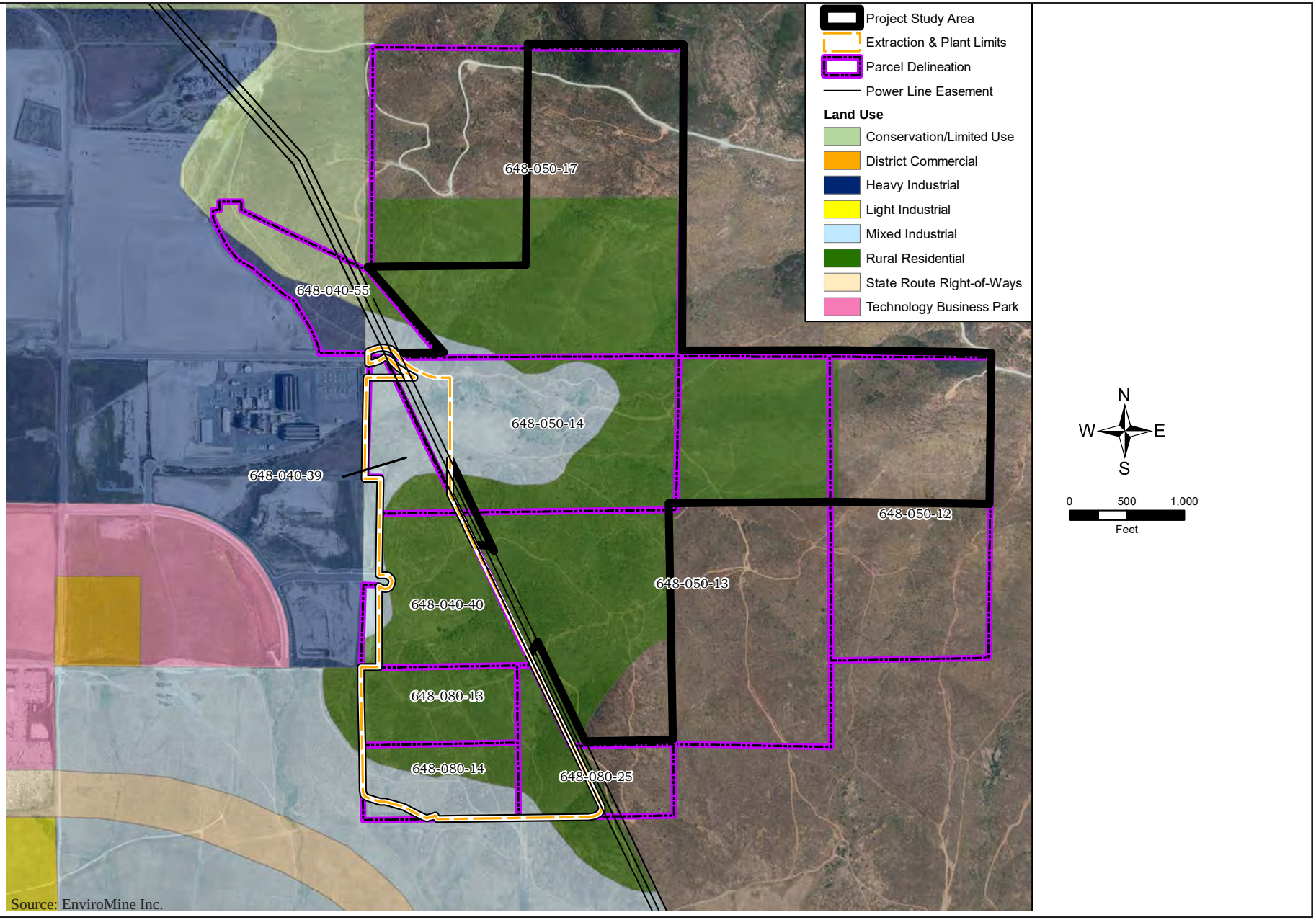
The bulk of the processing activities would take place on an approximate 16.1-acre pad located at the northern portion of the proposed site. The primary processing (which includes the use of a jaw crusher) may be extended to the extraction areas using conveyor belts. Some crushing and screening will eventually occur below grade, within the pit area. The hot mix asphalt (HMA) plant, aggregate processing plant, and concrete ready mix plant will be stationary and therefore, will not be relocated. Equipment shown on the southern end of the 16.1-acre pad, including the recycling plant and primary crusher, is portable and will eventually be relocated to the quarry floor as excavation progresses below grade (Figure 7).

Primary Plant

The primary plant is loosely defined as the area required to process the raw material and crush it to a size suitable for further processing and screening. Typically, a primary plant would crush the rock, screen out unusable fines, and deposit the crushed rock in a surge pile for use by the secondary plant. The primary plant is independent of the secondary plant and can be used without operating the secondary plant. It is anticipated that the primary plant would consist of a jaw crusher, a screen, and a primary crusher. Depending upon the distance from the processing plant, it may be feasible to use a remote jaw crusher and overland conveyor to move materials to the secondary processing plant.

Secondary Plant

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 end product specifications. Materials washing would require construction of a 90- by 160-foot pond to recycle and store water. Measures have been incorporated into the project that will minimize the potential for the pond to be an attractive nuisance for wildlife. Finished



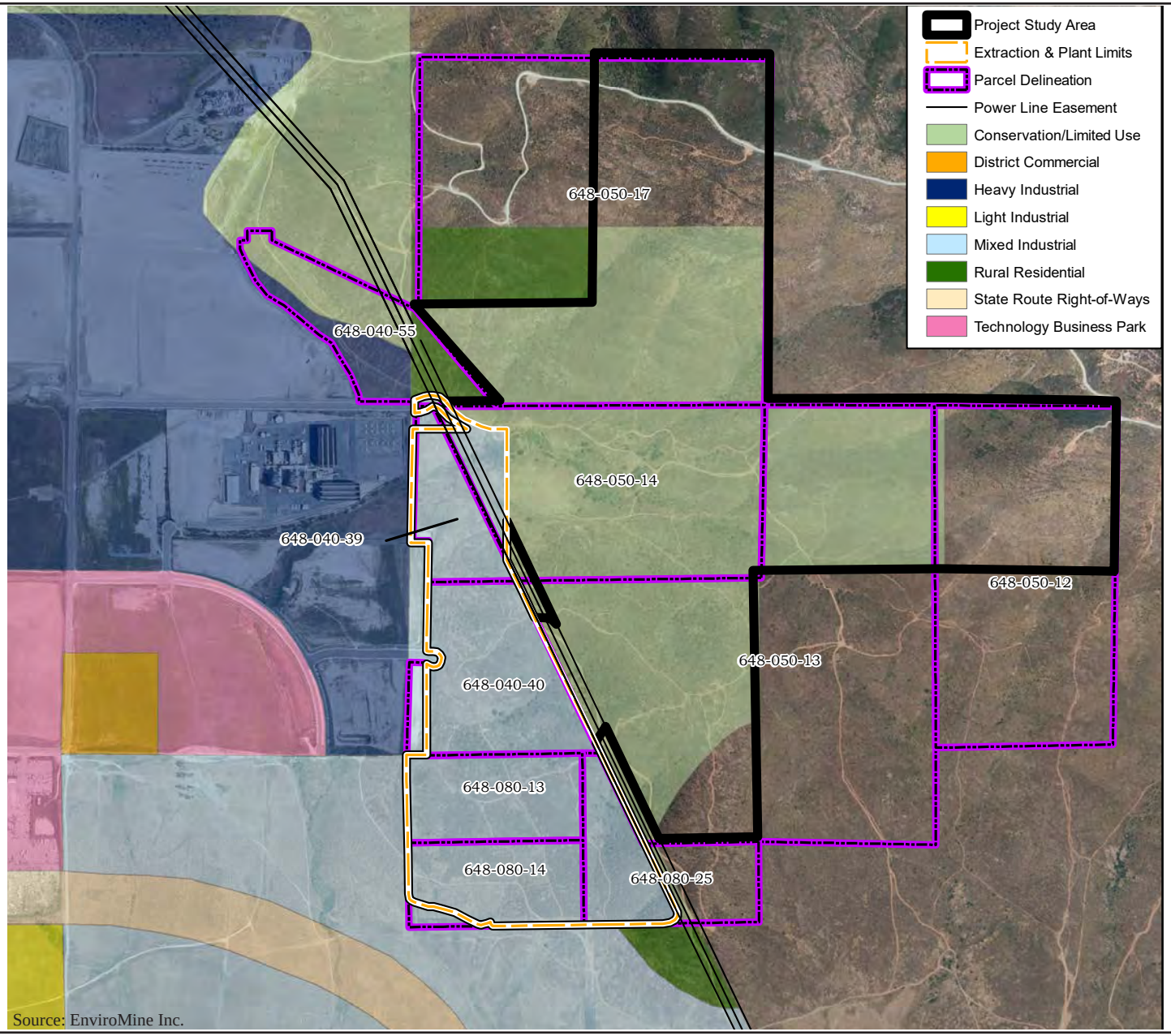
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Existing Land Use

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

Figure 6a



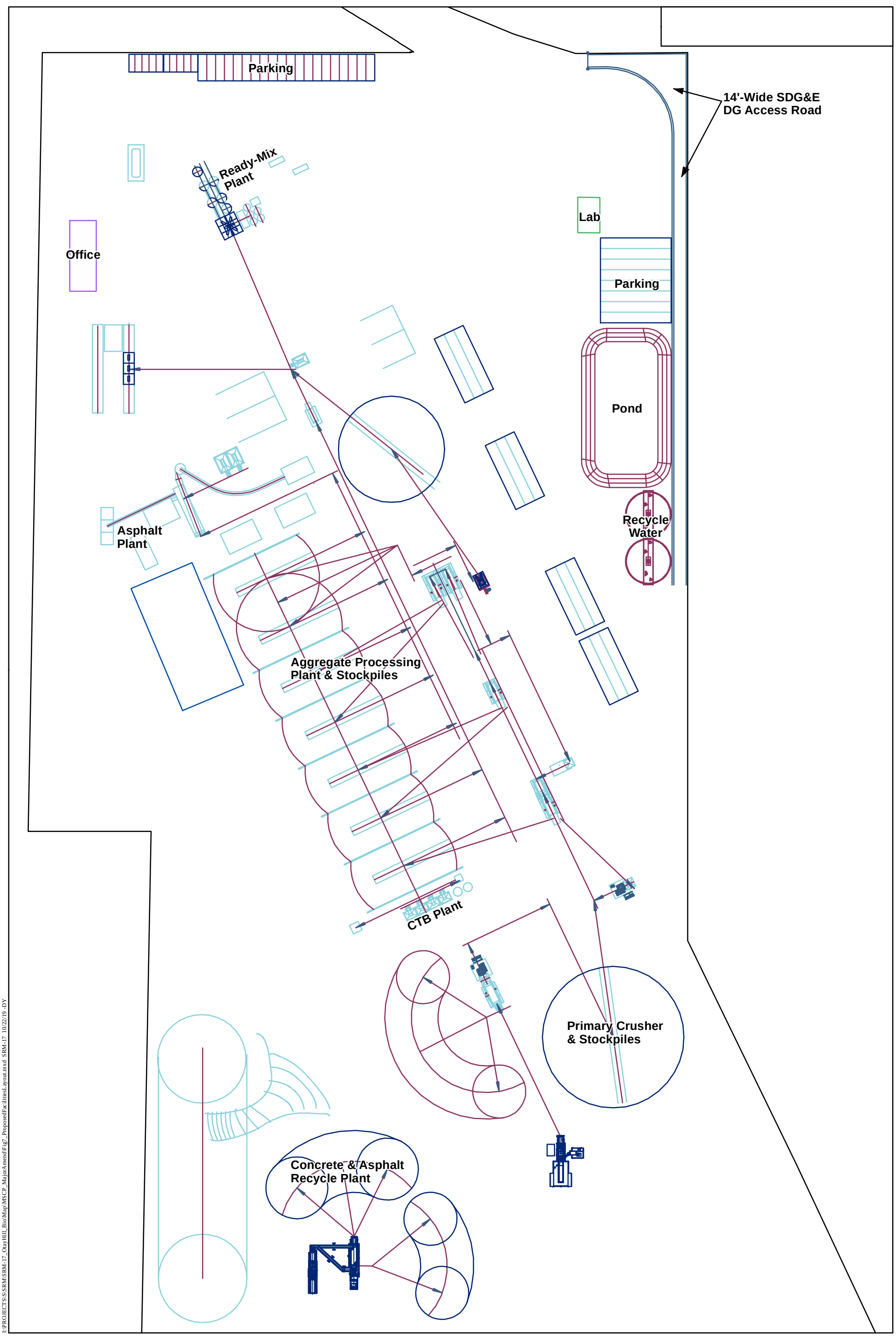
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Proposed Land Use

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

Figure 6b



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Proposed Facilities Layout

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

Figure 7

aggregate would be stockpiled and/or stored in overhead loading bins. The stockpiles would be approximately 35 feet in height. The aggregate would then be loaded onto trucks either with a front-end loader or by gates on the bottom of overhead loading bins. Prior to leaving the development footprint, loaded trucks would be top-watered to prevent fugitive dust and would pass across a scale to determine the total weight of the truck and identify the type and weight of the aggregate.

Operation of the processing plants would require approval of permits from the San Diego Air Pollution Control District (APCD). Dust would be controlled by state-of-the-art dust control system using the best available control technology (BACT; APCD 2011) with full review and monitoring by the APCD. The BACT may include measures such as covered screens or water spray systems for screens and material transfer points.

Concrete Batch Plant

A concrete batch plant would be located within the development footprint. The plant would likely be set up so that materials could be conveyed directly from the aggregate stockpiles to the concrete batch plant. Within a concrete batch plant, appropriate quantities of aggregate of various types (i.e., sand and rock), cement, and water are weighed to make up a batch of concrete. These materials are then discharged into a mixer drum on a ready mix concrete truck. A concrete batch plant is relatively quiet, and compliance with the APCD permits requiring BACT would ensure a relatively emissions- and dust-free operation.

Asphaltic Concrete Batch Plant

An asphaltic concrete batch plant also would be located within the development footprint. The plant would likely be set up so that materials could be conveyed from the aggregate stockpiles for direct loading of the asphalt plant by conveyor. The asphalt plant would discharge the various types of aggregate into a large rotating drum, where the aggregate would be heated to drive off water. The heated materials would then be mixed with asphalt to make asphaltic concrete. An asphaltic concrete plant is also relatively quiet, and compliance with APCD permits requiring BACT would ensure a relatively emissions- and dust-free operation.

Cement Treated Base Plant

A cement treated base plant would be located within the development footprint. Cement treated base is a rock/sand mixture that has been mixed with cement powder to provide improved strength and stability for highway and foundation projects.

Recycling of Concrete and Asphalt Products

Efficient use of resources requires that all used concrete and asphalt products (also known as construction and demolition materials) be recycled for beneficial use. This process involves the import of used concrete and asphalt materials that have been salvaged from redevelopment and/or reconstruction projects. These materials are crushed and then exported for use as road base or as

a foundation material. These materials may also be blended with crushed rock originating from the development footprint to improve performance characteristics.

Office Buildings

Buildings associated with the aggregate plant within the development footprint would likely include an office building, a small truck scale office, and a small maintenance shop. These facilities would be located near the secondary plant. Operations would likely employ approximately 10 to 15 persons, and parking within the development footprint is proposed.

Truck Access

Operations would produce approximately 0.6 to 1.6 million tons of aggregate annually during the most active phase of activity. There would be no trips related to mining or landfilling activities during Phase 1. It is anticipated that less than 148 average daily passenger care equivalent (PCE) trips would be experienced during this time. During Phase 2, truck trips would be limited to trips required for the extraction operation and materials imports for the onsite processing facilities. There would be no trips related to landfilling activities during Phase 2. Operations would produce approximately 0.6 to 1.6 million tons of aggregate annually. This level of activity would result in 1,332 PCE trips per day, related to Phase 2 and Phase 3 activities and based on an average production scenario. During Phase 4, 390 PCE trips on an average day would result from imported material and landfilling operations. Therefore, 1,722 average daily PCE trips should be expected when both extraction and Inert Debris Engineered Fill operations are occurring (Phases 3 and 4)

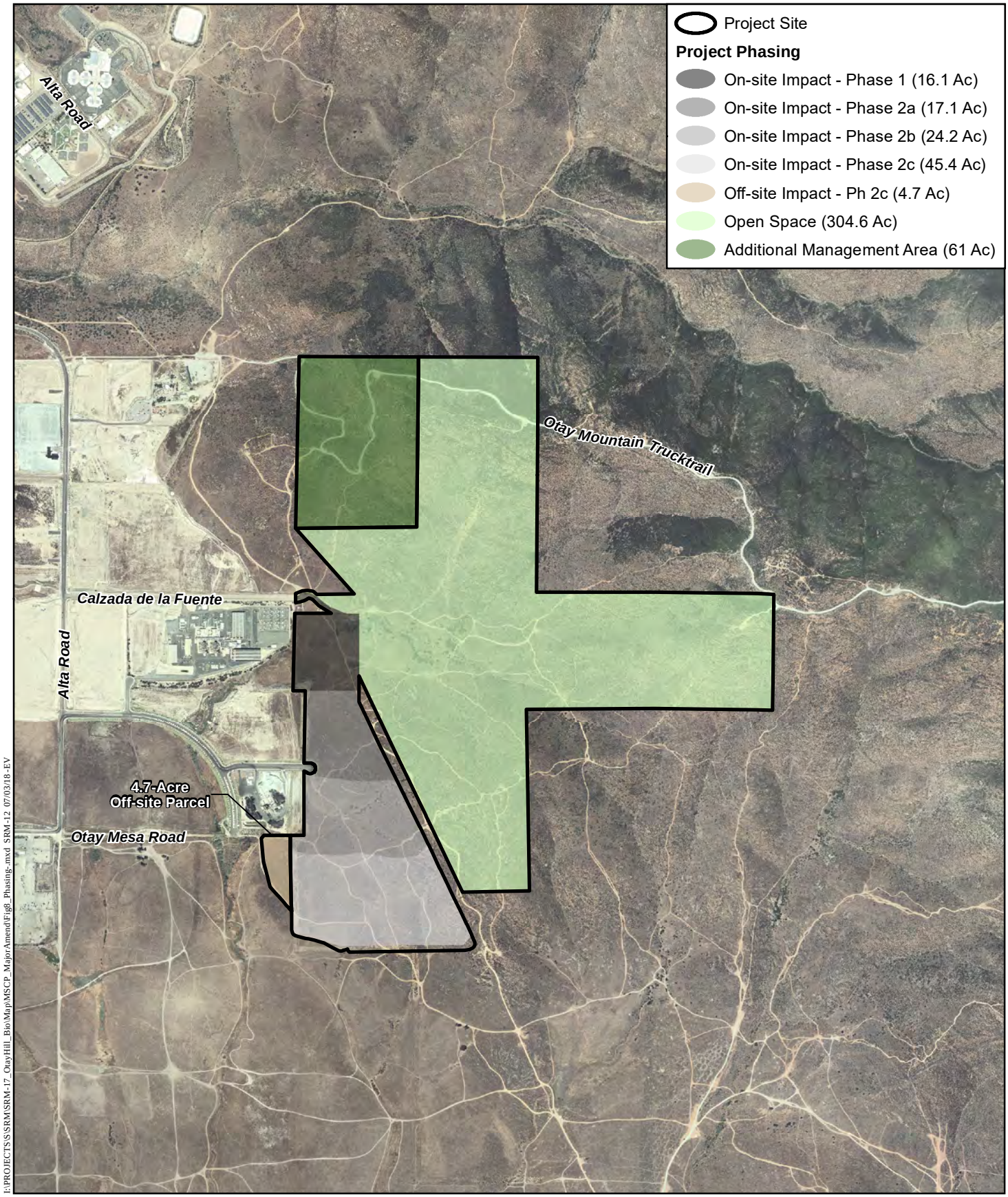
Primary access to the site would be from Calzada de la Fuente, a dedicated access road that connects the northern end of the site with Alta Road. The access road connects with Alta Road approximately one-half mile north of the intersection with Otay Mesa Road.

Phasing

The proposed mineral resource recovery 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 of the Project would allow reclamation to progress concurrently with the extraction operation. The phases would include Phase 1 Site Preparation, Phase 2 Extraction to Natural Grade Elevation, Phase 3 Open Pit Extraction, and Phase 4 IDEFO, as further discussed below and shown on Figure 8.

<u>Phase 1 – Site Preparation</u>

Phase 1 would be located in the northern portion of the development footprint (Figure 8). Site preparation would involve initial grading to establish access routes; extending water and power service to the development footprint; grading pad areas for processing plant location; and constructing the processing plant, concrete batch plant, asphalt plant, cement treated base plant, and site office. Phase 1 would consist of cutting the landform to create a relatively flat working surface for the processing plant. This initial phase would include approximately 16.1 acres within the development footprint, plus associated activities required to construct the access road.



Project Location/Phasing

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

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N 0 1,500 Feet

Figure 8

Activities in Phase 1 are expected to continue for about one year. Refer to Figure 7 for the proposed facilities layout. A fence would 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.

Phase 2 – Extraction to Natural Grade Elevation

Phase 2 would involve commencement of extractive operations within the development footprint (Figure 8). This phase is divided into three sub-phases with Phase 2a occurring in the north and ending with Phase 2c in the south. Phase 2 would consist of cutting the landform to the natural grade elevation that exists along the western perimeter of the development footprint. During Phase 2a, aggregate resources would be recovered immediately adjacent to Phase 1 and over an approximately 17.1-acre area of the development footprint (Figure 8). Extractive operations in Phase 2a are expected to remove 4.2 million tons and would continue for approximately 4.5 years depending on the demand for aggregate resources. Phase 2b would commence upon completion of extraction operations within Phase 2a.

Phase 2b operations would include extraction of material from an approximately 24.2-acre area and is expected to continue for approximately 5.5 years depending on the demand for aggregate resources. This phase is expected to remove 4.7 million tons of material.

Phase 2c operations would begin immediately following the completion of extraction operations within Phase 2b. Phase 2c would consist of extracting approximately 10.5 million tons of material from the remainder of the extraction footprint (approximately 45.4 acres). This phase is expected to continue for approximately 11 years depending on the demand for aggregate resources.

As operations progress in Phase 2, slope areas within Phases 1 and 2 would be seeded with a non-invasive erosion control mix. Phase 2 would consist of cutting the landform to the natural grade elevation that exists along the western perimeter of the site. Slopes that are seeded along the eastern perimeter of the pit would be used as a biological buffer adjacent to sensitive habitats proposed to be set aside by the Project to the east of the proposed extractive operations. Salvaged topsoil from the site and a native seed mix would be used for these areas.

Phase 3 – Open Pit Extraction

At the completion of Phase 2, mine operations would continue to Phase 3 (Figure 8). Like Phase 2, Phase 3 is divided into sub-phases. Phases 3a through 3d would also progress in a north to south direction. Extraction operations that would occur during Phases 3b through 3d would extend to a maximum depth of approximately 525 feet from the existing grade, unless groundwater (not storm water) is encountered in the pit. If groundwater is encountered, excavation will halt at that elevation and reclamation will begin within one year. As part of the reclamation process, the site would be used as an IDEFO. Backfilling is expected to continue throughout the Phase 3 operations on a phase-by-phase basis.

The Phase 3a operations would involve additional extraction of material from an approximately 8.5-acre area that would extend below the finished grade to form a sub-grade depression. Phase 3a

extraction operations would extend below the Phase 2a area and have a maximum depth of approximately 285 feet from the existing grade. This phase is expected to remove approximately 2.9 million tons and would continue for approximately three years, depending on the demand for aggregate resources. As extraction operations advance in Phase 3a and space becomes available, backfilling of the Phase 3a sub-grade depression would commence. Inert fill material would be used to backfill the depression. Phase 3b operations would consist of extracting approximately 12.2 million tons of material from an approximately 22.1-acre area over approximately 12 years depending on the demand for aggregate resources.

It is anticipated that Phase 3c would extract approximately 18.3 million tons of material from an approximately 22.1-acre area over approximately 18 years depending on the demand for aggregate resources. Lastly, Phase 3d operations are expected to extract 32.6 million tons from an approximately 33.7-acre area over approximately 33 years (±1 year) depending on the demand for aggregate resources.

Phase 4 – Inert Debris Engineered Fill Operations

As extraction operations advance in Phase 3, the pit would be backfilled with inert fill material (fill dirt) on a phase-by-phase basis. The rate of backfill is estimated at 500,000 cubic yards per year. This backfill rate was determined by studying backfill rates at other sites in San Diego County. Throughout the phased mine plan, fill material that is used for backfilling would be compacted to form pad areas. All fill material would be inspected upon arrival to ensure that contaminated soils or garbage are not present. All backfilling operations would be supervised by a geotechnical engineer to ensure that the materials are adequately compacted to satisfy the needs of the post-mining land use. Inert fill is produced from a variety of sources but typically is a by-product of sub-grade excavations for parking garages or development that results in export of naturally occurring soil. In addition, clean demolition materials from redevelopment projects need to be placed in an inert fill materials site.

Depending on the rate at which fill material is imported to the site, it is anticipated that Phase 4 activities would continue for approximately 64 years throughout the extraction operation and for approximately 15 years beyond extraction operations.

Reclamation

Reclamation would commence upon completion of each phase. Although reclamation would occur in each phase as recovery operations are concluded, these activities would be similar on all areas of the development footprint. Final reclamation would occur when all recovery operations have been completed. These activities would include final grading to establish the final land form, removal of plant equipment, application of topsoil resources, and revegetation.

Following completion of all recovery operations, processing and operating equipment would be removed from the site unless this equipment continues to be used following reclamation. At this time, it is anticipated that the concrete and asphalt plants would remain on the site following reclamation.

Pad areas would be treated with appropriate erosion control measures to stabilize the development footprint against accelerated erosion and sedimentation. The development footprint would be managed in this manner until an appropriate land use is identified. Post-mining land uses would be consistent with the underlying land use designations and will be determined upon reclamation of the site following completion of mining. An application for a SPA was submitted to County that addressed the land use concerns associated with long-term use of the Project site following the end of mining operations. The SPA would change the designation of approximately 36.3 acres of Mixed Industrial land to Conservation/Limited Open Space. These lands are found to the north and east of the Project site. In addition, approximately 81.1 acres of land currently designated Rural Residential would be designated as Mixed Industrial.

Portions of the slopes would be seeded as a biological buffer adjacent to sensitive biological habitats proposed to be set aside by the Project Proponent as construction of the slopes is completed. The OHCA dedications would occur on undisturbed lands located to the east of the proposed extractive operations prior to initiation of impacts. A fence would be placed along the outside edge of extraction areas during construction for safety and security reasons. The fencing will be chain link or similar fencing material. The fence also would help keep people out of the OHCA.

2.2 ACTIVITIES COVERED BY THE PERMIT

Activities proposed for coverage under the HCP that may result in direct impacts to Proposed Covered Species are vegetation clearing, grading, blasting, material extraction, and ancillary activities in the approximately 102.7-acre quarry and landfill development footprint. With the inclusion of the "impact neutral" area along the southern boundary of the site, the total MUP project area will be approximately 105 acres. Additionally, 4.7 acres of existing open space on the Otay Crossings Commerce Project to the west will be isolated by the proposed activity and are, therefore, considered impacted. The future land use of the 4.7-acre parcel will be determined through a separate action. It is anticipated that direct impacts to Proposed Covered Species would likely be limited to initial vegetation clearing, which is expected to occur over the entire development footprint within the first 16 years during Phases 1 and 2; thereafter, the development footprint area will be maintained in a cleared/disturbed state.

The activities listed above may result in indirect impacts to Proposed Covered Species including noise, invasive plant species, human activity/domestic animals, night lighting, fugitive dust, and animal pitfalls. Indirect impacts are anticipated to diminish over time as the grade separation between the quarry floor and OHCA increases. Indirect impacts are not expected to be significant after completion of Phase 2, which is expected to be completed within approximately 23 years of project initiation. Project minimization measures will further reduce these effects as discussed further below.

There is also the potential that some inadvertent take of small numbers of QCB could occur during habitat management activities as a result of trampling of QCB larvae and host plants. Minor trampling could also occur to sensitive plants; however, known sensitive plant and nest locations will be recorded and impacts will be avoided as much as possible during habitat management activities. This HCP authorizes incidental take of Proposed Covered Species through the expiration

of the current MSCP Subarea Plan in 2048. If additional take authorization is deemed necessary after 2048, an extension or a new permit would be required.

3.0 AFFECTED ENVIRONMENT

3.1 LOCATION

The 414.4-acre Project site is 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 (Figures 1 and 2). The Project is 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). Within the Project site, the development footprint, OHCA, and AMA are shown on Figure 5 in relation to the MSCP Subarea Plan Designations.

3.2 GEOGRAPHIC SETTING

The Project is located within the foothills of the San Ysidro Mountains (Figure 2). Topographically, the Project site is composed of generally parallel ranges of steep-sloping hills and mountains separated by alluvial valleys. Elevation in the western portion of the Project site ranges from 600 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 Project site is undeveloped and consists of several low hills at the western foothills of the San Ysidro Mountains. Numerous dirt roads cross the Project site. With the exception of Otay Truck Trail, these roads are frequently used illegally by off-highway vehicles (OHVs), especially dirt bikes. Hundreds of dirt bikes and OHVs have been observed on the Project site during surveys. The U.S. Border Patrol traverses the Project site in vehicles and OHVs during daily patrols. In addition, San Diego Gas & Electric (SDG&E) maintains access roads on the Project site. These activities degrade the biological resources on the Project site but not to an extent that appreciably decreases their value.

The southern boundary of the Project site abuts the boundaries of the proposed East Otay Mesa Recycling and Collection Center Landfill. The final footprint of this facility has not yet been determined, and no permits have been issued. The land is undeveloped and similarly impacted by OHVs and the U.S. Border Patrol.

The San Ysidro Mountains and foothills lie north and east of the development footprint 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 Biological Resource Core Area (BRCA; County 2010a) that support a high concentration of sensitive biological resources, which if lost or fragmented, could not be replaced or mitigated elsewhere. Additionally, the Otay Mountain Cooperative Land and Wildlife Management Area managed by the BLM lies east of the

Project site. The Otay Mountain Truck Trail, which crosses the northern portion of the Project site, provides access to this BLM-managed land. 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 U.S. Border Patrol, fewer than 1,000 recreationalists use the trail each year.

Undeveloped land and industrial complexes surround the development footprint. The closest existing development to the development footprint is a power plant on a lot abutting the western edge of the footprint; the land adjacent to the remainder of the western boundary is undeveloped although much of the western edge abuts pads that have been graded for future development. A small portion of the southwestern portion of the development footprint abuts open space on the Otay Crossings Commerce Park project. The George F. Bailey County Detention Facility is located approximately one mile to the northwest and the R.J. Donovan State Correctional Facility is located approximately 1.1 miles to the northwest. West and southwest of the development footprint, starting approximately one-half to one mile away and spreading westward, are industrial developments consisting of large buildings, automobile and/or equipment yards, and a municipal, small-airplane airport (Brown Field). Undeveloped lots are scattered between the various facilities.

The closest mapped recreational facility to the development footprint is Lower Otay County Park, approximately two miles to the north.

Scattered rural residential uses nearby consist of five private residential farms/ranches located within approximately two miles of the development footprint. The properties include facilities for animals, such as horses and sheep, and multiple usable and derelict vehicles, as well as homes and scattered outbuildings.

The U.S.-Mexico international border is located approximately 0.75 mile south of the development footprint. Land uses on the Mexican side of the border consist of undeveloped lands and industrial portions of the City of Tijuana, as well as some multi-family residential development.

3.4 GEOLOGY, SOILS, CLIMATE, AND HYDROLOGY

The Project site 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 (i.e., formed below the surface) rocks 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 Project site) 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 two million years old) alluvium, colluvium, and topsoil.

Soils on the Project site consist almost entirely of San Miguel-Exchequer rocky silt loam (nine to 70 percent slopes), which is typically found in mountainous uplands and consists of silt loams with a clay subsoil (Figure 9). Some of the western portion of the Project site consists of Huerhuero loam (nine to 70 percent slopes), which typically consists of loams with a clay subsoil developed from sandy marine sediments (Bowman 1973).

The Project site 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). Climatic conditions are characteristically Mediterranean, with mild temperatures year-round, though summer temperatures often exceed 90 degrees Fahrenheit and winter temperatures occasionally dip to freezing. Most of the rainfall is during the months of December through March; average annual rainfall is less than 12 inches per year.

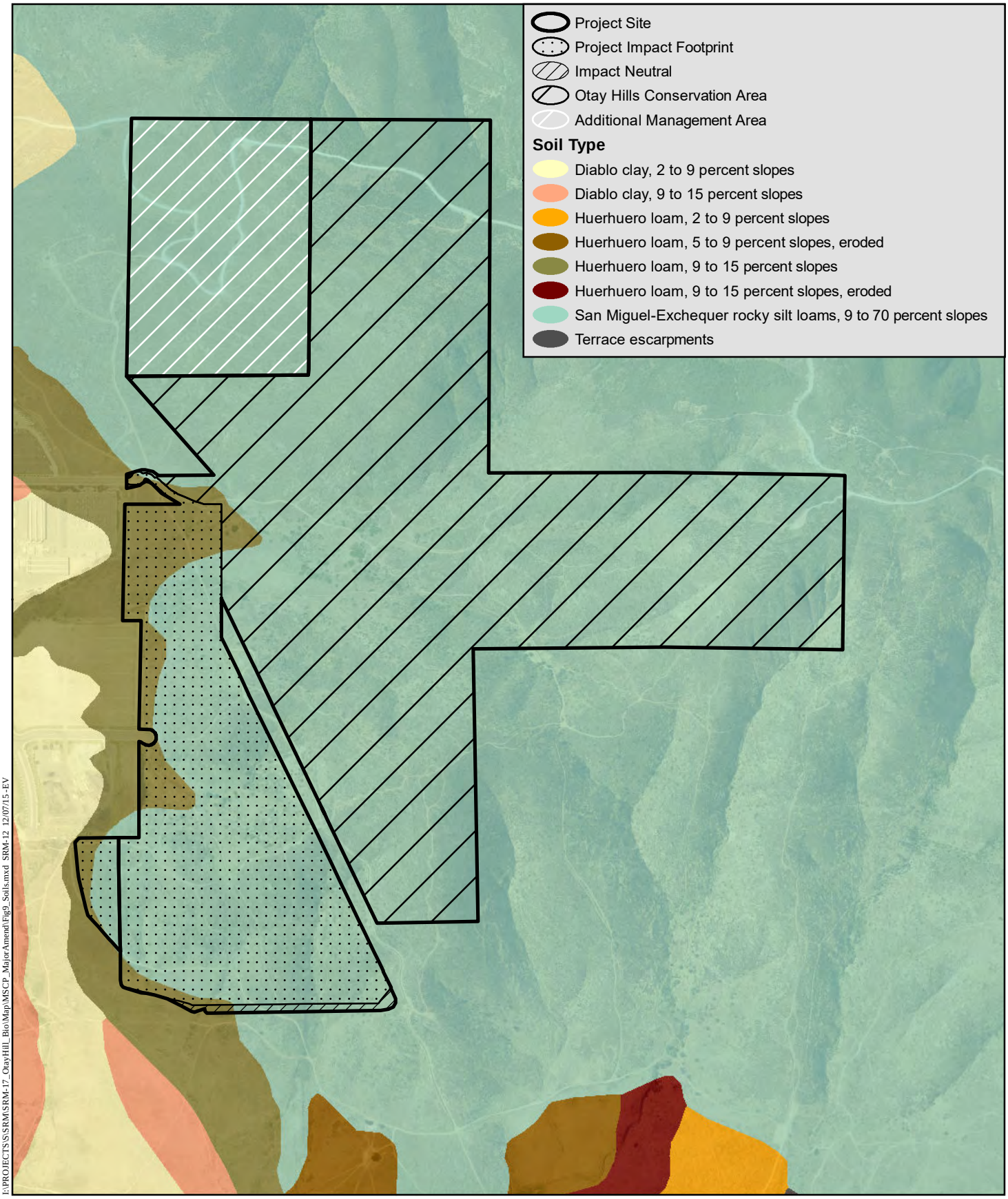
The Project site is located within the 470-square-mile Tijuana Hydrologic Unit, which is drained by Cottonwood and Campo creeks. Although these creeks are not in the vicinity of the Project, they are tributaries to the Tijuana River that lies approximately two miles south of it. The development footprint has an overall slope from east to west with a portion of the runoff collecting in an ephemeral stream that runs through the northern portion of the development footprint, and the remainder of the runoff flows through the southern portion of the development footprint. The stream descends from the San Ysidro Mountain Range, which lies to the northeast and drains into the Tijuana River within the boundaries of Mexico.

Due to the fairly steep topography on the Project site 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. 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 Project.

3.5 VEGETATION COMMUNITIES/HABITATS

The Project site was burned during a fire that swept through the area in 1997 and has not burned since. Vegetation has largely recovered and has moderate cover of perennial species. As a general characterization of the Project site, the south-facing slopes support thinner soils and are more sparsely vegetated. The north-facing slopes have deeper, heavier soils, support more vegetation, and support the majority of the sensitive annual plant species. Openings in the vegetative canopy are common, especially on the south-facing slopes.

In addition to developed land, 12 vegetation communities/habitats occur on the Project site: mule fat scrub, cismontane alkali marsh, southern interior cypress forest, disturbed wetland, tamarisk scrub, native grassland, Diegan coastal sage scrub (including disturbed), coastal sage-chaparral



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Soils Map

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 1,000 Feet

Figure 9

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scrub, chamise chaparral, southern mixed chaparral, non-native grassland, and disturbed habitat (Figure 10; Table 2; HELIX 2019).

Table 2
VEGETATION COMMUNITIES/HABITATS ON AND OFF SITE
(acres)[3]

VEGETATION COMMUNITY/HABITAT[1]	TIER[2]	ON SITE	OFF SITE	TOTAL
Mule fat scrub (63310)	I	0.03	0.00	0.03
Cismontane alkali marsh (52310)	I	0.34	0.00	0.34
Southern interior cypress forest (83330)	I	0.5	0.0	0.5
Disturbed wetland (11200)	1	0.01	0.0	0.01
Tamarisk scrub (63810)	I	0.10	0.00	0.10
Native grassland (42100)	I	1.2	0.0	1.2
Diegan coastal sage scrub (including disturbed; 32500)	II	284.1	2.5	286.6
Coastal sage-chaparral scrub (37G00)	II	5.4	0.0	5.4
Chamise chaparral (37200)	III	14.8	0.0	14.8
Southern mixed chaparral (37120)	III	38.6	0.0	38.6
Non-native grassland (42220)	III	45.4	2.0	47.4
Disturbed habitat (11300)	IV	18.4	0.2	18.6
Developed land (12000)	IV	0.7	0.0	0.7
	TOTAL	**409.7**	**4.7**	**414.4**

[1] Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008).
[2] Tiers refer to County MSCP Subarea Plan habitat classification system.
[3] Upland habitats are rounded to the nearest 0.1 acre. Wetland habitats are rounded to the nearest 0.01. Totals reflect rounding.

Eleven sensitive vegetation communities are present on the Project site (i.e., all vegetation communities/habitats except disturbed habitat and developed land) and include mule fat scrub, cismontane alkali marsh, southern interior cypress forest, disturbed wetland, tamarisk scrub, native grassland, Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub, chamise chaparral, southern mixed chaparral, and non-native grassland. Each vegetation community/habitat present is described below.

Mule Fat Scrub

Mule fat scrub is a 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). On the Project site, mule fat scrub is dominated by mule fat; other species include arroyo willow (*S. lasiolepis*), tamarisk (*Tamarix* sp.), and broom baccharis (*B. sarothroides*).

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.). On the Project site, cismontane alkali marsh is dominated by San Diego marsh-elder (*Iva hayesiana*) and southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*).

Southern Interior Cypress Forest

Southern interior cypress forest is a fairly dense, fire-maintained, low forest dominated by piute cypress (*Hesperocyparis* [*Cupressus*] *nevadensis*), Tecate cypress (*H.* [*C.*] *forbesii*), or Arizona cypress (*H.* [*C.*] *stephensonii*). This forest often occurs as isolated groves within a matrix of chaparral or piñon-juniper woodland (Holland 1986). On the Project site, southern interior cypress forest is dominated by Tecate cypress with a matrix of chaparral species. The other two cypress species do not occur on the Project site. Tecate cypress is the host plant for Thorne's hairstreak butterfly (*Callophrys thornei*) but Thorne's hairstreak was not observed during surveys and is considered to have very low potential to occur.

Disturbed Wetland

This vegetation community is dominated by exotic wetland species that invade areas that have been previously disturbed or undergone periodic disturbances. These non-natives become established more readily following natural or human-induced habitat disturbance than the native wetland flora. Characteristic species of disturbed wetlands include giant reed (*Arundo donax*), ox tongue (*Picris echioides*), cocklebur (*Xanthium strumarium* var. *canadense*), and tamarisk (*Tamarix* sp.). Dominant species in this plant community within the Proposed Project site include hyssop loosestrife (*Lythrum hyssopifolia*).

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 Project site.

Native Grassland

Native grassland is a vegetation community dominated by perennial bunchgrasses such as purple needlegrass (*Nassella pulchra*) with annual and perennial forbs such as common golden stars

Project Site

Vegetation

- 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).

Additional Management Area

See Inset

Inset

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Existing Vegetation Communities

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N

0 850 Feet

Figure 10

(*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 two patches on northwest-facing slopes in the western portion of the Project site. 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 include purple needlegrass and San Diego needlegrass (*Achnatherum diegoense*).

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 approximately 70 percent of the Project site. 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. An additional 51.8 acres of Diegan coastal sage scrub occurs within the AMA.

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 is located in the eastern end of the Project site and contains floristic elements of both communities including California sagebrush, California buckwheat, laurel sumac, chamise (*Adenostoma fasciculatum*), and Ramona ceanothus (*Ceanothus tomentosus*).

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 on the Project site. Chamise chaparral occurs in the eastern portion of the Project site.

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 on the Project site includes such species as chamise, mission manzanita, and Ramona ceanothus. Southern mixed chaparral occurs primarily in the far northern portion of the Project site. An additional 7.0 acres of southern mixed chaparral occurs in the AMA.

Non-native Grassland

Non-native grassland is a dense to sparse cover of annual grasses. Characteristic species on the Project site 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 Project site and in small patches scattered throughout Diegan coastal sage scrub. This vegetation community is important raptor foraging habitat and may also support special status plant species.

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 ornamentals or ruderal, exotic species) that take advantage of disturbance (previously cleared or abandoned landscaping), or shows signs of past or present animal usage which has reduced the land's capability of providing higher quality wildlife habitat.

On the Project site, disturbed habitat includes dirt roads crisscrossing the area that have been carved through the native vegetation and non-native grassland by dirt bikes and U.S. Border Patrol

vehicles. In addition, SDG&E maintains access roads and transmission facilities on the Project site.

Developed Land

Developed land exists where permanent structures and/or pavement has been placed (preventing the growth of vegetation) or where landscaping is clearly tended and maintained. Developed land consists of a paved roadway (Otay Mountain Truck Trail) in the northern portion of the Project site.

3.6 PROPOSED COVERED SPECIES

There is one non-MSCP Covered Species and 17 MSCP Covered Species proposed for coverage under this HCP (12 animals and nine plants; Table 1). Figures 11a and b shows the location of the non-MSCP Covered Species, the QCB, and Figures 12 and 13 show the locations of the MSCP Covered Species. Appendix A includes a conservation analysis for each of these species. The analysis includes the overall levels of conservation of habitat estimated for each MSCP Covered Species in: 1) the MSCP Preserve; 2) within the County Subarea's portion of the MSCP Preserve; and 3) habitat preserved outside of the MSCP Preserve. The conservation analysis also includes background biological information on each species including habitat characteristics/use, life history, status and distribution, occurrences in the Project area, and threats and conservation needs. The MSCP Area Specific Management Directives for each MSCP Covered Species are included as well as guidelines for management and monitoring of the species and their habitats.

4.0 POTENTIAL BIOLOGICAL IMPACTS/TAKE ASSESSMENT

4.1 DIRECT AND INDIRECT IMPACTS

Impacts would be implemented over time. Direct impacts would occur upon clearing of habitat, which is anticipated to occur within the first 16 years of Project implementation (see Section 2.2). Indirect impacts to Proposed Covered Species could potentially occur as a result of noise, potential introduction of invasive plant species, human activity/domestic animals, night lighting, fugitive dust, and the unintentional creation of animal pitfalls. Indirect impacts are anticipated to diminish over time as the grade separation between the quarry and OHCA increases. Indirect impacts are not expected to be significant after completion of Phase 2, which is expected to be completed within approximately 23 years of project initiation, because the grade separation between the quarry and OHCA at that time will limit these impacts, and project minimization measures will further reduce these effects.

4.1.1 Vegetation Communities/Habitats

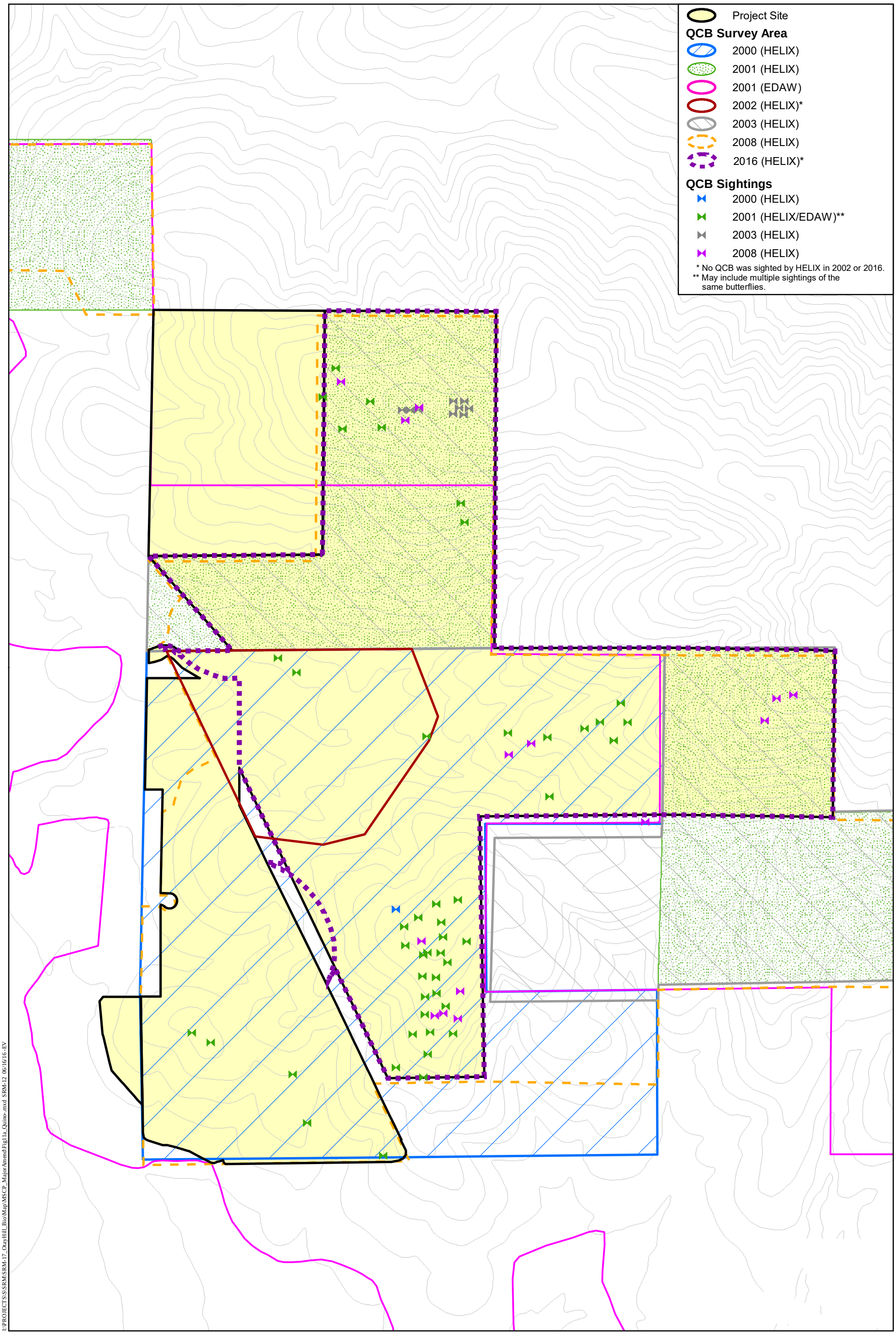
The Project would directly impact approximately 98.7 acres of sensitive vegetation communities/habitats through grubbing, clearing, and grading: 0.27 acre of cismontane alkali marsh, 0.01 acre of disturbed wetland, 0.06 acre of tamarisk scrub, 0.5 acre of native grassland,

66.7 acres of Diegan coastal sage scrub (including disturbed), and 31.1 acres of non-native grassland (Figure 14; Table 3).

Table 3
DIRECT IMPACTS TO VEGETATION COMMUNITIES/HABITATS

VEGETATION COMMUNITY/HABITAT[1]	TIER[2]	ON SITE (acre)[3]	OFF SITE (acre)[3]	TOTAL (acre)[3]	IMPACT NEUTRAL (acre)[3,4]
Mule fat scrub (63310)	I	0.00	0.00	0.00	0.00
Cismontane alkali marsh (52310)	I	0.27	0.00	0.27	0.00
Southern interior cypress forest (83330)	I	0.00	0.00	0.00	0.00
Disturbed wetland (11200)	1	0.01	0.00	0.01	0.00
Tamarisk scrub (63810)	I	0.06	0.00	0.06	0.00
Native grassland (42100)	I	0.5	0.0	0.5	0.0
Diegan coastal sage scrub (including disturbed; 32500)	II	64.2	2.5	66.7	1.0
Coastal sage-chaparral scrub (37G00)	II	0.0	0.0	0.0	0.0
Chamise chaparral (37200)	III	0.0	0.0	0.0	0.0
Southern mixed chaparral (37120)	III	0.0	0.0	0.0	0.0
Non-native grassland (42220)	III	29.1	2.0	31.1	0.2
Disturbed habitat (11300)	IV	8.5	0.2	8.7	1.2
Developed land (12000)	IV	<0.1	0.0	<0.1	0.0
TOTAL		**102.7**	**4.7**	**107.4**	**2.4**

[1] Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008).
[2] Tiers refer to County MSCP Subarea Plan habitat classification system.
[3] Upland habitats are rounded to the nearest 0.1 acre, while wetland habitats are rounded to the nearest 0.01; thus, totals reflect rounding.
[4] Not impacted but also not proposed to be dedicated to open space.



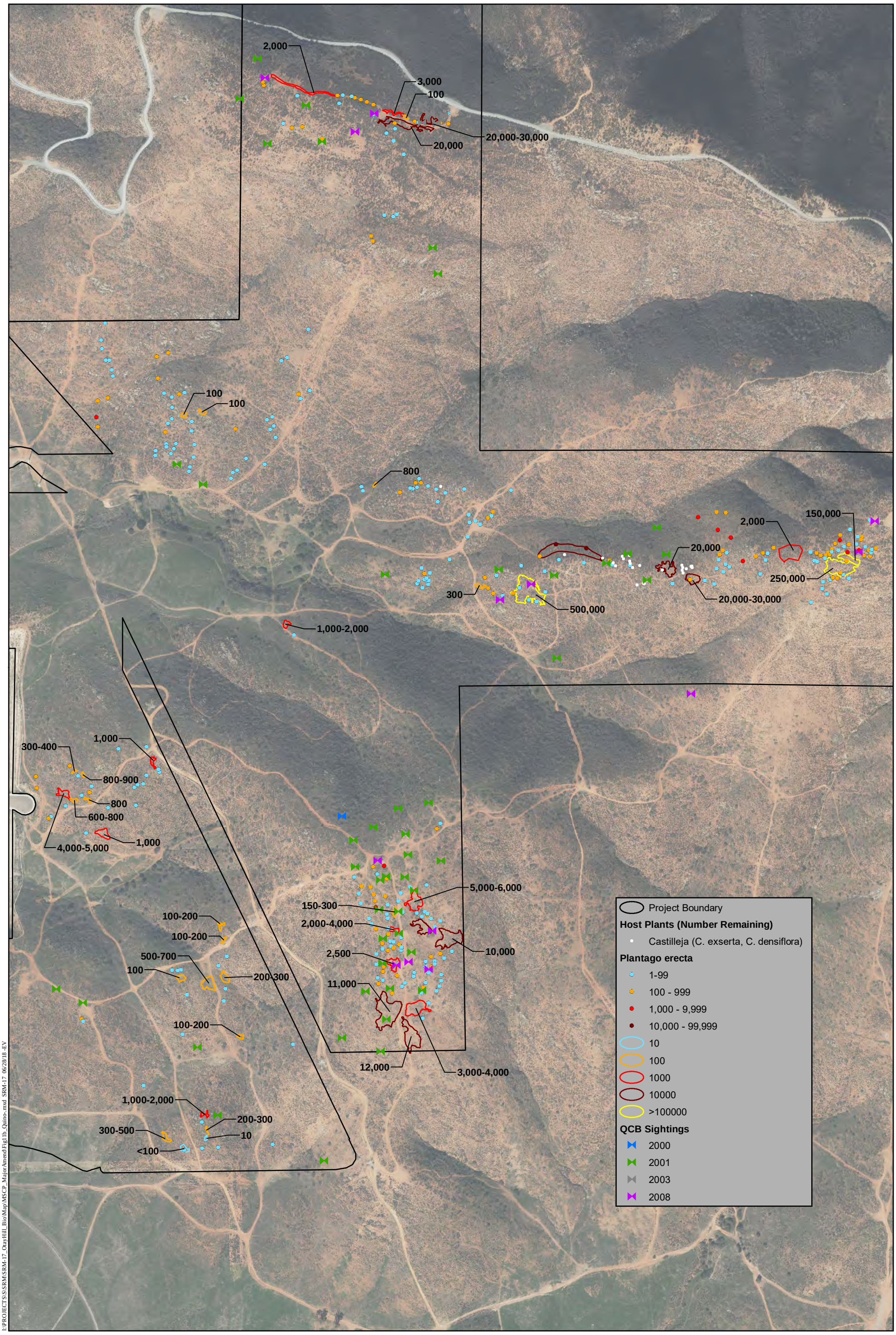
Quino Checkerspot Butterfly (QCB) Survey Limits and Sightings

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 700 Feet

Figure 11a



2016 Quino Checkerspot Butterfly Host Plant Locations

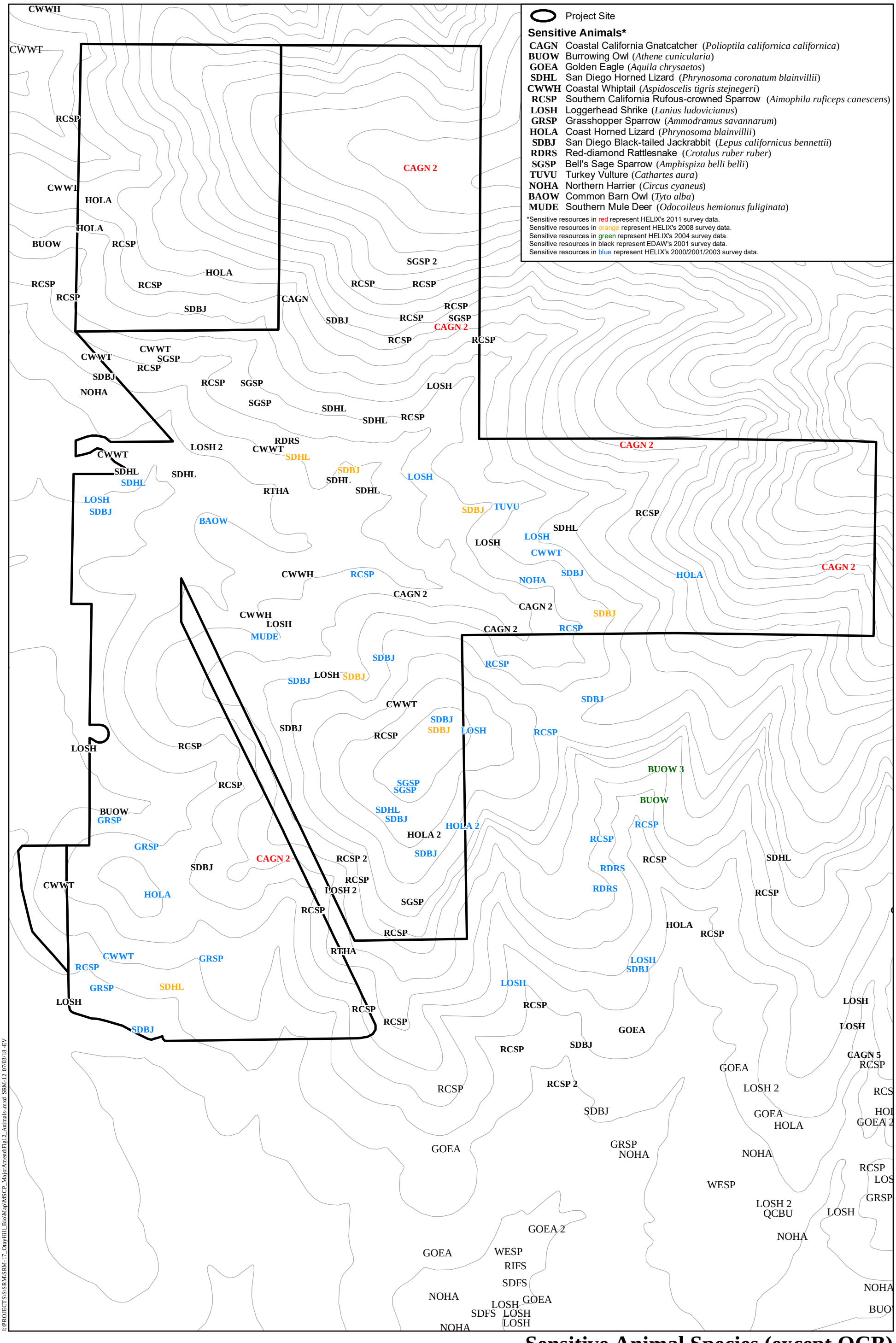
MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N

0 500 Feet

Figure 11b



Sensitive Animal Species (except QCB)

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

Figure 12

Project Site

Sensitive Plants (List A and B)

- **Dc** Otay Tarplant (*Deinandra conjugens*)
- **Cd** Dunn's Mariposa Lily (*Calochortus dunnii*)
- **Sm** Munz's Sage (*Salvia munzii*)
- **Dv** Variegated Dudleya (*Dudleya variegata*)
- **Bc** San Diego Goldenstar (*Bloomeria [Muilla] clevelandii*)
- **Fv** San Diego Barrel Cactus (*Ferocactus viridescens*)
- **Ih** San Diego Marsh-elder (*Iva hayesiana*)
- **Cf** Tecate Cypress (*Hesperocyparis [Cupressus] forbesii*)
- **Co** Orcutt's Bird's Beak (*Cordylanthus orcuttianus*)
- **Cdd** Summer Holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)
- **Lg** Gander's Pitcher Sage (*Lepechinia ganderi*)

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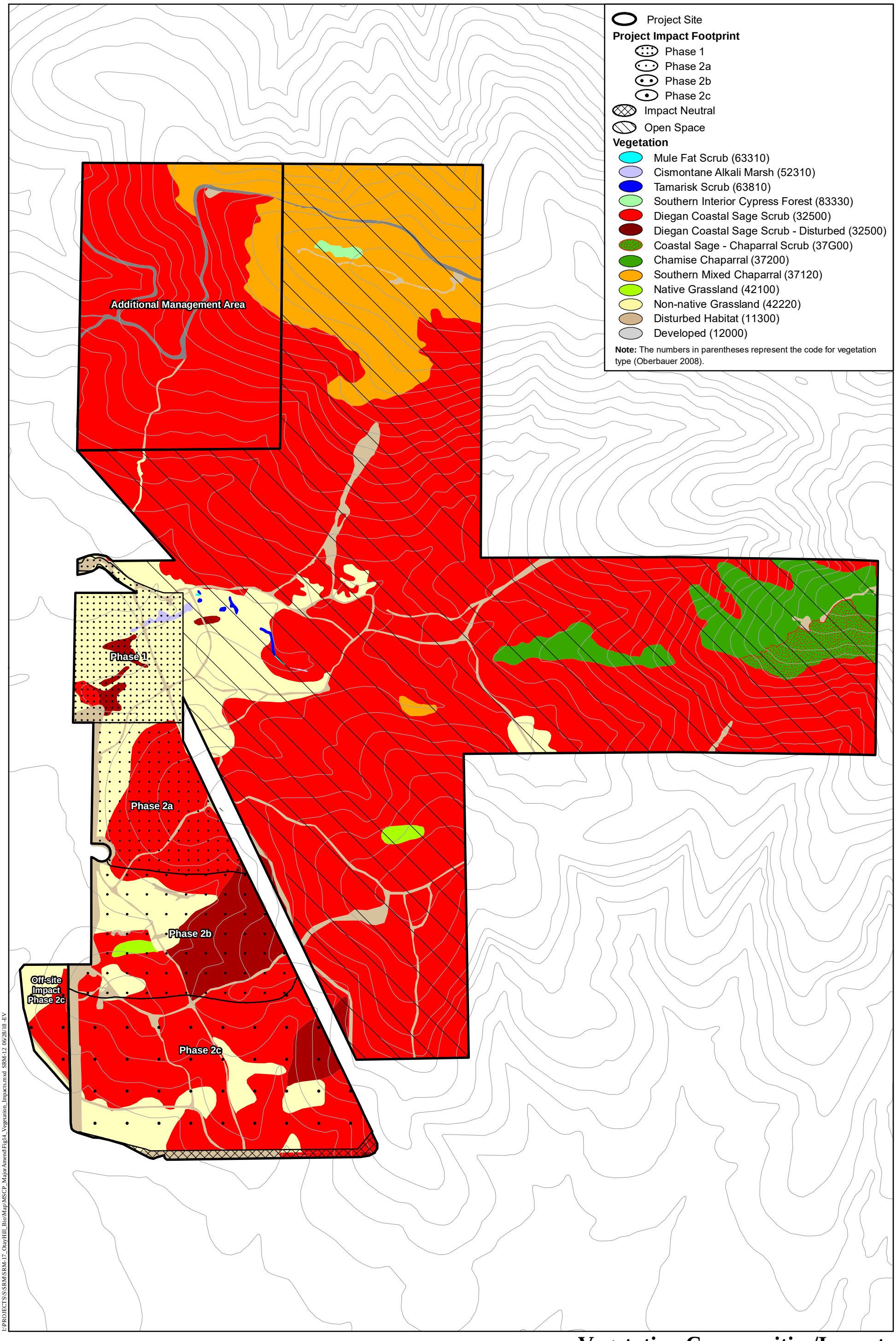
Federal, State, and County (List A and B) Sensitive Plant Species/Impacts

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 600 Feet

Figure 13



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Vegetation Communities/Impacts

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 650 Feet

Figure 14

Table 4 summarizes impact by Phase.

Table 4
DIRECT IMPACTS TO VEGETATION COMMUNITIES BY PHASE

VEGETATION COMMUNITY/HABITAT[1]	PHASE 1 (acre)[2]	PHASE 2A (acre)[2]	PHASE 2B (acre)[2]	PHASE 2C[3] (acre)[2]	TOTAL (acre)[3]
Mule fat scrub (63310)	0.0	0.0	0.0	0.0	0.0
Cismontane alkali marsh (52310)	0.27	0.0	0.0	0.0	0.27
Southern interior cypress forest (83330)	0.0	0.0	0.0	0.0	0.0
Disturbed wetland (11200)	0.01	0.0	0.0	0.0	0.01
Tamarisk scrub (63810)	0.06	0.0	0.0	0.0	0.06
Native grassland (42100)	0.0	0.0	0.5	0.0	0.5
Diegan coastal sage scrub (including disturbed; 32500)	1.8	13.5	16.4	35.0	66.7
Coastal sage-chaparral scrub (37G00)	0.0	0.0	0.0	0.0	0.0
Chamise chaparral (37200)	0.0	0.0	0.0	0.0	0.0
Southern mixed chaparral (37120)	0.0	0.0	0.0	0.0	0.0
Non-native grassland (42220)	12.0	3.2	6.1	9.8	31.1
Disturbed habitat (11300)	1.6	1.5	2.5	3.2	8.7
Developed land (12000)	0.0	0.0	0.0	0.0	0.0
TOTAL	**15.7**	**18.2**	**25.5**	**48.0**	**107.4**

[1] Vegetation categories and numerical codes are from Holland (1986) and Oberbauer (2008).
[2] Upland habitats are rounded to the nearest 0.1 acre, while wetland habitats are rounded to the nearest 0.01; thus, totals reflect rounding. The phase acreages in the project description (Section 2.1) reflect the excavation footprint used to calculate aggregate yield. The acreages in this table and in the phased funding calculation (Section 7.1) are more inclusive, and conservatively assume impacts all the way to the project boundary.
[3] Phase 2c includes 4.7-acre off-site impacts to the Otay Crossings Commerce Park open space parcel.

4.1.2 Regional Context, Wildlife Movement, and Nursery Sites

Two types of wildlife corridors potentially occur on the Project site: local and regional. Local corridors provide animals with access to resources such as food, water, and shelter. Animals can use these corridors (such as the hillsides and tributary drainages to the main drainage on the Project site) to travel from riparian to upland habitats and back. Regional corridors allow for animal movement between large core areas of habitat that are regionally important. They include major creeks and rivers, ridges, valleys, and large swaths of undeveloped land.

The Project site serves as a key component enabling gene flow of many sensitive plant and animal species that move between the Project site and adjacent open space to the north, south, and east, and a small area of open space on the Otay Crossings Business Park to the southwest. The project will isolate this open space area on Otay Crossings Business Park and will be treated as part of the project impact area. Existing development occurs adjacent to the northwestern portion of the development footprint (the AMA), and already approved development (Otay Crossings Commerce Park and partially constructed Paseo De La Fuente) occurs along the remainder of the western boundary of the development footprint. The presence of several raptor nests on the Project site demonstrates the importance of the area to raptor species. These species forage in undeveloped

lands located both within and outside of the Project site boundary. Sightings of the federally endangered QCB over multiple years on the Project site demonstrate that the Project site contains habitat for this species.

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 (Figure 15) that support the QCB (Figure 16). Therefore, the Project site would continue to provide regional landscape level conservation function.

4.2 ANTICIPATED TAKE OF COVERED WILDLIFE SPECIES

Incidental take of Covered Wildlife Species could occur in the form of harassment, harm, injury, or mortality. Direct impacts that could result in incidental take of Proposed Covered Species would occur through the permanent removal of habitat, which is expected to be completed by year 16. Direct impacts to QCB adult locations and host plants are shown on Figure 16. Covered Wildlife Species excluding the QCB are shown on Figure 17. There is also the potential that some inadvertent take of small numbers of QCB could occur during habitat management activities as a result of trampling of QCB larvae and host plants. Minor trampling could also occur to sensitive plants; however, known sensitive plant and nest locations will be recorded and impacts will be avoided as much as possible during habitat management activities.

Incidental take of Covered Wildlife Species also has the potential to occur from the indirect impacts that could result from noise, colonization of non-native invasive plant species, human activity/domestic animals, night lighting, fugitive dust, and animal pitfalls. Indirect impacts associated with noise and fugitive dust are not expected to be significant after completion of Phase 2, which is expected to be completed within approximately 23 years of project initiation, because the grade separation between the quarry and OHCA at that time will limit these impacts. Other indirect impacts such as animal pitfalls and human access will be minimized by fencing, as discussed below for each potential indirect impact.

Noise. Noise from such sources as grading, grubbing, vehicular traffic, and extraction and processing activities (includes blasting) would impact the coastal California gnatcatcher, southern California rufous-crowned sparrow, burrowing owl (should it re-occur on site), and northern harrier (should it nest on site). Construction of the facility, aggregate extraction, and processing



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Regional Context

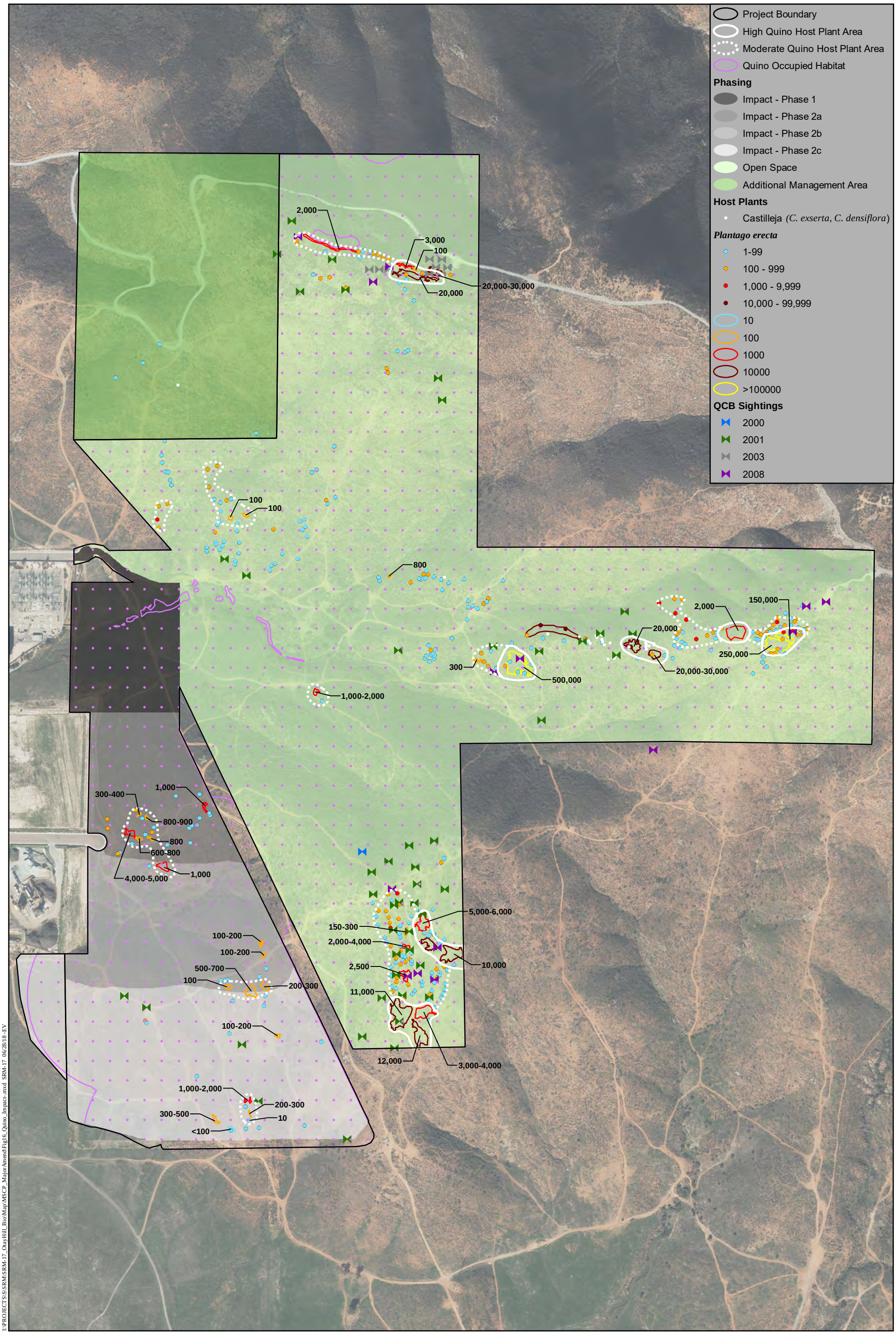
MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N

0 4,000 Feet

Figure 15



Quino Checkerspot Butterfly Sightings and Host Plant Locations/Impacts

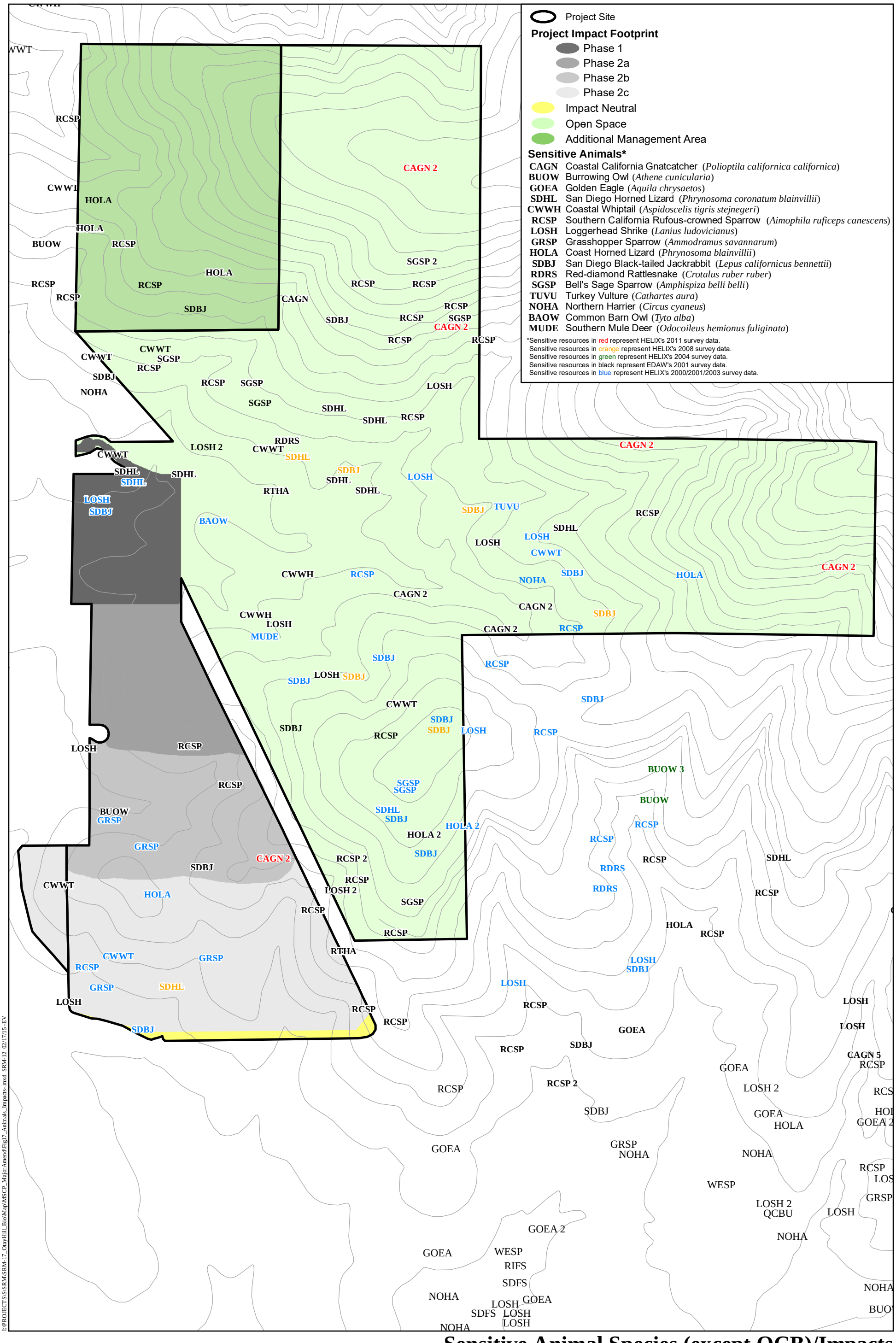
MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 600 Feet

Figure 16

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Sensitive Animal Species (except QCB)/Impacts

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 600 Feet

Figure 17

operations would require the daily use of heavy equipment that would elevate existing noise levels on the Project site.

Some studies such as the Bioacoustics Research Team (1997 *in* County 2010c) concluded that 60 A-weighted decibels (dBA; that is, relative loudness in air as perceived by the human ear), averaged over a time period such as one hour or 24 hours, is a single, simple criterion to use as a starting point for passerine impacts until more specific research is done. Factors that may be considered include, but are not limited to, song and noise frequencies and levels and temporal shifts (time of day, steady versus intermittent, etc.) for the sensitive species.

A noise analysis, prepared by HELIX (2015), determined that the 60 dBA L_{eq} (equivalent continuous) noise level resulting from the processing plant operations and extraction activities would extend out past the ultimate development footprint at distances of between 12 and 1,200 feet. This determination was derived from existing and proposed topography and modeling using the known noise level of various extraction equipment. Excavation activities would be located in only 1 location at any given time, rather than around the entire development footprint perimeter. The distance between operations and the 60 dBA L_{eq} limit assumes that extractive equipment is operating immediately adjacent to the edge of the development footprint (closest to the OHCA), and no mitigating circumstances occur. Thus, the noise impacts would be localized and not spread across the entire area at one time. Also, excavation of the material would utilize a bench construction technique. This technique results in a shear working face after initial construction. These approximately 20- to 60-foot-high slopes would act as a noise barrier when equipment is near the working face. The grade separation between the quarry floor and OHCA will substantially limit these impacts by the completion of Phase 2 at year 23, according to the noise analysis prepared by HELIX (2016b).

In order to determine potential indirect impact acreage from excavation activities, noise impacts were calculated based on taking three sample points at the edge of the development footprint, extending out to the 60 dBA L_{eq} noise contour, and calculating Diegan coastal sage scrub (including disturbed), non-native grassland, and cismontane alkali marsh acreages outside the footprint but within the 60 dBA L_{eq} noise contour. This indirect noise impact is estimated to be approximately 10.4 to 20.6 acres of Diegan coastal sage scrub (including disturbed) for the processing plant and excavation. For the processing plant and excavation north, impacts would total approximately 17.7 acres (Figure 18a). For the processing plant and excavation east, impacts would total approximately 20.6 acres (Figure 18b). For the processing plant and excavation south, impacts would total approximately 10.4 acres (Figure 18c). The worst-case scenario of 20.6 acres is used in this document (Figure 18b).

As stated above, excavation noise would not have significant noise impacts past the completion of Phase 2 in approximately year 23, because of the grade separation between the excavation area and the adjacent habitat. Backfilling operations would also continue past Phase 2; however, the noise generated by backfilling would be less than that of excavation. The equipment used during backfilling would likely be rubber tire dozers or scrapers for compaction purposes, which would have a similar noise output to the loader used for excavation, while the D9 track dozer and rock drill used during excavation would not be used for backfilling. In addition, backfilling would finish at the same elevation as at the end of Phase 2, and thus the grade separation throughout backfilling

operations would be the same or greater than at year 23. For these reasons, no significant noise impact is expected from backfilling.

The processing plant would also continue operation beyond year 23, with a noise impact of approximately 2.79 acres (Figure 18d). The processing plant would operate continuously and the limits of its noise impacts would be consistent, such that species impacted by noise would not be expected to initiate nesting in that area; thus, there would be no take of Proposed Covered Species from plant noise continuing past year 23. If additional take authorization is deemed necessary after 2048, an extension or a new permit would be required.

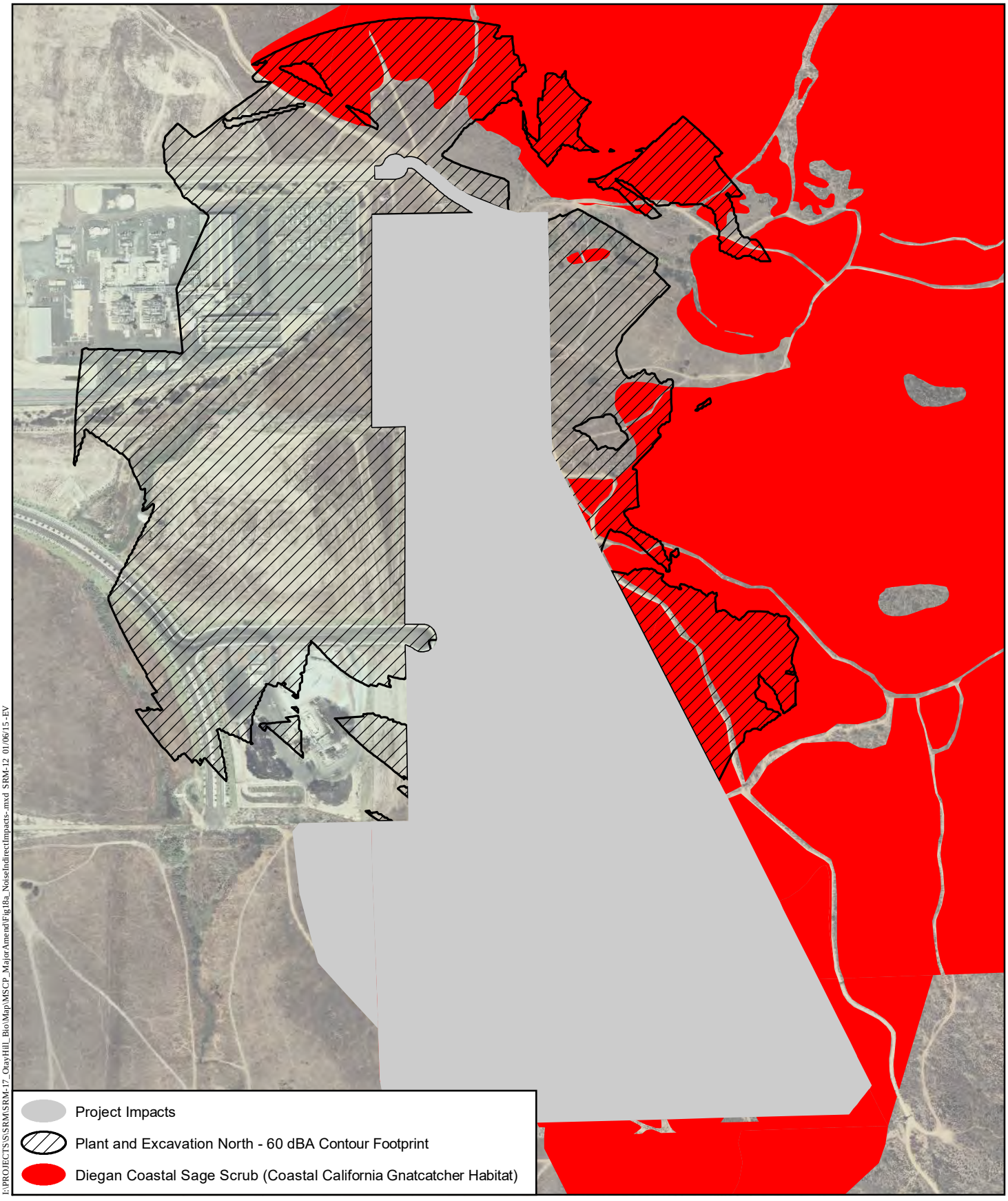
Colonization of Non-native, Invasive Plant Species. Non-native plants could colonize areas disturbed by construction and could potentially spread into adjacent native habitats, especially following a disturbance such as fire in the native habitats. Many of these non-native plants are highly invasive and can displace native vegetation and reduce native species diversity, potentially increase flammability and fire frequency, change ground and surface water levels, and potentially adversely affect native wildlife that is dependent on the native plant species directly or indirectly.

Human Activity/Domestic Animals. Currently, the development footprint has relatively unrestricted access via a series of dirt roads that dissect it. Quarry development would limit unauthorized access from the west to the OHCA to the east, and a fence would be placed along the outside edge of extraction areas during construction for safety and security reasons as described further in Section 5.3.2. Therefore, unauthorized human activity in the area is anticipated to be reduced over the long term by implementation of the Project.

Night Lighting. Night lighting on native habitats can prevent nocturnal wildlife from using an area. Increased ambient light levels could alter bird behavior and increase the effectiveness of visually aided nocturnal predators (e.g., Rich and Longcore 2006). Night lighting can also adversely affect plants. For example, plants depend on darkness for the management of their metabolism. Deciduous trees lose their leaves during the fall from the production of hormones that are caused by lengthening nights; they do not lose their leaves when artificial night lighting simulates summer's long days and short nights (County 2010c).

There is potential for night lighting at staging areas during construction or during operations for security purposes for the Project. It is anticipated by the Project Proponent that some operational activities would occur at night. Additionally, artifact light from nearby existing industrial or commercial activities may occur on the Project site. Night lighting could cause an increased loss in native wildlife as it could provide nocturnal predators with an unnatural advantage over their prey. Since the plant species on the Project site are not seasonally deciduous (i.e., deciduous in fall [some are drought deciduous, however, in summer, for example]), night lighting effects on plants are anticipated to be minimal. The grade separation between the quarry and OHCA will limit these impacts by the completion of Phase 2.

Fugitive Dust. Fugitive dust produced by construction and extraction operations has the potential to disperse into the OHCA, which may reduce the overall vigor of individual plants by reducing their photosynthetic capabilities and increasing their susceptibility to pests or disease. This, in turn, could affect animals dependent on these plants (e.g., QCB or seed-eating rodents). Fugitive dust



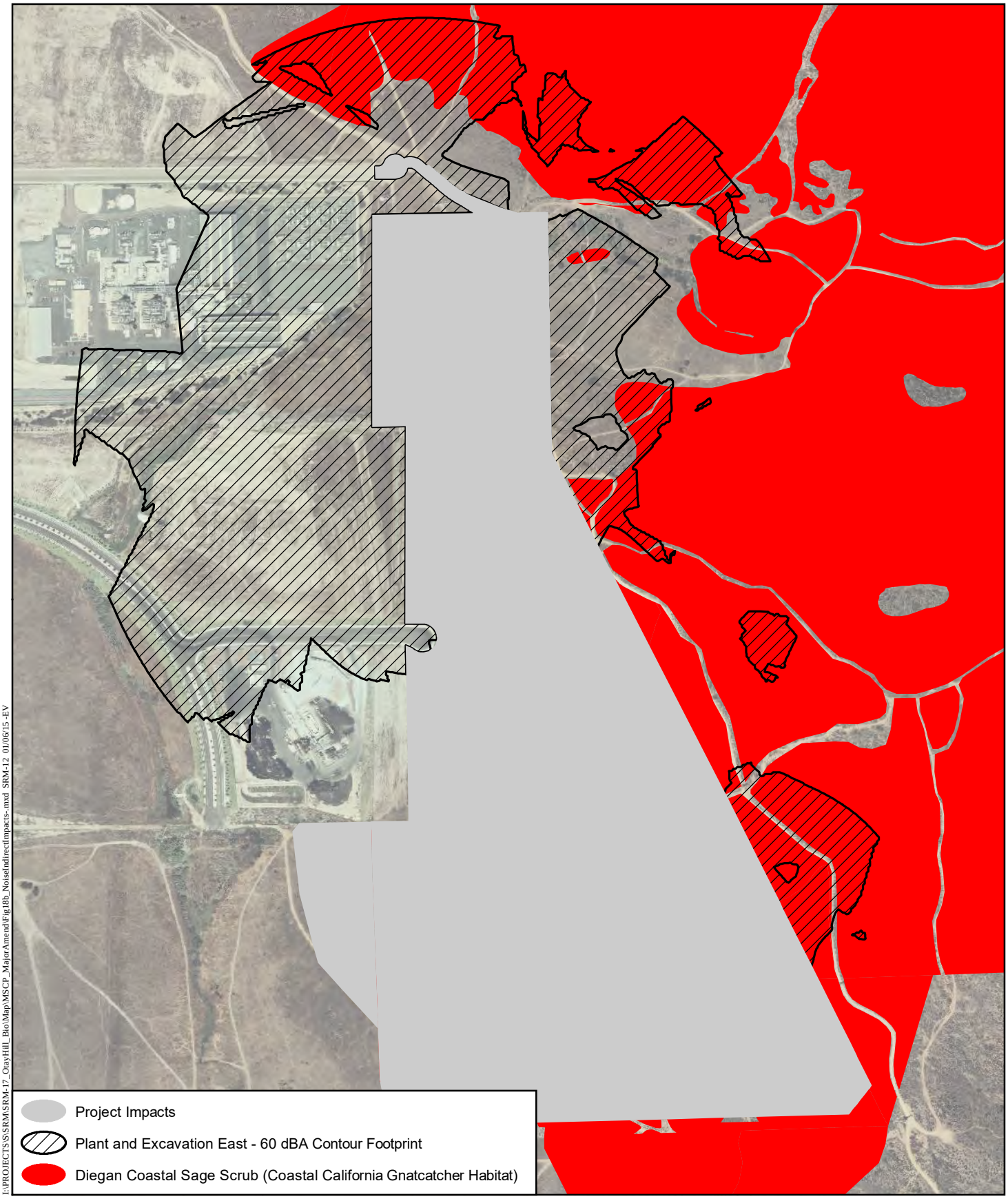
Plant and Excavation North Indirect Impacts to Coastal California Gnatcatcher Habitat

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 550 Feet

Figure 18a



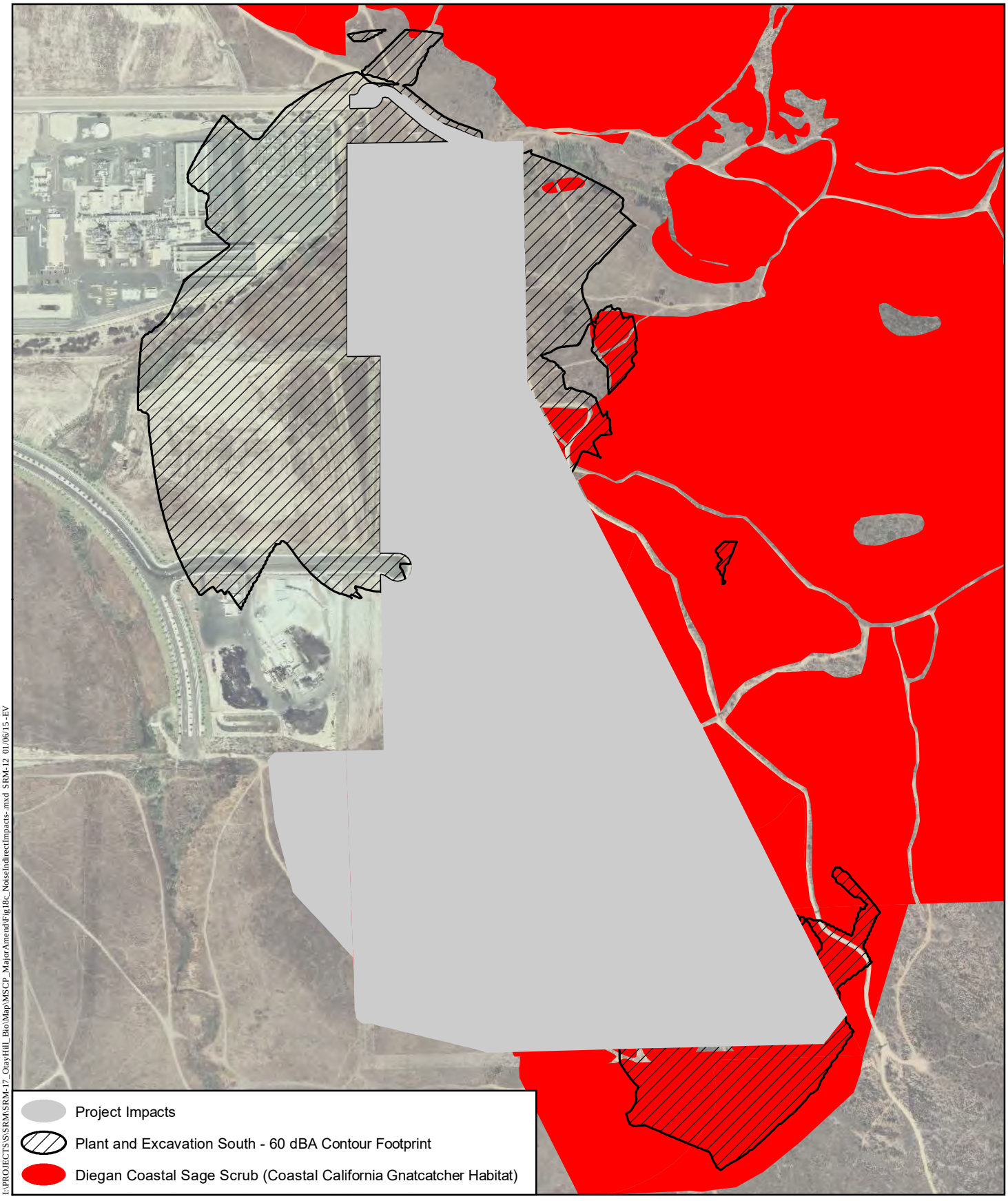
Plant and Excavation East Indirect Impacts to Coastal California Gnatcatcher Habitat

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

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Figure 18b



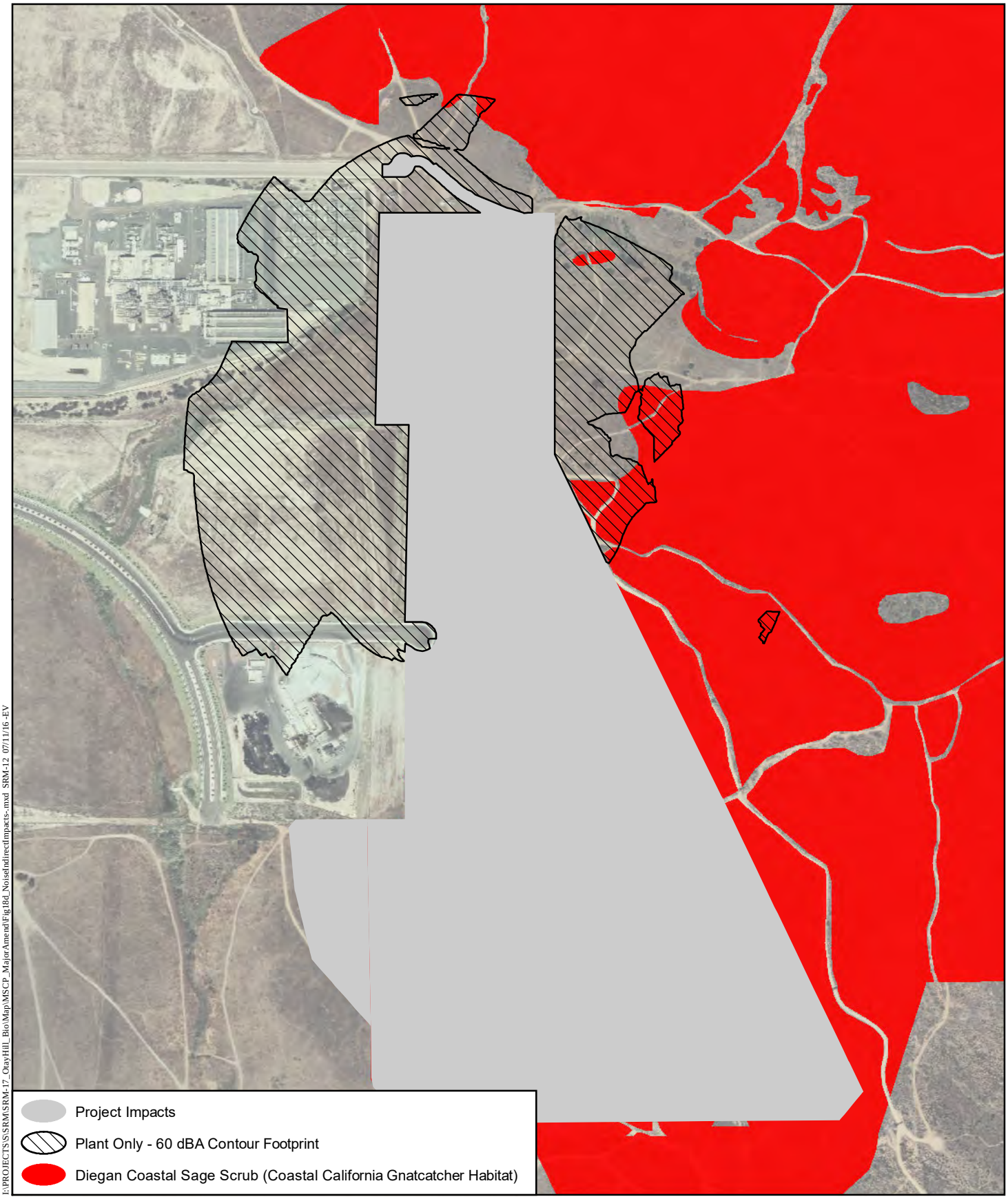
Plant and Excavation South Indirect Impacts to Coastal California Gnatcatcher Habitat

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

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Figure 18c



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Plant Only Indirect Impacts to Coastal California Gnatcatcher Habitat

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 550 Feet

Figure 18d

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also may make plants unsuitable as habitat for insects and birds. Breeding birds and mammals may temporarily or permanently leave their territories to avoid construction and/or extraction operations, which could lead to reduced reproductive success and increased mortality.

Animal Pitfalls. The Project would result in a pit approximately 530 to 650 feet deep with 1.5:1 side slopes during extraction activities and prior to filling with inert debris. During the intermediary time, animals such as butterflies, reptiles, birds, and mammals could potentially fly or fall into the pit. Butterflies and birds would be able to fly out of the pit. Some reptiles, such as lizards, and some mammals may be able to climb out of the pit. Other animals, such as snakes or mammals, unable to climb the side slopes may be able to work their way out of the pit via access roads or other paths, although some species may become trapped. This could include impacts to Proposed Covered Species such as coast horned lizard and southern mule deer. Fencing would be placed along the outside edge of extraction areas during construction for safety and security reasons (as described further in Section 5.3.2) that would prevent animal pitfalls and trapping.

Increased Fire Frequency. Fire is a natural part of southern California ecosystems. Wildfire ignition sources may increase with implementation of Covered Activities adjacent to the OHCA. 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. Non-natural fire return intervals (increased fire frequency over prehistoric levels) could affect the long-term viability of habitats through type conversion (e.g., Diegan coastal sage scrub to non-native grassland). The frequency of fires often increases with increased human access to areas adjacent to open space, resulting in shorter fire return intervals. Due to the type of land use proposed and the active preclusion of access through the quarry site to the OHCA, human access may actually decrease, and no increase in fire frequency is anticipated.

Table 5 presents the impacts to Covered Wildlife Species from the Project.

Table 5 IMPACTS TO WILDLIFE SPECIES THAT ARE PROPOSED FOR COVERAGE				
SPECIES	**FEDERAL, STATE, COUNTY STATUS**	**OBSERVED OR POTENTIAL TO OCCUR**	**TYPES OF IMPACT**	**QUANTIFICATION OF TAKE OR IMPACT**
INVERTEBRATES				
Quino checkerspot butterfly (*Euphydryas editha quino*)	Federal: Endangered State: None County: MSCP Not Covered	Fifty-seven unique locations observed during multiple surveys. 99 percent of habitat (409.5 acres) is assumed occupied based on the County's "Occupied QCB Habitat" definition (County 2009).	Direct impacts to five locations and occupied habitat. Indirect impacts from invasive plant species may affect habitat quality and replace larval host plants. Indirect impacts from dust could adversely affect both larval host and adult nectar resource plants.	Direct impacts to five locations and 104.9 acres of occupied habitat. All five locations would be impacted in Phase 2c.
VERTEBRATES				
Reptiles				
Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*)	Federal: None State: Species of Special Concern County: MSCP Covered	Assumed present throughout the Project site as abundant suitable habitat is present.	Direct impacts to habitats and individuals. Indirect impacts from invasive plant species and dust could affect habitat quality and structure and prey base.	96.3 acres of habitat assumed to be occupied by this species (i.e., the entire development footprint except disturbed and developed areas).

Table 5 (cont.) IMPACTS TO WILDLIFE SPECIES THAT ARE PROPOSED FOR COVERAGE				
SPECIES	**FEDERAL, STATE, COUNTY STATUS**	**OBSERVED OR POTENTIAL TO OCCUR**	**TYPES OF IMPACT**	**QUANTIFICATION OF TAKE OR IMPACT**
VERTEBRATES (cont.)				
Reptiles (cont.)				
Coast horned lizard (*Phrynosoma blainvillii*)	Federal: None State: Species of Special Concern County: MSCP Covered	Eleven individuals observed on the Project site. Assumed present throughout the Project site as abundant suitable habitat is present.	Direct impacts to habitats and individuals. Indirect impacts from invasive plant species and dust could affect habitat quality and structure and prey base.	Four individuals directly impacted. 96.3 acres of habitat assumed to be occupied by this species (i.e., the entire development footprint except disturbed and developed areas).
Birds				
Cooper's hawk (*Accipiter cooperii*)	Federal: None State: Watch List County: MSCP Covered	One individual flying over the site. Assumed to use site for foraging.	Direct impacts to foraging habitat.	One individual and 98.7 acres of suitable habitat impacted.
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	Federal: None State: Watch List County: MSCP Covered	Twenty-two individuals observed/detected on the Project site.	Direct impacts to habitat and individuals. Indirect impacts from noise may render habitat undesirable (for breeding). Indirect impacts to habitat from invasive plant species and dust could affect habitat quality and structure and prey base.	Five individuals 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.

Table 5 (cont.) IMPACTS TO WILDLIFE SPECIES THAT ARE PROPOSED FOR COVERAGE				
SPECIES	**FEDERAL, STATE, COUNTY STATUS**	**OBSERVED OR POTENTIAL TO OCCUR**	**TYPES OF IMPACT**	**QUANTIFICATION OF TAKE OR IMPACT**
VERTEBRATES (cont.)				
Birds (cont.)				
Burrowing owl (*Athene cunicularia*)	Federal: Bird of Conservation Concern State: Species of Special Concern County: MSCP Covered, MSCP Narrow Endemic	One sighting west of the SDG&E easement in 2001 in non-native grassland. None observed during subsequent surveys, including winter and breeding season burrowing owl surveys in 2012 (HELIX 2012a, 2012b).	Direct impacts to grassland habitats. Indirect impacts from invasive plant species and dust on grassland habitats could affect habitat quality and structure and prey base. This species is often observed in high noise areas such as airports and adjacent to roadways and indirect impacts such as noise are not anticipated to have a significant impact on this species.	Approximately 31.6 acres of potential grassland habitats directly impacted (0.5 acre native grassland and 31.1 acres non-native grassland).
Coastal California gnatcatcher (Polioptila californica californica)	Federal: Threatened State: Species of Special Concern County: MSCP Covered	Five pairs observed on the Project site. Protocol survey conducted in 2011 (HELIX 2011).	Direct impacts to habitat and individuals. Indirect impacts to species from noise may render habitat undesirable (for breeding). Indirect impacts to habitat from invasive plant species and dust could affect habitat quality and structure and prey base.	One pair 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.

Table 5 (cont.) IMPACTS TO WILDLIFE SPECIES THAT ARE PROPOSED FOR COVERAGE				
SPECIES	**FEDERAL, STATE, COUNTY STATUS**	**OBSERVED OR POTENTIAL TO OCCUR**	**TYPES OF IMPACT**	**QUANTIFICATION OF TAKE OR IMPACT**

VERTEBRATES (cont.)				
Mammals				
Mountain lion (*Puma concolor*)	Federal: None State: None County: MSCP Covered	Not observed but high potential to utilize the Project site as tracks observed in the vicinity.	Direct impacts to potential habitat. Indirect impacts from invasive plant species and dust on habitats could affect prey base. Potential indirect impacts on use of habitat from increased human activity associated with the Project.	Direct impacts to 107.4 acres of habitat (i.e., the entire development footprint).

Table 5 (cont.) IMPACTS TO WILDLIFE SPECIES THAT ARE PROPOSED FOR COVERAGE				
SPECIES	**FEDERAL, STATE, COUNTY STATUS**	**OBSERVED OR POTENTIAL TO OCCUR**	**TYPES OF IMPACT**	**QUANTIFICATION OF TAKE OR IMPACT**
VERTEBRATES (cont.)				
Mammals (cont.)				
Southern mule deer (*Odocoileus hemionus fuliginata*)	Federal: None State: None County: MSCP Covered	One mule deer observed in habitat to be preserved on the Project site, but more expected to occur.	Direct impacts to potential habitat. Indirect impacts to habitat from invasive plant species and dust could adversely affect forage quality/quantity. Potential indirect impacts on use of habitat from increased human activity associated with the Project.	Direct impacts to 107.4 acres of habitat (i.e., the entire development footprint).

4.3 ANTICIPATED IMPACTS ON COVERED PLANT SPECIES

Direct impacts will occur to Covered Plant Species populations occurring within the development footprint through direct removal. Indirect impacts to Covered Plant Species could occur from the colonization of non-native, invasive plant species and fugitive dust, as described in Section 4.2.

Table 6 presents the impacts to Covered Plant Species from the Project as a whole; Table 7 presents the impacts to Covered Plant Species by phase. Direct impacts to Covered Plant Species are shown on Figure 19. Likely Limits of Occurrence for Otay tarplant, variegated dudleya, and San Diego goldenstar are shown on Figures 20a through 20c.

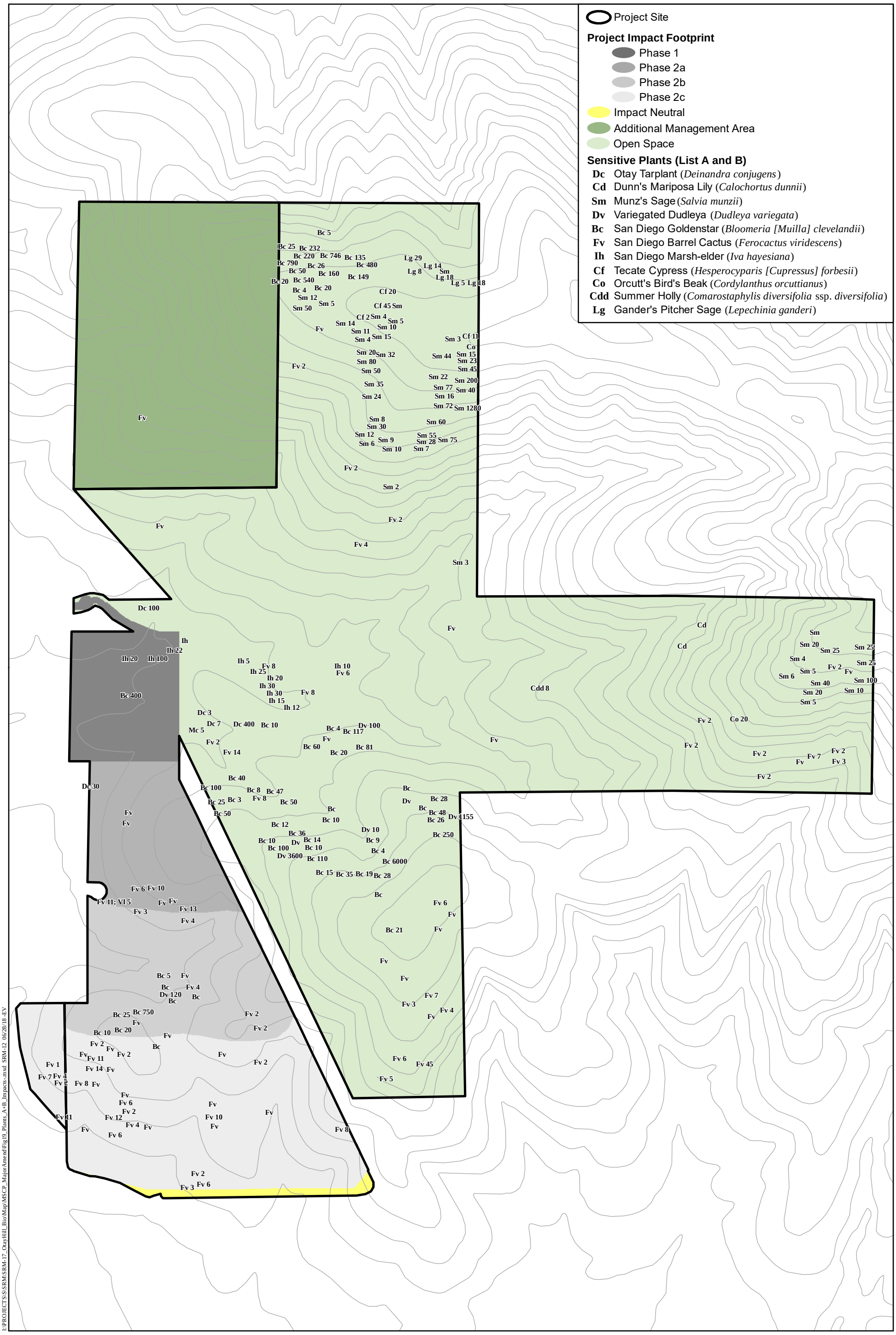
Table 6
MSCP COVERED PLANT SPECIES IMPACTS

SPECIES	FEDERAL, STATE, COUNTY STATUS	OBSERVED OR POTENTIAL TO OCCUR	TYPES OF IMPACT	QUANTIFICATION OF TAKE OR IMPACT
San Diego goldenstar (*Bloomeria* [*Muilla*] *clevelandii*)	Federal: None State: None (CNPS RPR 1B.1) County: MSCP Covered	12,388 individuals found on north- and west-facing slopes on the Project site. Most individuals occur within six primary populations. Three represent 11,174 individuals to be preserved in the OHCA. Two smaller populations (1,214 individuals) occur within the development footprint.	Direct impacts through removal. Indirect impacts could occur from invasive plant species competition and dust that could reduce plant vigor.	1,214 individuals (9.8 percent) directly impacted. 13.27 acres of potential habitat impacted (16 percent).
Dunn's mariposa lily (*Calochortus dunnii*)	Federal: None State: Rare (CNPS RPR 1B.2) County: MSCP Covered, MSCP Narrow Endemic	Eight individuals found on the Project site.	Indirect impacts could occur from invasive plant species competition. The nearest location of this plant to the development footprint is more than 2,000 feet, so indirect impacts from dust are not anticipated.	Zero individuals directly impacted.
Orcutt's bird's beak (Cordylanthus orcuttianus)	Federal: None State: None (CNPS RPR 2.1) County: MSCP Covered	Twenty-one individuals found on the Project site.	Indirect impacts could occur from invasive plant species competition. The nearest location of this plant to the development footprint is more approximately 2,700 feet, so indirect impacts from dust are not anticipated.	Zero individuals directly impacted.

Table 6 (cont.)
MSCP COVERED PLANT SPECIES IMPACTS

SPECIES	FEDERAL, STATE, COUNTY STATUS	OBSERVED OR POTENTIAL TO OCCUR	TYPES OF IMPACT	QUANTIFICATION OF TAKE OR IMPACT
Tecate cypress (*Hesperocyparis* [*Cupressus*] *forbesii*)	Federal: None State: None (CNPS RPR 1B.1) County: MSCP Covered	Seventy-eight individuals found in scattered locations on the Project site.	Indirect impacts could occur from invasive plant species competition. While this species may be affected by high return-interval fire, no increase in fire frequency is anticipated to be caused by the Project.	Zero individuals directly impacted.
Otay tarplant (Deinandra conjugens)	Federal: Threatened State: Endangered (CNPS RPR 1B.1) County: MSCP Covered, MSCP Narrow Endemic	540 individuals found on the Project site within four primary populations, the largest of which contains 400 individuals. Three of these populations occur in habitat to be preserved in the OHCA. The fourth population (30 individuals) occurs in the western portion of the development footprint.	Direct impacts through removal. Indirect impacts could occur from invasive plant species competition and dust that could reduce plant vigor. Critical habitat extends off site to the west but this area is already developed and fragmentation of the existing critical habitat is not anticipated.	30 individuals directly impacted (5.6 percent). 16.69 acres of potential habitat impacted (72 percent).
Variegated dudleya (*Dudleya variegata*)	Federal: None State: None (CNPS RPR 1B.2) County: MSCP Covered, MSCP Narrow Endemic	4,987 individuals found on the Project site. Six primary populations of variegated dudleya are present: one in the development footprint (120 individuals) and five in habitat to be preserved in the OHCA (two of these are MSCP major populations with greater than 500 individuals each).	Direct impacts through removal. Indirect impacts could occur from invasive plant species competition and dust that could reduce plant vigor.	120 individuals directly impacted (2.4 percent). 1.27 acres of potential habitat impacted (22 percent).

Table 6 (cont.) MSCP COVERED PLANT SPECIES IMPACTS				
SPECIES	**FEDERAL, STATE, COUNTY STATUS**	**OBSERVED OR POTENTIAL TO OCCUR**	**TYPES OF IMPACT**	**QUANTIFICATION OF TAKE OR IMPACT**
San Diego barrel cactus (*Ferocactus viridescens*)	Federal: None State: None (CNPS RPR 2.1) County: MSCP Covered	337 individuals found on south-facing slopes throughout the Project site; 25 additional on Otay Crossings Commerce Park open space to the west.	Direct impacts through removal. Indirect impacts could occur from invasive plant species competition and dust that could reduce plant vigor.	196 total individuals directly impacted (50.4 percent).
Gander's pitcher sage (*Lepechinia ganderi*)	Federal: None State: None (CNPS RPR 1B.3) County: MSCP Covered, MSCP Narrow Endemic	92 individuals found on the Project site.	Indirect impacts could occur from invasive plant species competition. The nearest location of this plant to the development footprint is approximately 2,850 feet, so indirect impacts from dust are not anticipated.	Zero individuals directly impacted.

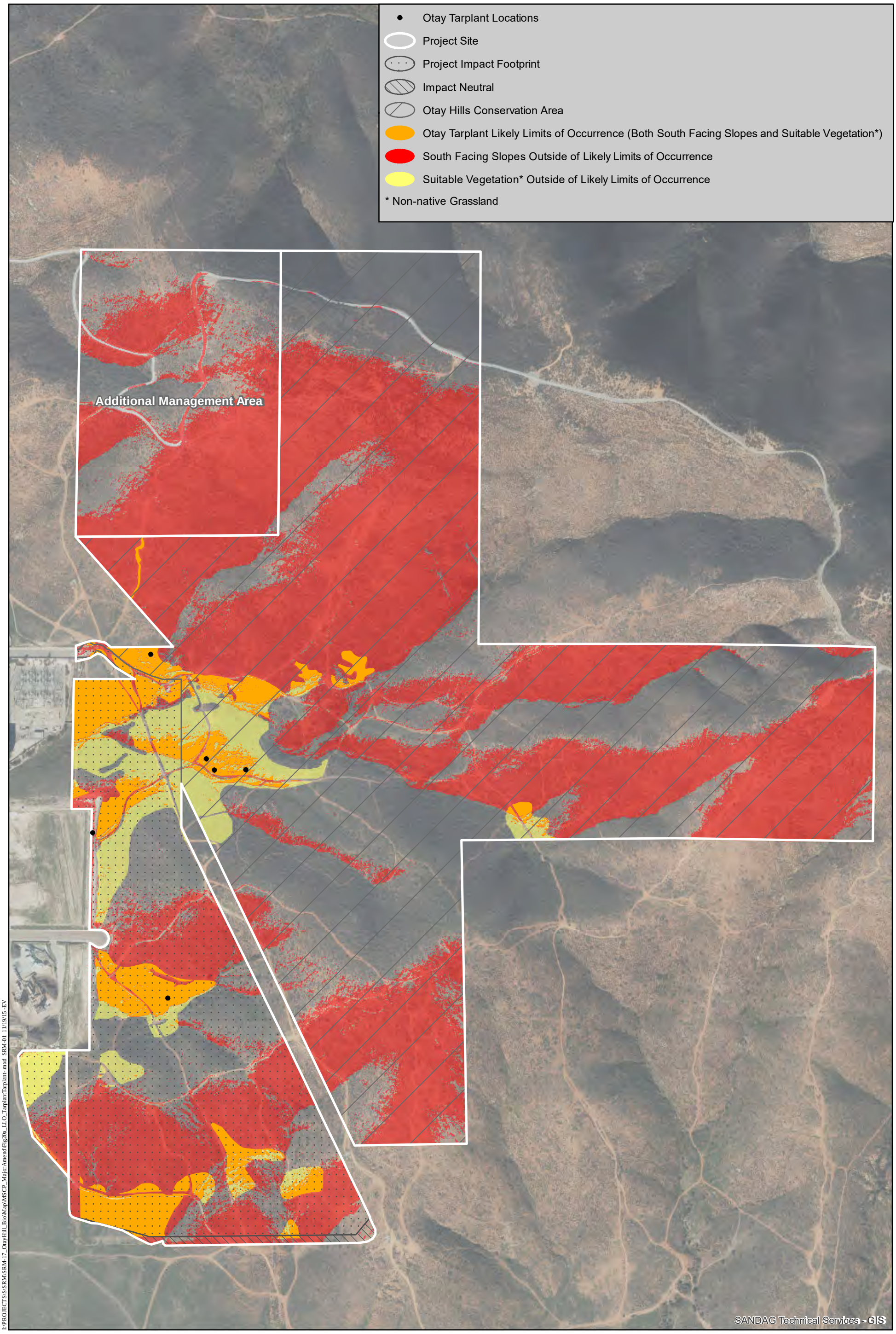


Federal, State, and County (List A and B) Sensitive Plant Species/Impacts

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

Figure 19



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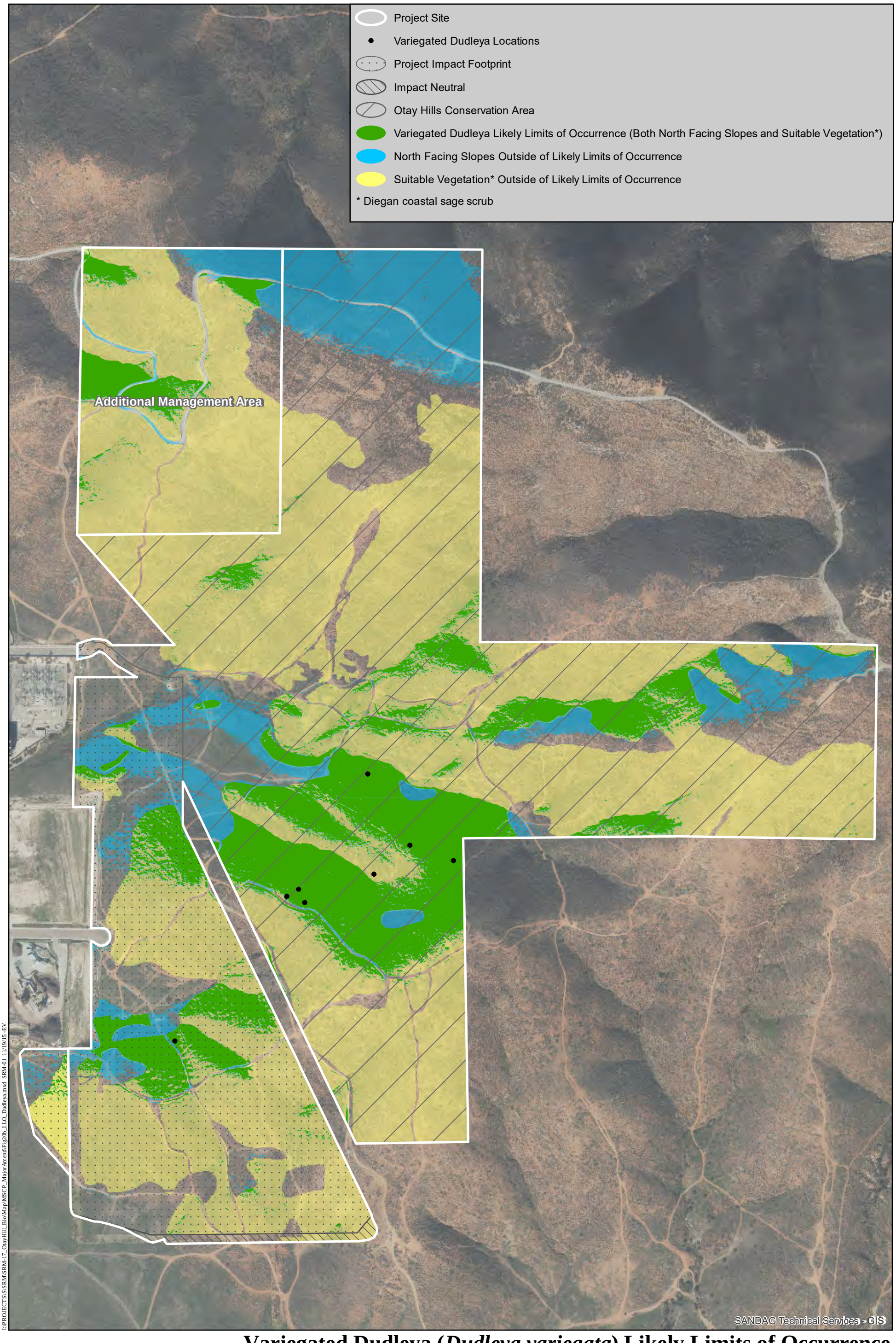
Otay Tarplant (*Deinandra conjugens*) Likely Limits of Occurrence

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

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Figure 20a



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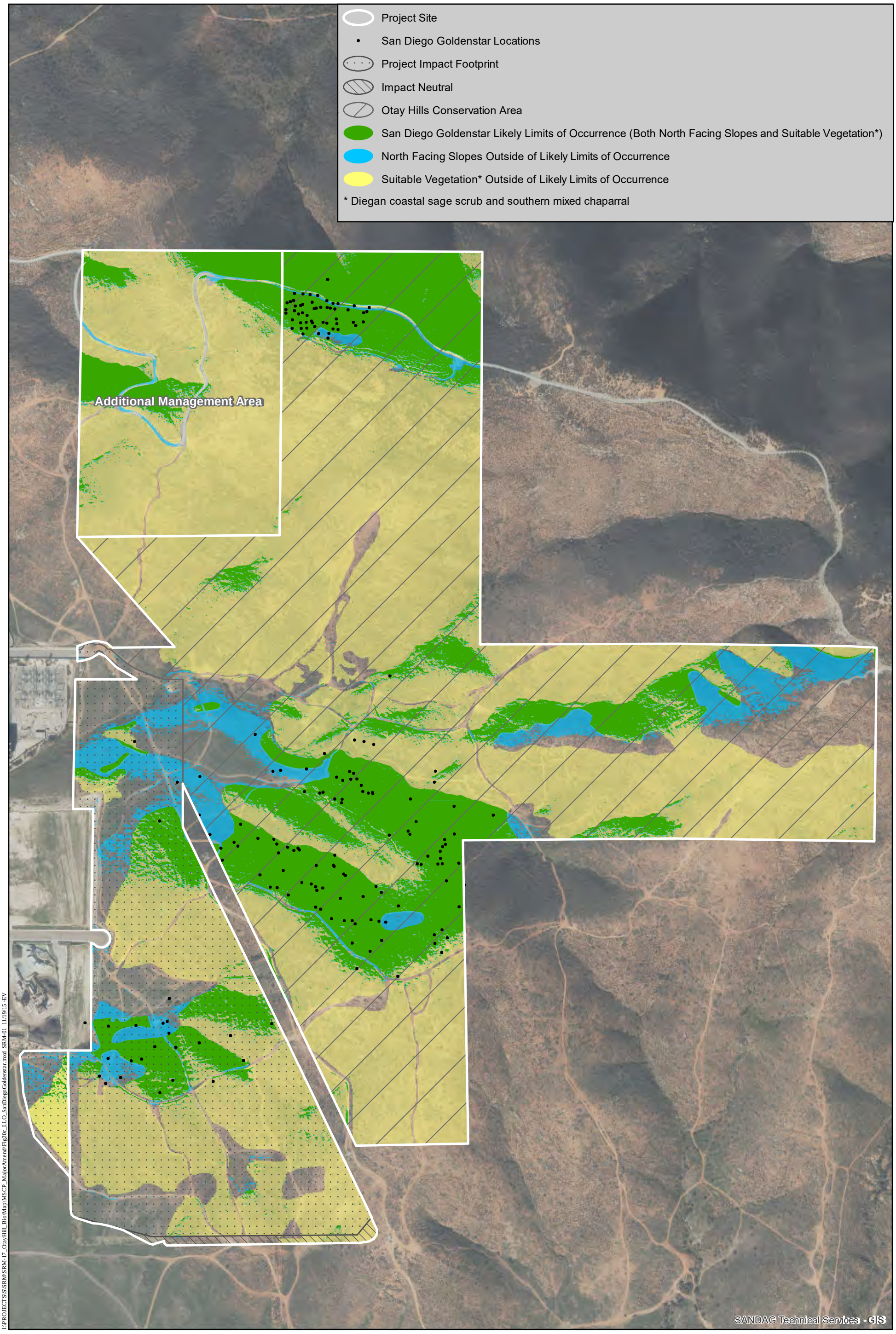
Variegated Dudleya (*Dudleya variegata*) Likely Limits of Occurrence

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 600 Feet

Figure 20b



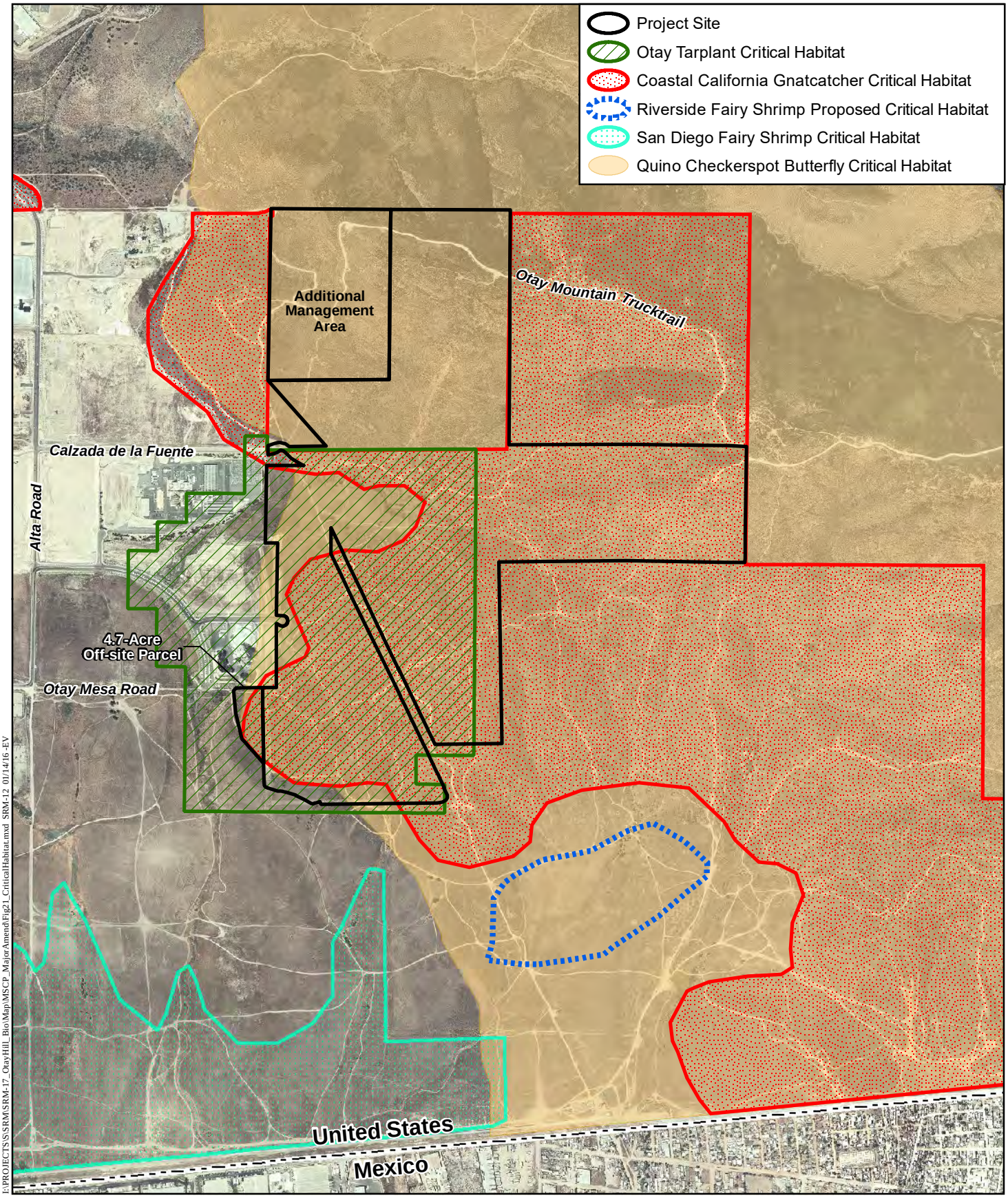
San Diego Goldenstar (*Bloomeria [Muilla] clevelandii*) Likely Limits of Occurrence

MULTIPLE SPECIES CONSERVATION PROGRAM MAJOR AMENDMENT FOR OTAY HILLS

HELIX Environmental Planning

N 0 850 Feet

Figure 20c



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.

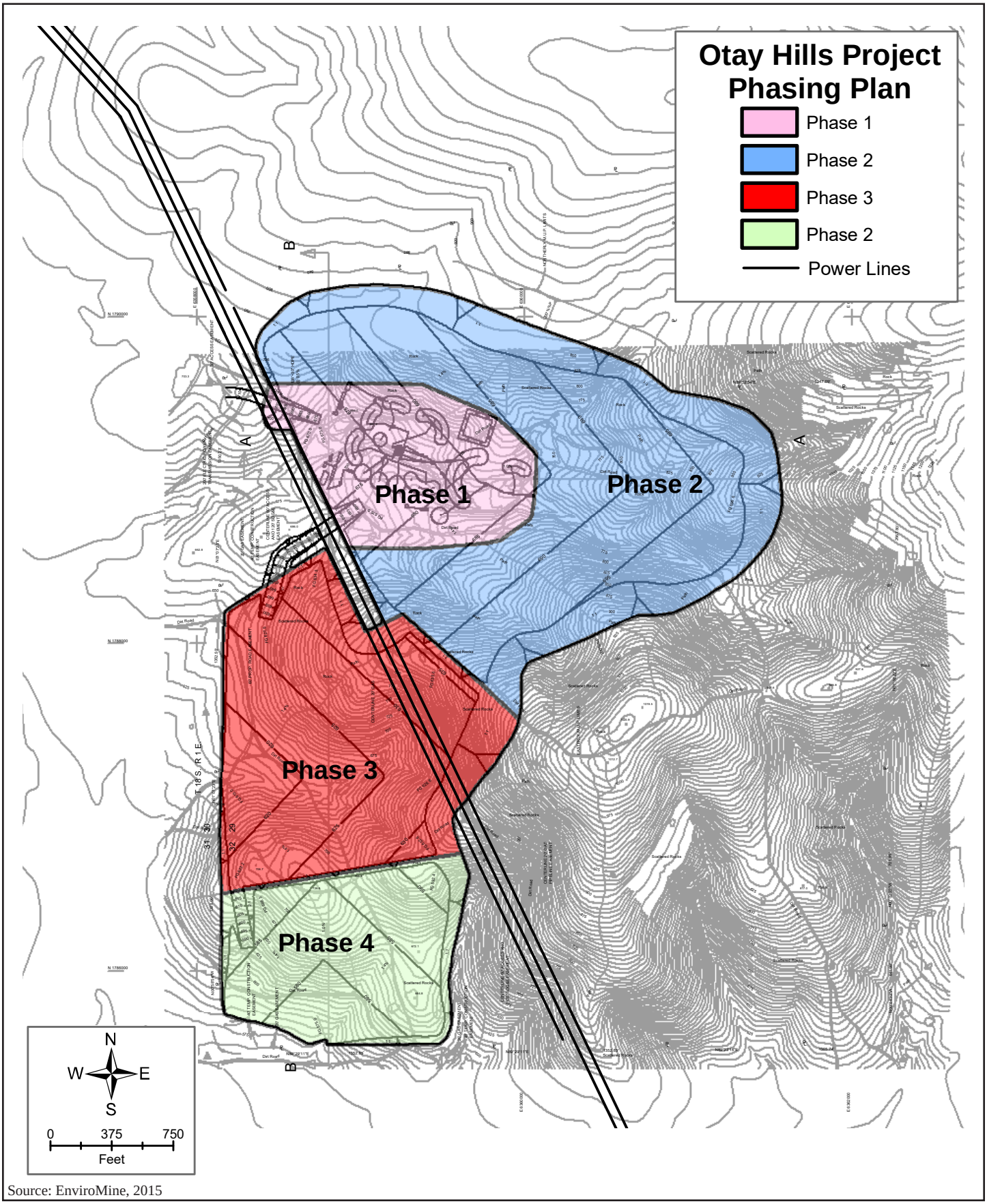
- All cone crushers used in the aggregate crushing process shall be shielded with noise control barriers: the barriers shall start at ground level and extend to at least a minimum of one foot higher than the direct line of sight between any portion of the shielded equipment and any suitable habitat areas 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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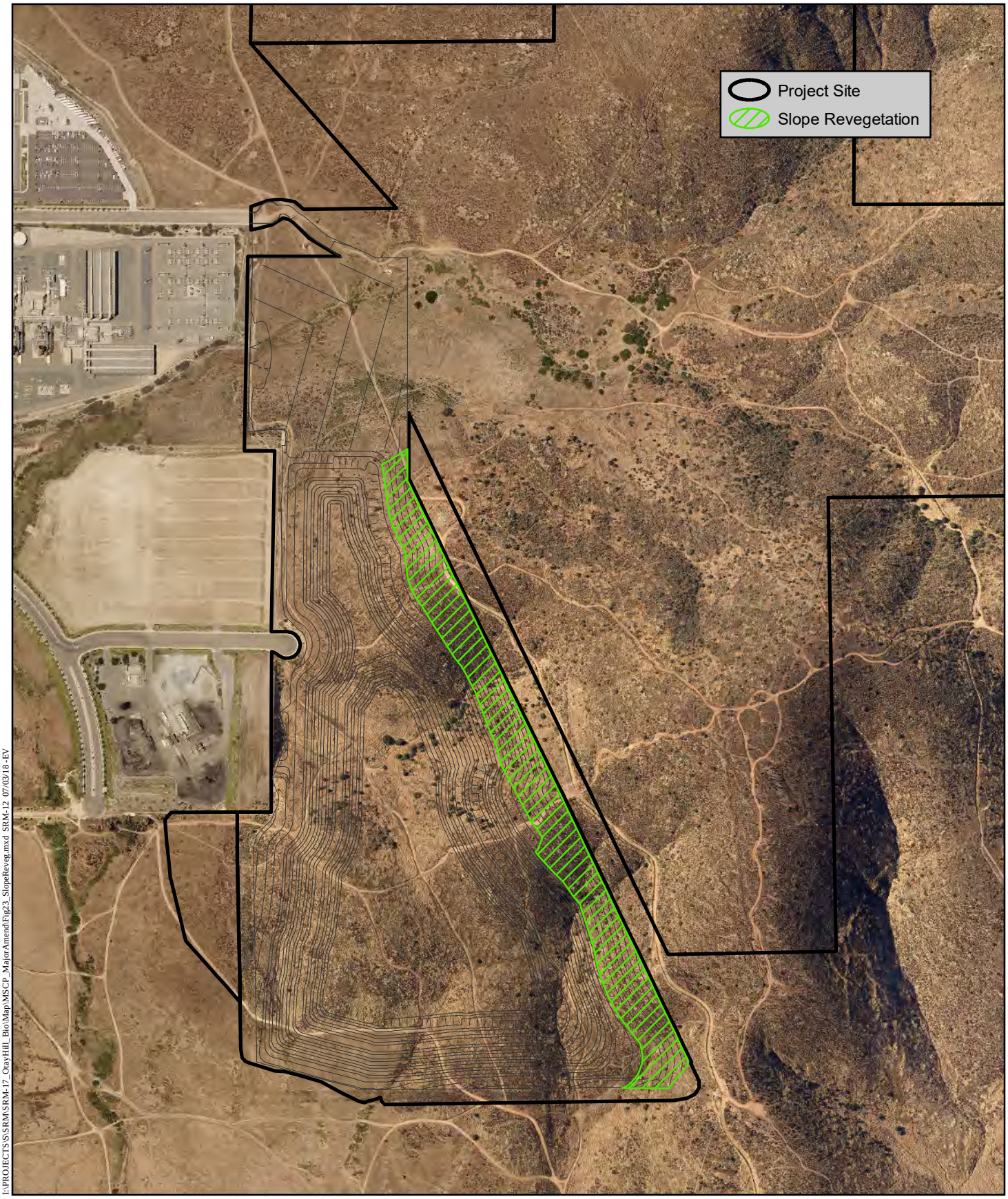
Source: EnviroMine, 2015

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

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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).

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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.

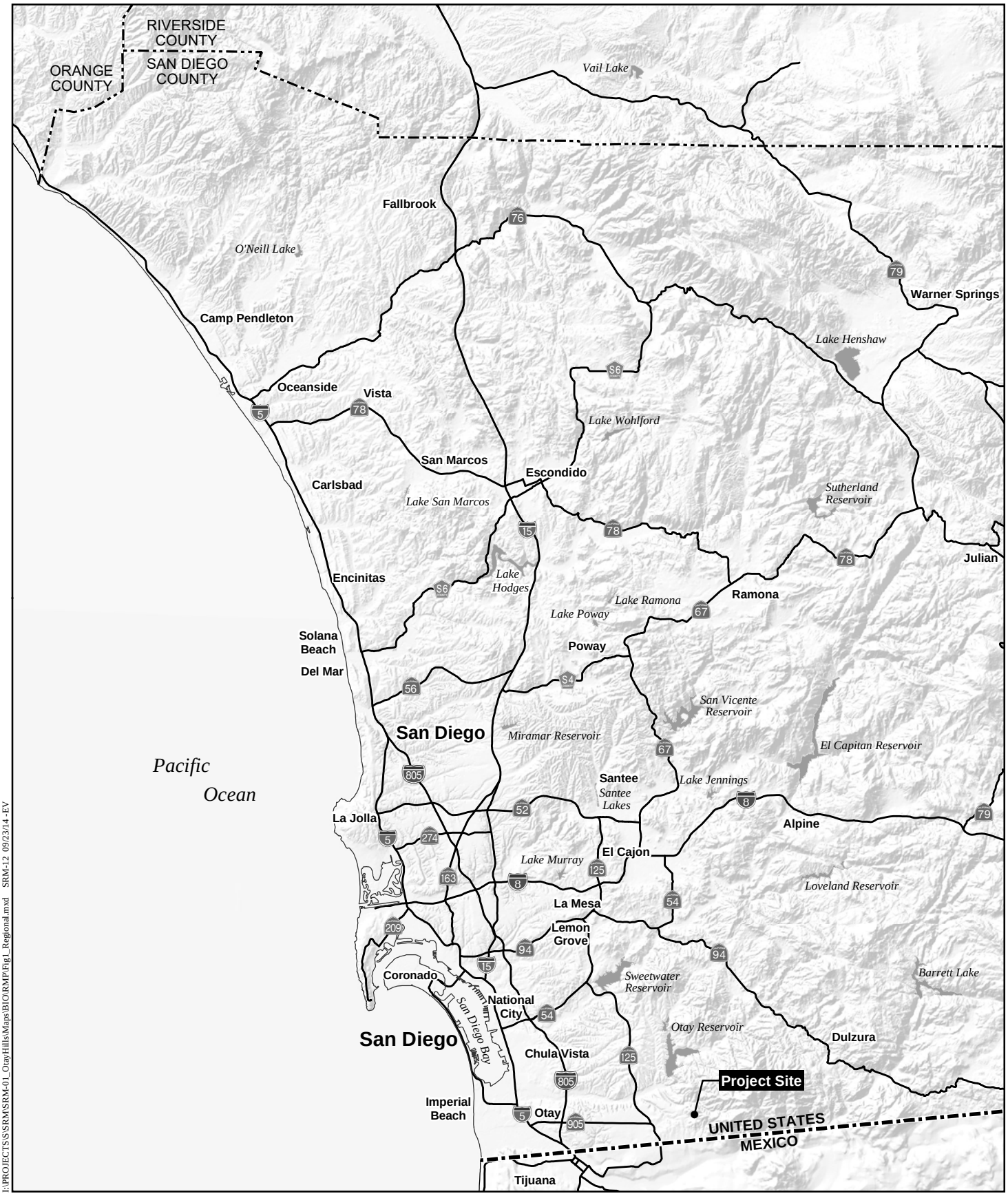
Topographically, the Peninsular Ranges Province is composed of generally parallel ranges of steep-sloping hills and mountains separated by alluvial valleys. More recent uplift and erosion has produced the characteristic canyon and mesa topography present today in western San Diego County, as well as 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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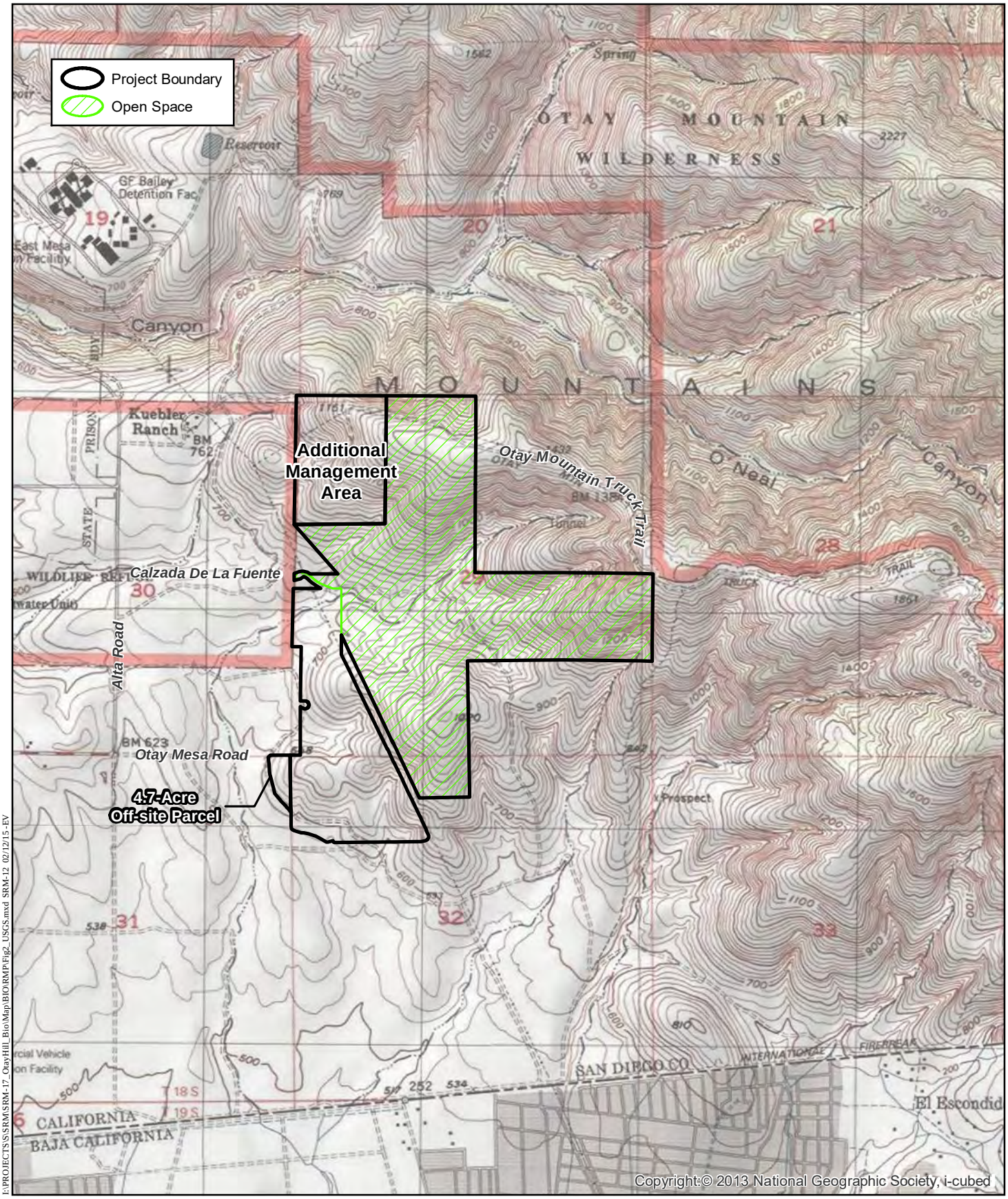
Regional Location Map

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N 0 8 Miles

Figure 1



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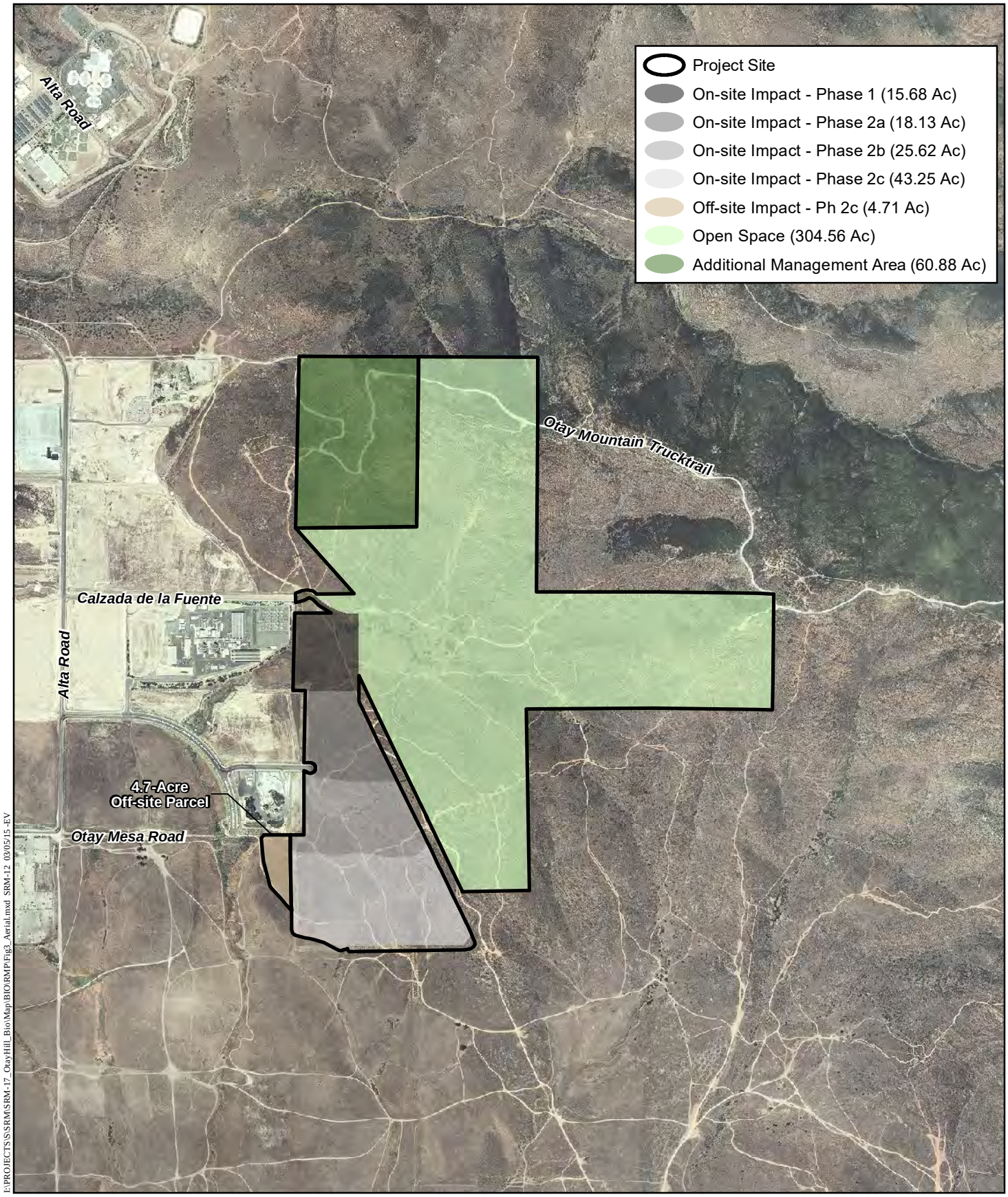
Project Location Map

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N 0 2,000 Feet

Figure 2



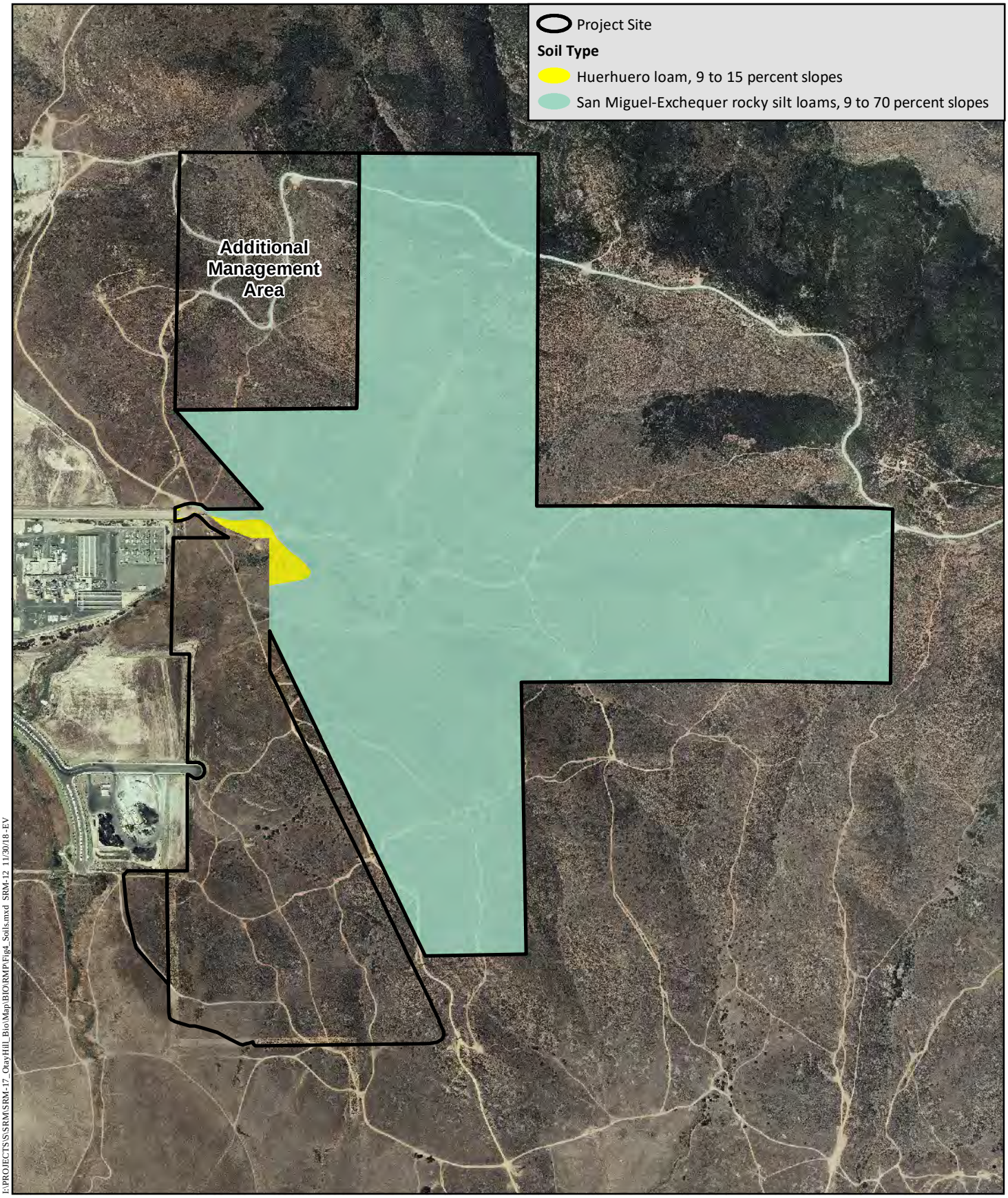
Aerial Photograph

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N 0 1,500 Feet

Figure 3



I:\PROJECTS\S\SRM\SRM-17_OtayHill_Bio\Map\BIO\RMP\Fig4_Soils.mxd SRM-12 11/30/18 -EV

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

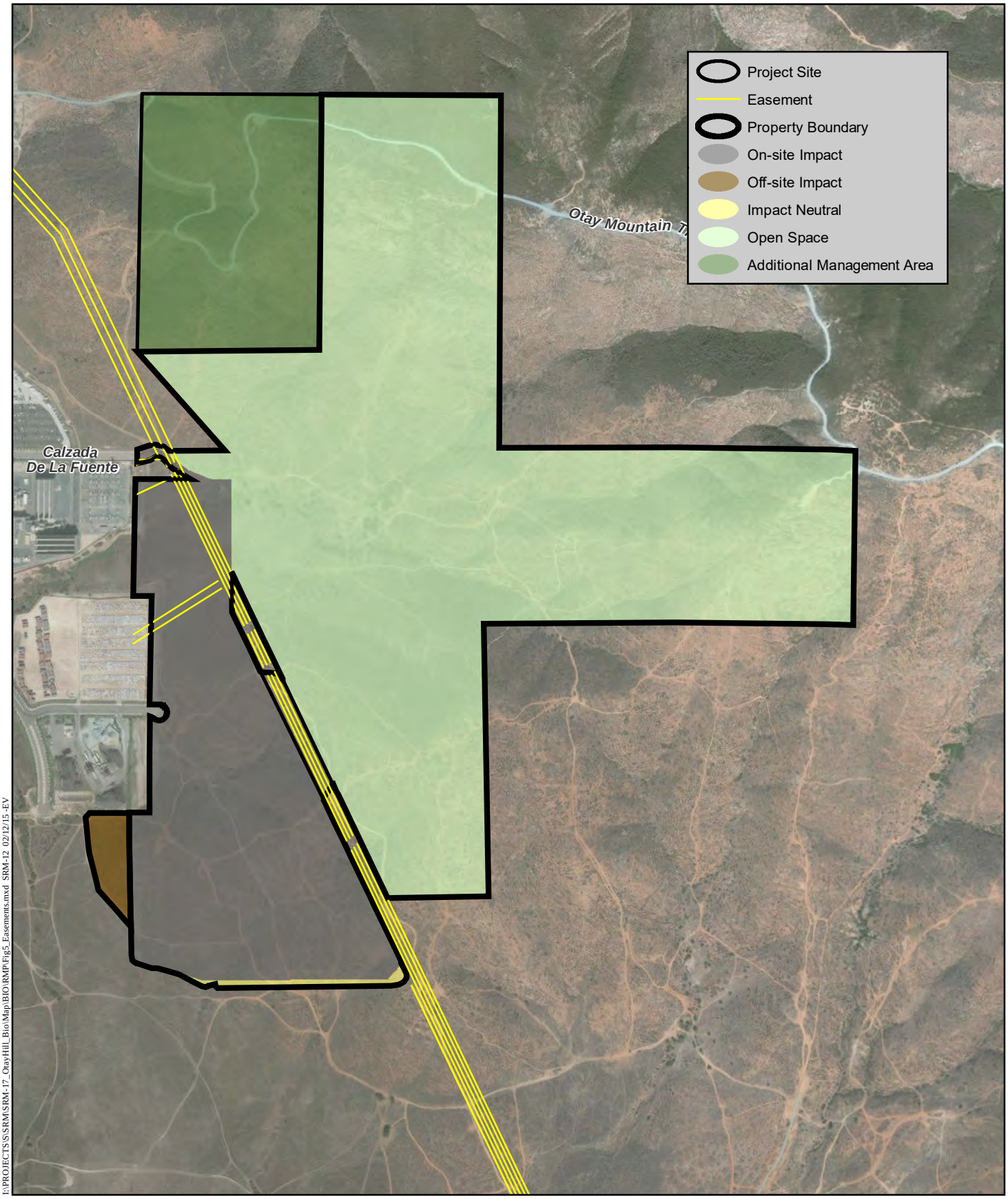
Mule fat scrub is a shrubby riparian scrub community dominated by mule fat (*Baccharis salicifolia*) interspersed with shrubby willows (*Salix* spp.) and a few other shrub species. This vegetation community occurs along intermittent stream channels with a coarse substrate and moderate depth to the water 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



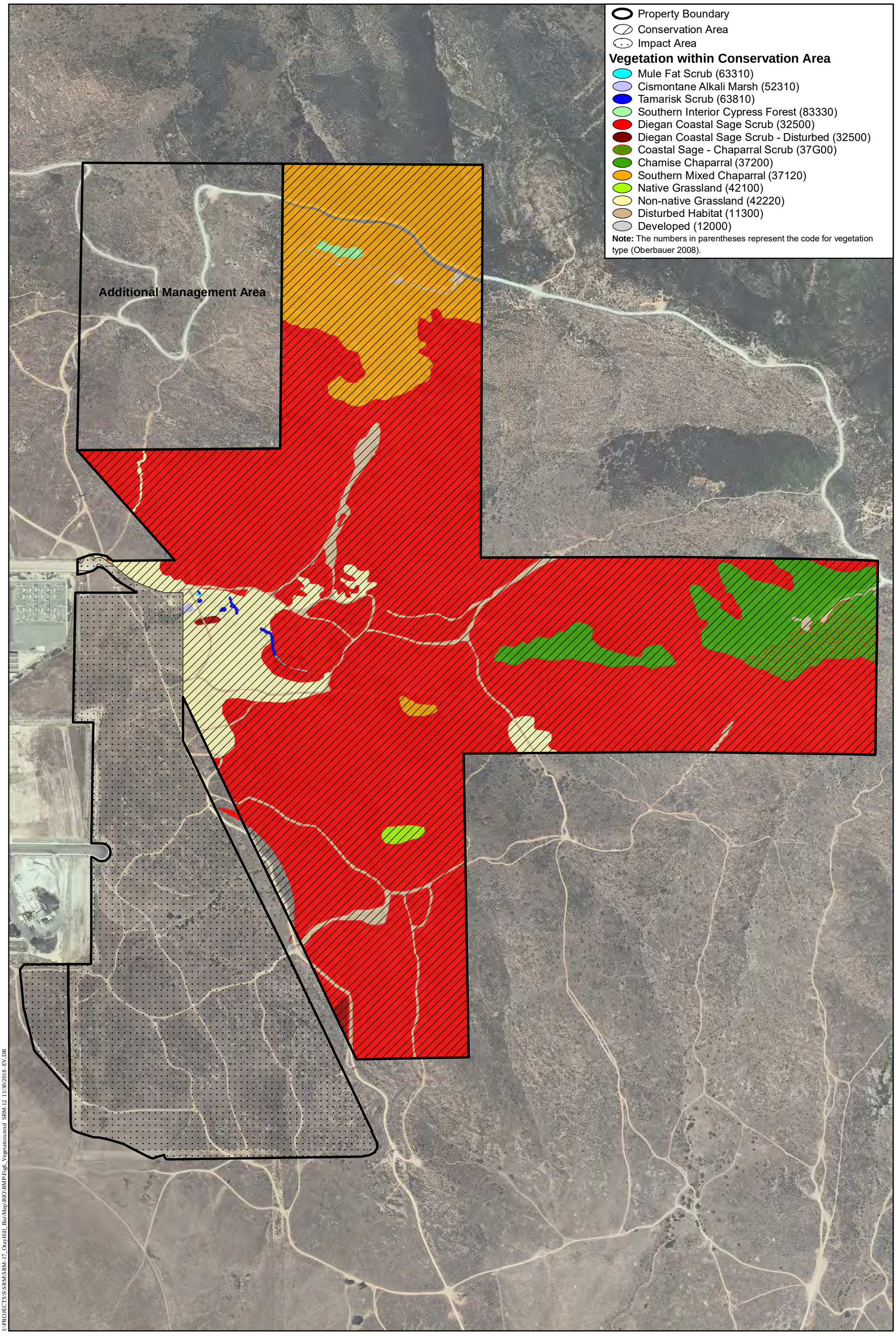
Easements

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

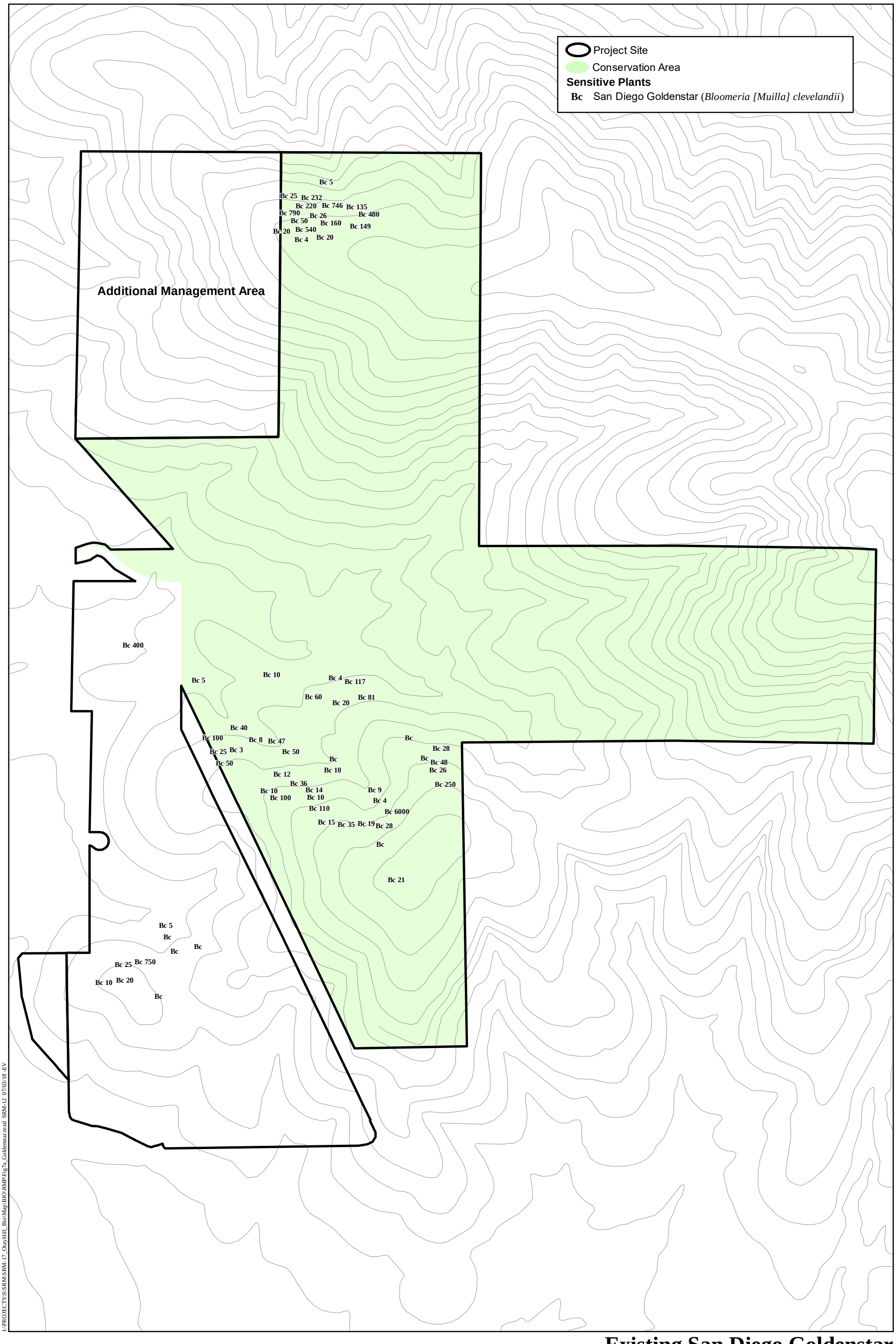
Ashy spike-moss (*Selaginella cinerascens*)
Coulter's matilija poppy (*Romneya coulteri*)
Dunn's mariposa lily (*Calochortus dunnii*)*
Gander's pitcher sage (*Lepechinia ganderi*)*
Munz's sage (*Salvia munzii*)
Orcutt's bird's beak (*Cordylanthus orcuttianus*)*
Otay tarplant (*Deinandra conjugens*)*
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*)*

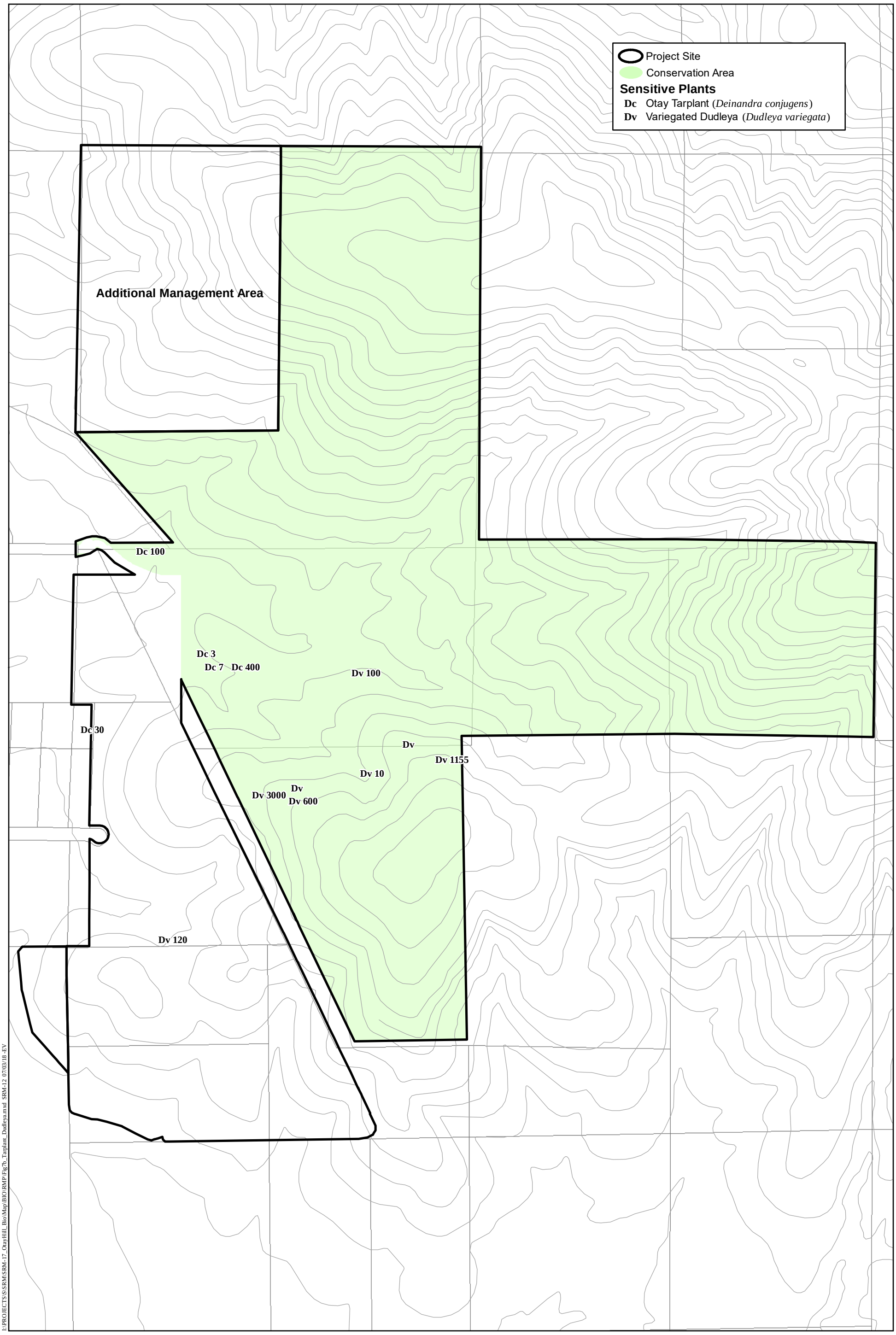


Existing San Diego Goldenstar

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

Figure 7a



Existing Otay Tarplant and Variegated Dudleya

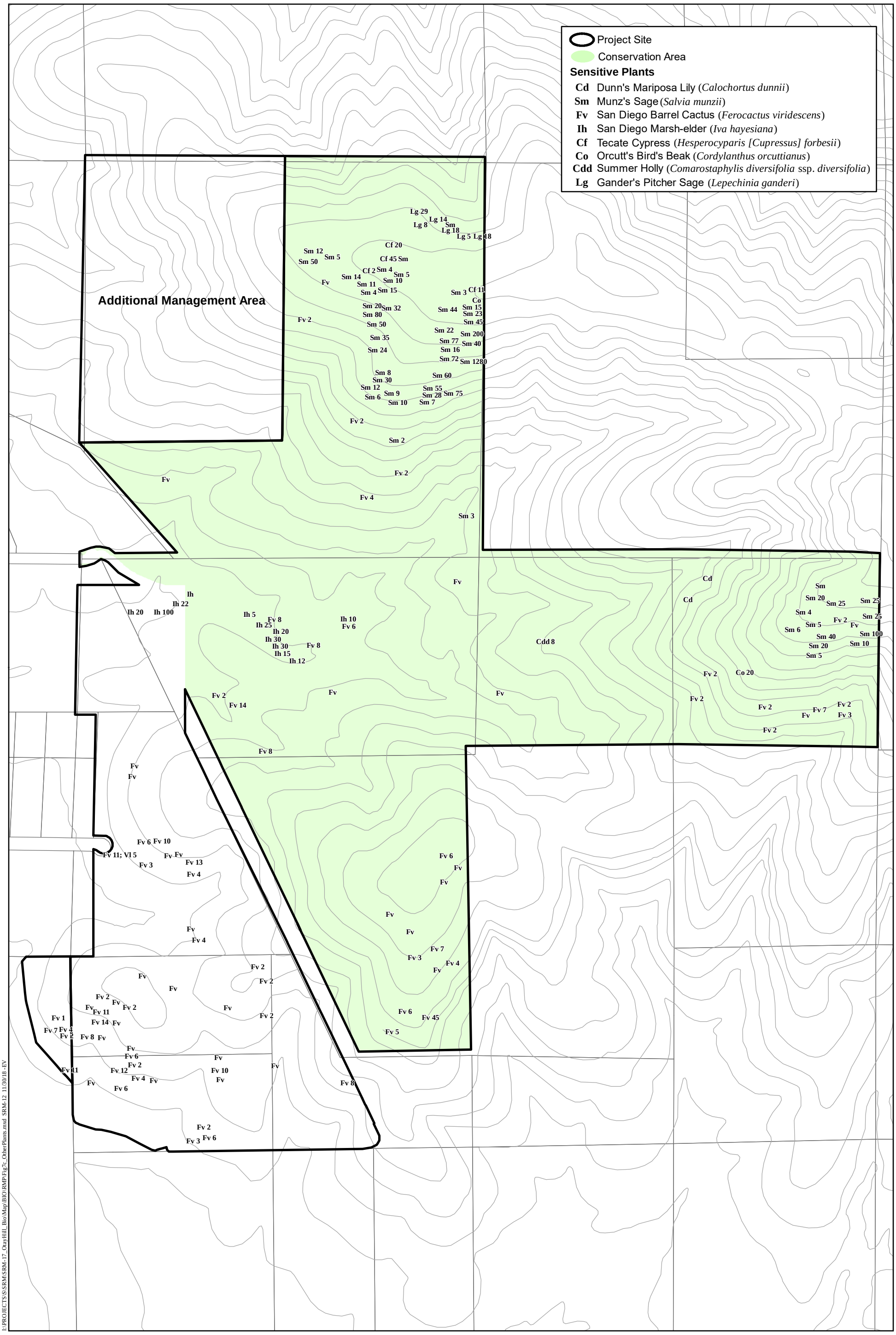
OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

N

0 600 Feet

Figure 7b

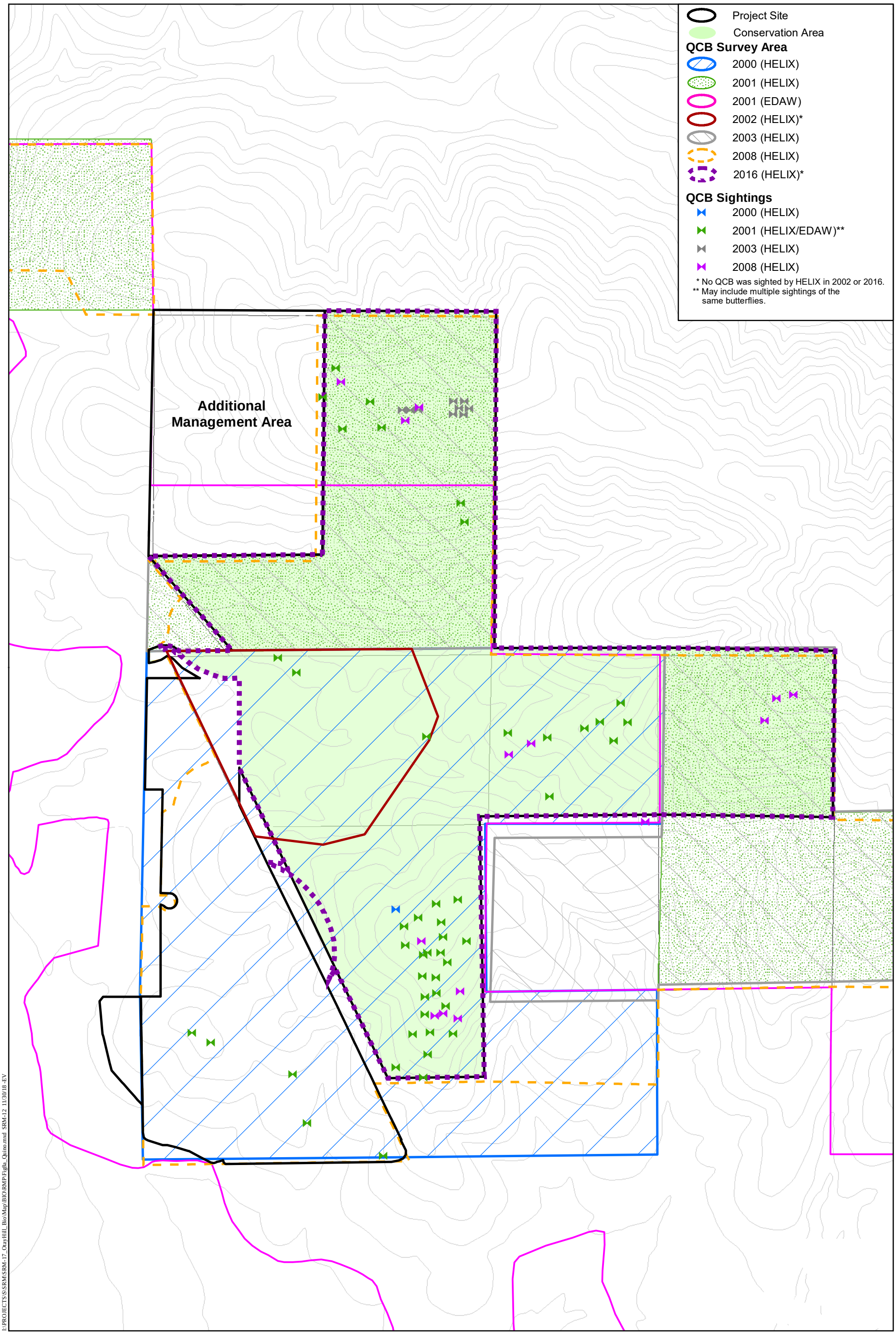


Other Existing Federal, State, and County List A and B Sensitive Plant Species

OTAY HILLS RESOURCE MANAGEMENT PLAN

HELIX Environmental Planning

Figure 7c



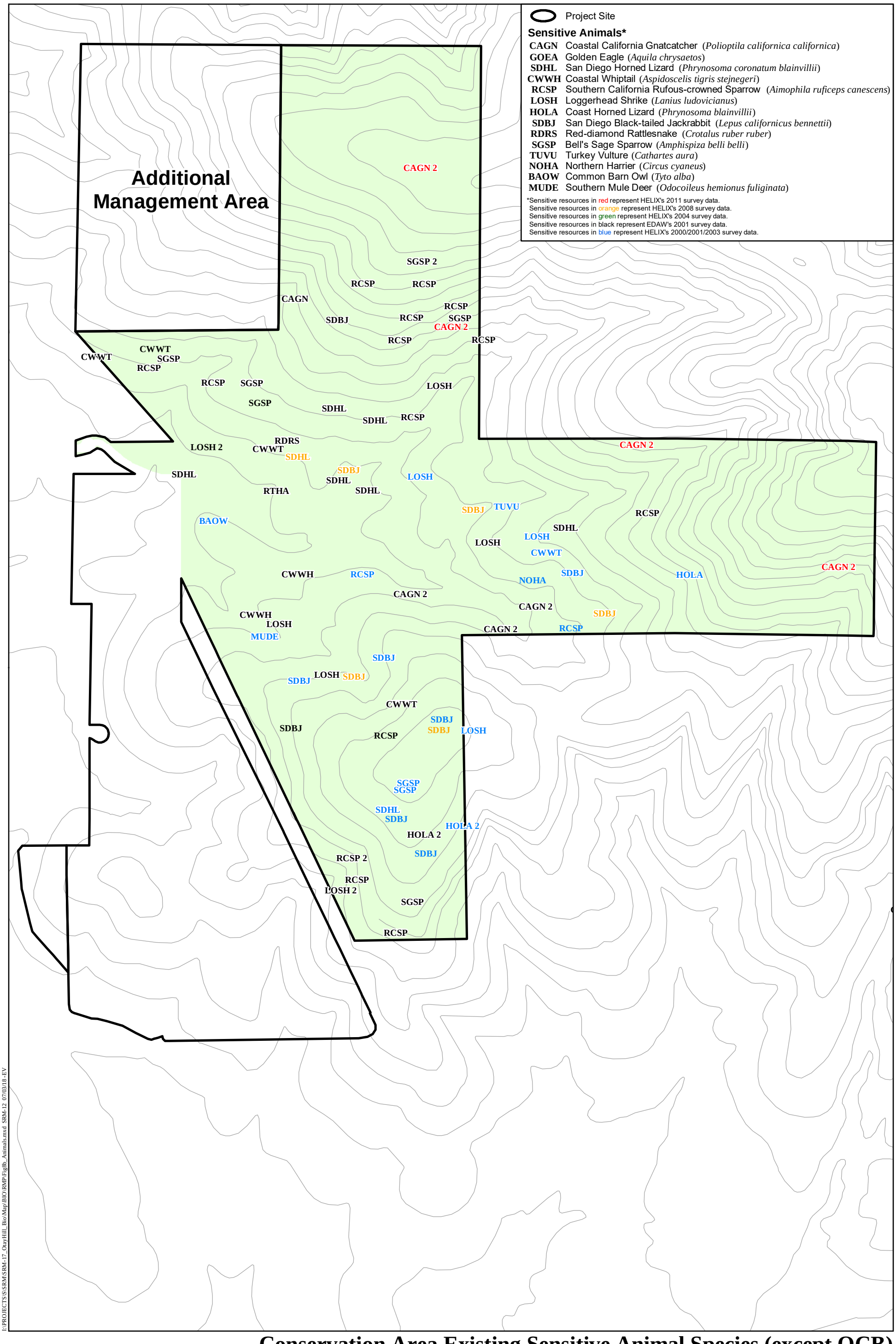
Quino Checkerspot Butterfly (QCB) Survey Limits and Sightings

OTAY HILLS RESOURCE MANAGEMENT PLAN

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N 0 700 Feet

Figure 8a



Conservation Area Existing Sensitive Animal Species (except QCB)

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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.

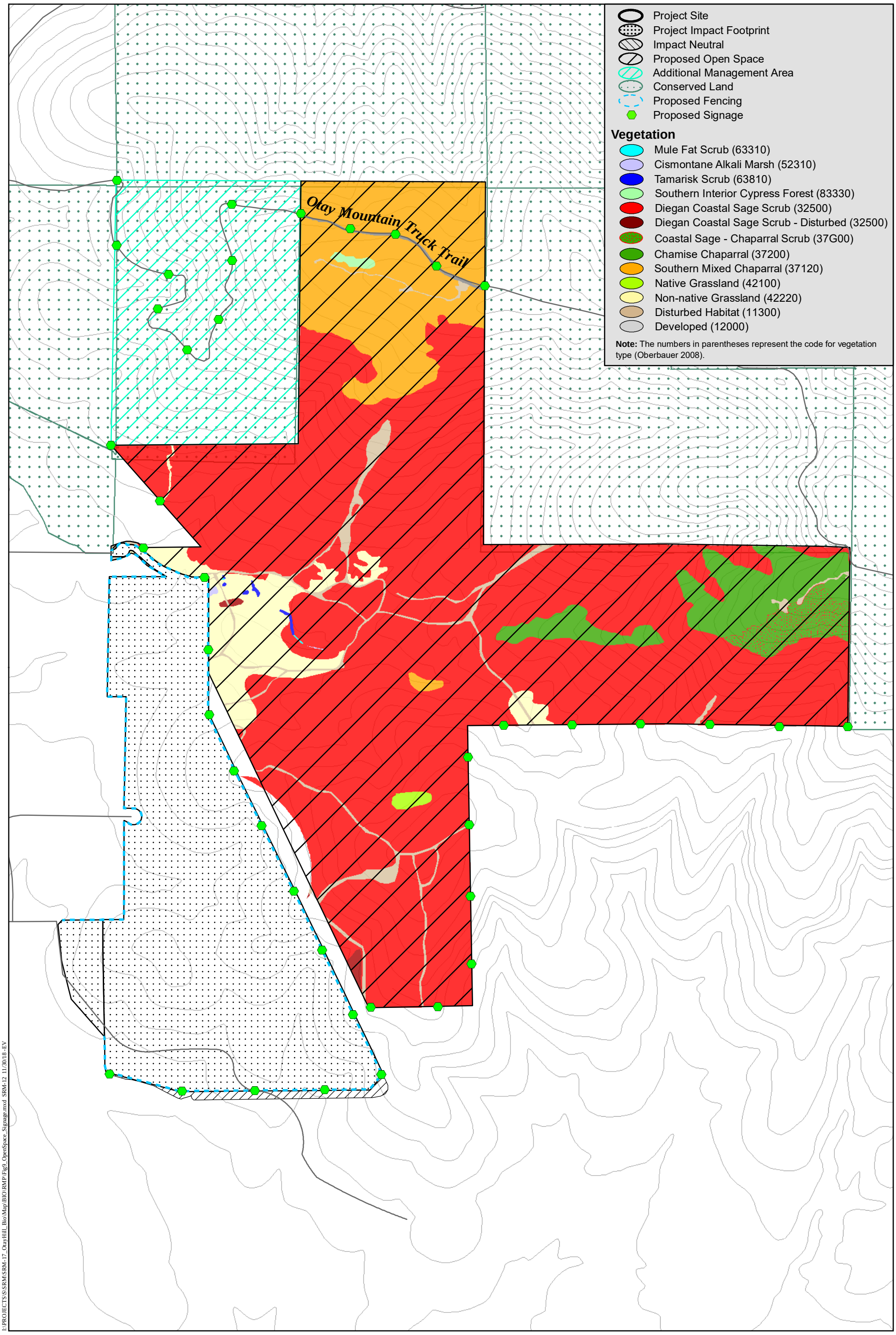
Goal 6: Coordinate/Integrate Management of the OHCA with adjacent conserved lands within the Janal Management Unit of the San Diego Management and Monitoring Program Management Strategic Plan (2013).

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

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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.

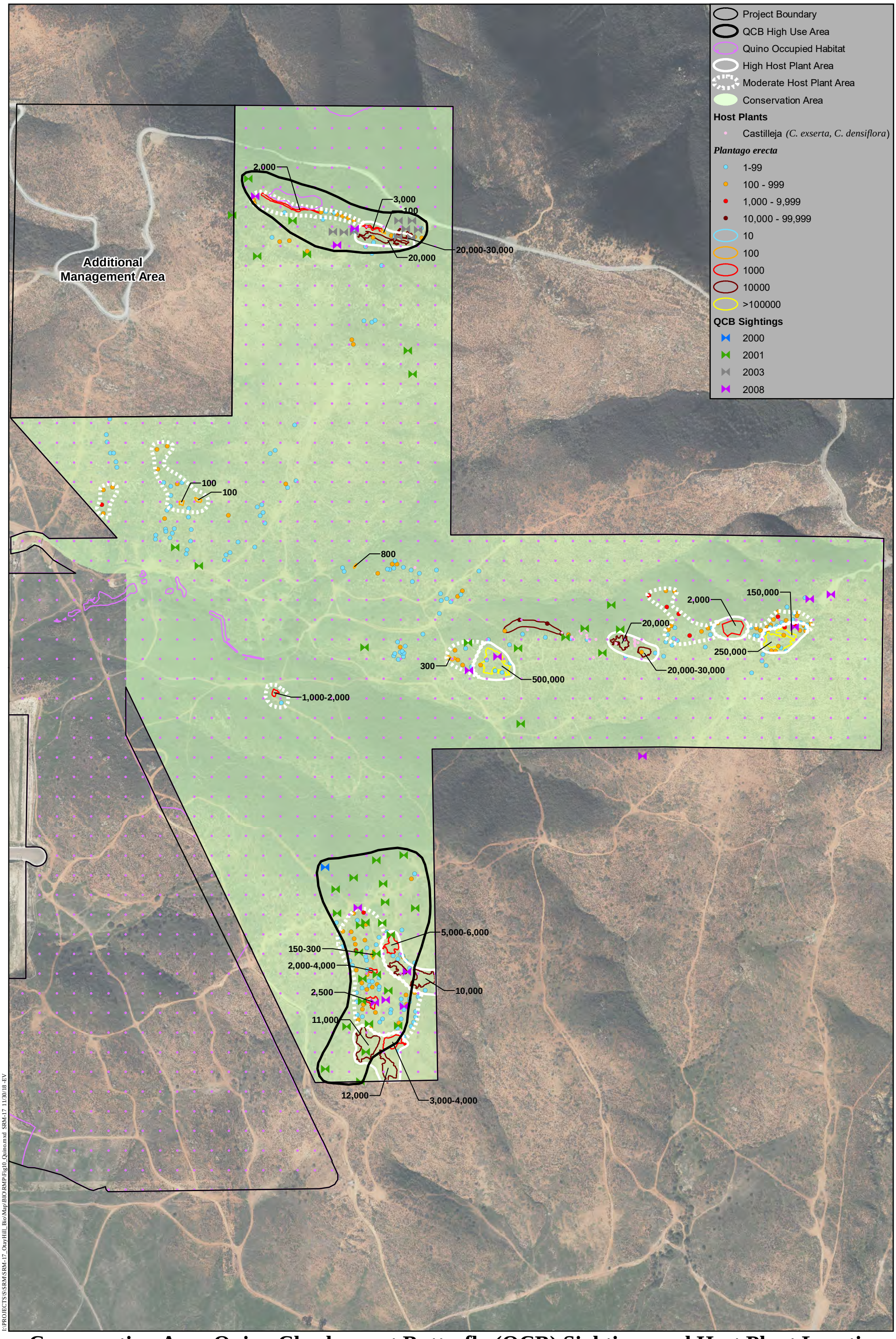
Task 1.1.6: *Map Non-native Species.* During the first year of RMP implementation, create a list of all invasive non-native plant species on the OHCA and AMA using existing species lists from previous reports of the property and from on-site inspection. Special attention should be paid to species noted 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

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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

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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\RMP\Fig6_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.

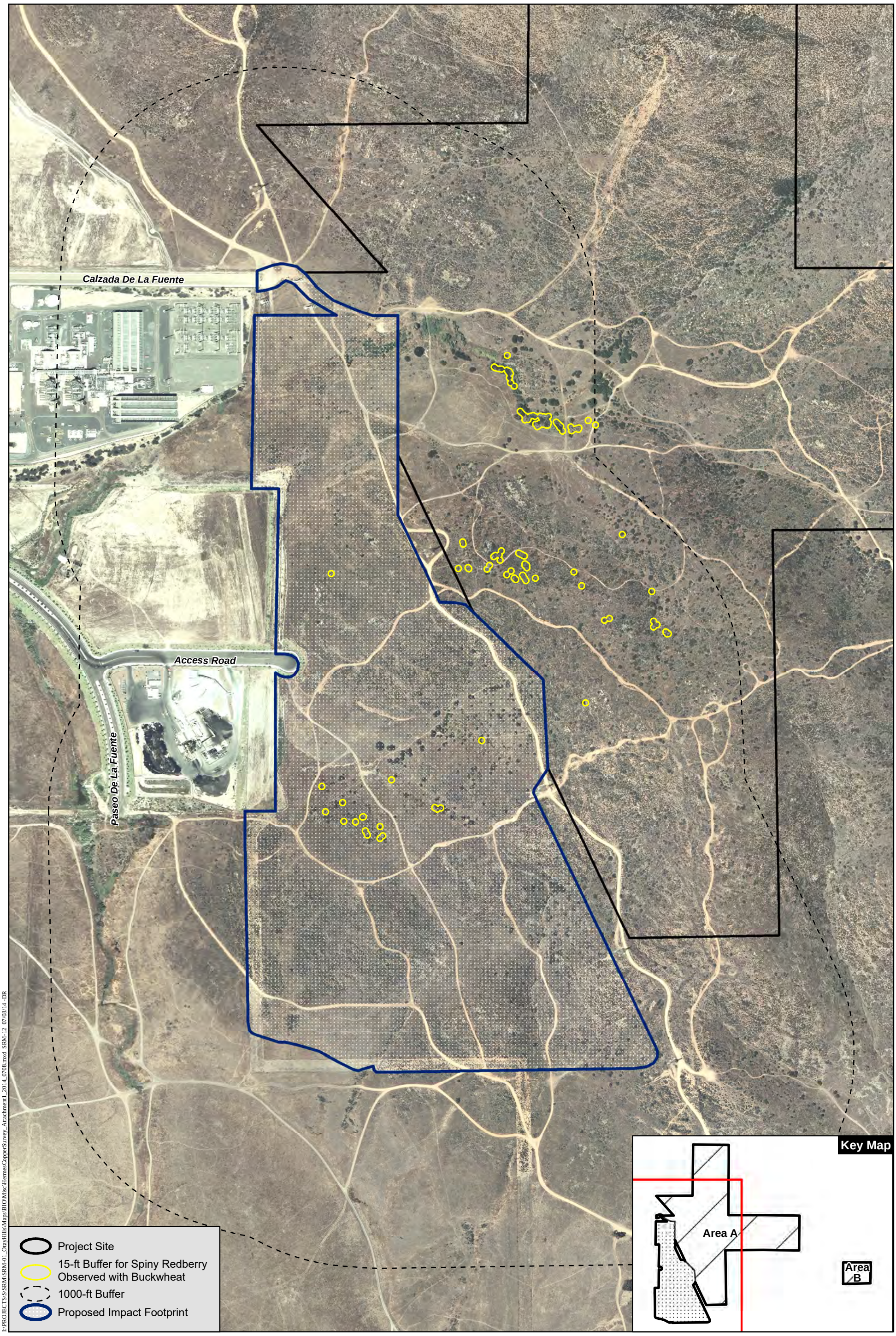
A small number of spiny redberry plants were found within the project footprint, consisting of a single individual northeast of the eastern terminus of the access road and of 12 survey areas consisting of one or two spiny redberry spread out on the north-facing slope to the southeast of the access road (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

References

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Survey Limits and Spiny Redberry Locations

OTAY HILLS

HELIX Environmental Planning

N 0 450 Feet

Attachment 1