

Appendix C
Biological Technical Report

BIOLOGICAL TECHNICAL REPORT
for the
Otay 250 SPA Project
PDS2015-SPA15-001

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GLOSSARY OF TERMS AND ACRONYMS

AMSL	Above Mean Sea Level
AOU	American Ornithologists' Union
APN	Assessor Parcel Number
BMO	Biological Mitigation Ordinance
BOS	Biological Open Space
BRCA	Biological Resources Core Area
BTR	Biological Technical Report
BUOW	Burrowing Owl
CDFG	California Department of Fish and Game (old name of CDFW)
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNAH	Center for North American Herpetology
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CSS	Coastal Sage Scrub
DPLU	Department of Planning and Land Use, County of San Diego; now PDS
DPR	Department of Parks and Recreation, County of San Diego
EIR	Environmental Impact Report
EOMSP(A)	East Otay Mesa Specific Plan (Amendment)
ESA	Endangered Species Act
F	Fahrenheit
FMZ	Fuel Modification Zone
FSEIR	Final Supplemental EIR
GIS	Geographic Information System
GPS	Global Positioning System
HCP	Habitat Conservation Plan
HMP	Habitat Management Plan
I	Interstate
LBZ	Limited Building Zone
MBTA	Migratory Bird Treaty Act
MPH	Miles per Hour
MSCP	Multiple Species Conservation Program
NCCP	Natural Communities Conservation Plan
PDS	Planning and Development Services, County of San Diego
POE	Point of Entry
QCB	Quino checkerspot butterfly
REC	REC Consultants, Inc.
ROW	Right-of-Way
RPO	Resource Protection Ordinance
RWQCB	Regional Water Quality Control Board
SanBIOS	San Diego Biological Information and Observation System
SDNHM	San Diego Natural History Museum

SEIR	Supplemental EIR
SPA	Specific Plan Amendment
SR	State Route
US	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

SUMMARY

The Otay 250 Specific Plan Amendment project (Project) consists of an amendment to the East Otay Mesa Business Park Specific Plan, an amendment to the Otay Subregional Plan, a Rezone, and Environmental Impact Report, and a Tentative Map. The approximately 253-acre Project site is located within the already approved East Otay Mesa Specific Plan (EOMSP). The Project site, previously called Sunroad Centrum, was approved for development in 2012 to subdivide the site into 55 lots. Tentative Map 5538 (TM 5538) consists of 52 technology business park lots ranging in size from 1.8 acres to 5.3 acres, one lot for a sewer pump station, one storm water detention lot, and a 51.34-acre dedicated open space lot. A 0.41-acre easement within the subdivision is identified as an open space easement established for the protection of biological resources (vernal pools). The current Project proposes a Specific Plan Amendment (SPA) to the EOMSP to establish a new Mixed-Use Village Core area, which would allow for the establishment of a mix of employment, retail, and residential uses. Approval of the Project would allow for the entitlement of a maximum of 3,158 dwelling units, 78,000 square feet of general commercial uses, and 765,000 square feet of employment uses, and approximately 51.34 acres of permanent biological open space (the project dedicated open space lot). The Project would result in grading the same area approved for grading with TM 5538.

An Environmental Impact Report (EIR) was prepared for the EOMSP and was certified in 1994, along with approval of the EOMSP project. Subsequent to this certification and approval, a Biological Technical Report (BTR) for the Sunroad Centrum TM 5538 was completed and approved in 2000 and was included in the December 15, 2000 “Final Supplemental Environmental Impact Report for the East Otay Mesa Specific Plan, Sunroad Centrum” (FSEIR). The 2000 FSEIR superseded portions of the 1994 EIR and all relevant mitigation measures from the 1994 EIR were incorporated into the 2000 FSEIR; therefore, with certification of the 2000 FSEIR, most of the 1994 EIR is no longer relevant to the Project site. This 2016 BTR report update incorporates additional data gathered since the 2000 FSEIR was approved, including changes in site vegetation and results of additional focused surveys.

The Project site supports seven vegetation/land cover types: San Diego mesa claypan vernal pools, disturbed wetland, non-native riparian habitat, native grassland, non-native grassland, disturbed land, and developed land.

Six special-status plant species have been documented on the Project site: San Diego sunflower (*Bahiopsis laciniata*), small-flower bindweed (*Convolvulus simulans*), coast barrel cactus (*Ferocactus viridescens*), variegated dudleya (*Dudleya variegata*), San Diego button-celery (*Eryngium aristulatum* var. *parishii*), and prostrate navarretia (*Navarretia fossalis*). It should be noted that San Diego sunflower (*Bahiopsis laciniata*), variegated dudleya (*Dudleya variegata*), San Diego button-celery (*Eryngium aristulatum* var. *parishii*), and prostrate navarretia (*Navarretia fossalis*) were not found onsite during the 2015-2016 surveys. However, they have been reported onsite in previous studies. Some special-status plants may have been undetectable in 2015-2016 due to drought

conditions. Therefore, in accordance with County guidelines, potential impacts and mitigation were evaluated based on the earlier reports.

Fourteen special-status animal species have been documented on or over the site: San Diego fairy shrimp (*Branchinecta sandiegensis*), San Diego ring-neck snake (*Diadophis punctatus similis*), Cooper's hawk (*Accipiter cooperii*), grasshopper sparrow (*Ammodramus savannarum*), Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), ferruginous hawk (*Buteo regalis*), turkey vulture (*Cathartes aura*), northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), California horned lark (*Eremophila alpestris actia*), loggerhead shrike (*Lanius ludovicianus*), barn owl (*Tyto alba*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), and burrowing owl (*Athene cunicularia*).

Approximately 201.39 acres will be impacted on the site, and another 2.69 acres will be impacted offsite to the north and east. Approximately 51.75 acres will be preserved within a 51.34-acre biological open space lot and a 0.41-acre open space easement. Development of the Project site will result in significant impacts to non-native grassland and disturbed wetland habitats, and to variegated dudleya, San Diego button-celery, coast barrel cactus, fairy shrimp, turkey vulture, northern harrier, white-tailed kite, loggerhead shrike, San Diego black-tailed jackrabbit, burrowing owl, and raptors. Significant impacts include impacts based on older reports even if a species was not observed onsite in 2015-2016. Habitat impact acreage changes and new significant impacts based on analysis according to current County guidelines are clearly described in this report.

Mitigation for impacts to biological resources was proposed and approved through the December 2000 FSEIR, which included a Resource Conservation Plan (RCP). An updated final RCP was prepared and approved for the Sunroad Centrum TM 5538 project in December 2003. The December 2003 RCP included revisions and additions to the approved FSEIR mitigation measures. A conditional concurrence for a Minor Amendment was completed in 2003, making the Applicant a Third-Party beneficiary to the County's Incidental Take Permit. In 2012, the County issued a "Resolution of San Diego County Conditionally Approving Tentative Map No. 31000 5538 (TM)" with mitigation-related Conditions of Approval. The mitigation measures from the 2003 RCP, the 2003 Minor Amendment, and the 2012 Conditions of Approval are discussed in this report, and are carried forward to mitigate the impacts of this Project. The mitigation measures include onsite habitat preservation within established biological open space easements (vernal pools, native grassland, non-native grassland, riparian habitat); onsite preservation of vernal pools; onsite fairy shrimp preservation, habitat creation/restoration, and fairy shrimp translocation; onsite variegated dudleya preservation; onsite barrel cactus preservation and translocation; onsite wetland creation; and purchase of offsite mitigation land for non-native grassland and variegated dudleya. Applicability of the approved mitigation measures to new determinations of significant impacts based on current County guidelines is also described in this report. All Project mitigation measures are summarized in Section 8 of this report.

1.0 INTRODUCTION

1.1 Purpose of the Report

The purpose of this report is to update documentation on the biological resources identified as present or potentially present on the Otay 250 project (Project) site; identify potential biological resource impacts resulting from the Project and compare to previously documented impacts; and confirm or update measures to avoid, minimize, and/or mitigate significant impacts consistent with federal, State and local rules and regulations including the federal and State Endangered Species Acts; California Environmental Quality Act; County of San Diego Resource Protection Ordinance, Multiple Species Conservation Program, and Biological Mitigation Ordinance; and East Otay Mesa Specific Plan. Significance determinations for this report are based on County of San Diego “Guidelines for Determining Significance and Report Format and Content Requirements, Biological Resources” (“Guidelines”) (County of San Diego 2010a).

1.2 Project Location and Description

Project Location

The 253.14-acre Otay 250 Project site is located on nine parcels (APNs 646-080-26, -27, -28, -29, -31, -32, -33, 646-240-30, and 646-310-17) in eastern Otay Mesa, north of Otay Mesa Road and on the east and west sides of Harvest Road (**Figures 1 and 2**). Associated offsite improvements would impact 2.69 acres on portions of an additional seven parcels (646-070-07, -23, -24, 646-080-11, and -21). Johnson Canyon and undeveloped land border the site to the north, Otay Mesa Road forms the southern boundary, residential and undeveloped parcels are located to the east, and undeveloped land and State Route (SR) 125 abut the site to the west. The planned Lone Star Road alignment crosses the northeastern section of the site. Satellite imagery of the site and vicinity is provided in **Figure 3**.

Project Background

The Project site was part of July 1994 County of San Diego East Otay Mesa Specific Plan (EOMSP) EIR, which included a Biological Technical Report and mitigation measures for projected impacts. A Supplemental Environmental Impact Report (SEIR) was prepared specifically for the Project site (called Sunroad Centrum at the time), and was certified in December 2000. The 2000 FSEIR superseded portions of the 1994 EIR and all relevant mitigation measures from the 1994 EIR were incorporated into the 2000 FSEIR; therefore, with certification of the 2000 FSEIR, most of the 1994 EIR is no longer relevant to the Project site. Additional or revised mitigation measures were included in the subsequent December 2003 Resource Conservation Plan (RCP) for the Project. A conditional concurrence for a Minor Amendment was completed in 2003. This project was never developed.

A subsequent project was approved for development on the site in 2012 to subdivide the site into 55 lots. Tentative Map 5538 (TM 5538) consisted of 52 technology business

park lots ranging in size from 1.8 acres to 5.3 acres, one lot for a sewer pump station, one storm water detention lot, and a 51.34-acre dedicated open space lot. A 0.41-acre easement within the subdivision is identified as an open space easement established for the protection of biological resources (vernal pools). This project was never developed.

Project Description

The current Project proposes a Specific Plan Amendment (SPA) to the EOMSP and a new tentative map to establish a new Mixed-Use Village Core area, which would allow for the establishment of a mix of employment, retail, and residential uses. Approval of the project would allow for the entitlement of a maximum of 3,158 dwelling units, 78,000 square feet of general commercial uses, and 765,000 square feet of employment uses, and conserve approximately 51.75 acres of permanent biological open space. The Project would result in grading the same area approved for grading with TM 5538.

1.3 Survey Methods

REC and its subcontractors performed numerous general and focused site surveys between 1998 and 2001 for the 2000 BTR and associated RCP (including RCP revisions completed in 2003). Additional mitigation-related surveys were conducted onsite in 2004, 2005, and 2006. General and focused surveys were undertaken in 2015 and 2016 to confirm or update documentation of biological resources onsite since the 2000 FSEIR. Focused surveys were conducted for rare plants, vernal pools, fairy shrimp, wetlands, Quino checkerspot butterfly, and burrowing owl. Table 1-1 summarizes all site surveys for the Project, with survey type and conditions during each survey.

General and Special-status Species Survey Methodology

Existing biological resources that occur on the Project site were investigated through field reconnaissance and literature review by REC biologists. Literature review included California Native Plant Society (CNPS) Rare Plant Inventory, California Natural Diversity Database (CNDDB), *San Diego Bird Atlas*, *The Jepson Manual* 2nd edition, *Jepson eFlora*, *Rare Plants of San Diego*, and the “Biological Technical Report for the East Otay Mesa Specific Plan Area” (County of San Diego 1993). The Project site was surveyed for plants and animals via intensive surveys between 1998 and 2016. Wildlife species were identified directly by sight or vocalizations and indirectly by scat, tracks, pellets, feathers, or burrows. Plant species were identified by REC biologists in the field and/or collected for later identification. Field notes were maintained by throughout the surveys. Species of interest were mapped by hand on printed satellite imagery and/or mapped with a hand-held Garmin GPS unit. Although the surveys focused on sensitive plant and wildlife species, all species observed were noted by biologists. Additionally, all onsite habitats were mapped and the presence or absence of suitable habitat for sensitive (special-status) species was documented. Mapping of vegetation and habitats on the Project site was conducted on printed Google Earth satellite images scaled at approximately 1 inch = 200 feet based on field observations, and confirmed or refined using additional Google Earth satellite imagery.

Additionally, focused surveys and population checks were conducted for special-status (sensitive) plant species (1998, 2001, 2004, 2005, 2006, and 2015), fairy shrimp (1998-1999 and 2016), burrowing owl (2016), and Quino checkerspot butterfly (1999 and 2016). Special-status species observed during the focused surveys were included in the site plant and animals lists.

Burrowing Owl Methodology

Burrowing owl (*Athene cunicularia*) surveys were conducted according to the California Department of Fish and Wildlife (CDFW) March 2012 Staff Report on Burrowing Owl Mitigation, Appendix D, and County of San Diego survey guidelines (2010a), as required by the County of San Diego. In 2016, a breeding season protocol survey for all potentially suitable habitat was conducted throughout the site. In addition to the field transects, this survey used Google Earth to identify burrows onsite in 2012 and 2014 and then check those specific locations in the field. A preliminary breeding season survey was conducted in 2015 in conjunction with spring plant surveys.

Quino Checkerspot Butterfly Survey Methodology

In 1999, Quino checkerspot butterfly (*Euphydryas editha quino*) (QCB) surveys were conducted by Royce B. Riggan (federal permit PRT-780195) of RBRiggan & Associates, over an area corresponding to the northern portion of mima-mound topography. The methods outlined in the “Survey Protocol for the Endangered Quino Checkerspot Butterfly (*Euphydryas editha quino*) for the 1999 Field Season (USFWS 1999) were used during these surveys. The results of this survey were negative and no primary host plant dot-seed plantain (*Plantago erecta*) was observed onsite. However, in 2001, QCB surveys were again conducted by RBRiggan & Associates over the mima mound area and an “extremely limited, low density, localized population” of dot-seed plantain was found on the Project site. The 2001 survey was conducted according to the Year 2000 survey protocols. No QCB were detected and the report concluded that the Project site was not occupied by QCB. In 2016, a third protocol survey was conducted by Gretchen Cummings (federal permit TE-031850-4). The 2016 survey series was conducted according to the Proposed 2016 Quino Checkerspot Survey Protocol (USFWS 2016), which combined elements of past USFWS protocols (2002, early 2014, and late 2014) to use for the 2016 season, with reporting and required survey areas unchanged from the late 2014 protocol. As was the case in 2001, small areas of dot-seed plantain were found but no QCB were detected. Results of all surveys are discussed in greater detail in Section 1.4.6.5.

Fairy Shrimp Survey Methodology

Protocol dry season surveys were conducted by Charles Black in 1998, and an additional wet season sample was collected by him in early 1999. In February 2016, protocol wet season sampling was attempted by Greg Mason (federal permit TE-58862A) of Alden Environmental, Inc. in order to update survey results; however, the pools did not receive adequate rainfall to pond, and the 2016 wet season sampling was not possible.

Special-status Plants Survey Methodology

Focused special-status plant surveys conducted in 1998 and 2001, with a special emphasis on those species historically documented onsite. In 2004, 2005, and 2006, additional surveys were conducted to evaluate the variegated dudleya (*Dudleya variegata*) population onsite and search for other previously documented special-status species. In 2015, focused surveys were conducted in early spring, mid-spring, and early summer. However, conditions were poor due to drought. In 2016, the site was reassessed for a focused special-status plant survey, but due to ongoing drought, plant germination and growth were still below average and a focused survey series was not conducted. However, locations of known occurrences were checked during other site visits and all observed plants were documented.

All Otay 250 surveys are summarized in Table 1-1, below.

Table 1-1. Surveys Conducted on the Otay 250 Project Site

Date	Time	Temp (°F)	Sky	Wind (MPH)	Survey Type	Personnel
GENERAL SURVEYS						
04/24/1998	Begin: 0900 End: 1200	Begin: 70° End: 75°	Partly cloudy	Slight breeze	General, Burrowing Owl	Elyssa Robertson, Holly Boessow
07/10/2001	Begin: 0900 End: 1000				Offsite Impact Survey, Vernal Pool Status Check	Catherine MacGregor
02/24/2015	Begin: 0955 End: 1730	Begin: 60° End: 62°	Clear	Begin: 6-9 End: 6-11	General, Early Plant Survey	Lee BenVau
06/23/2015	Begin: 0700 End: 1000	Begin: 67° End: 79°	Clear	Begin: 1-3 End: 0-5	General, Summer Plant Survey	Lee BenVau
FOCUSED SPECIAL-STATUS PLANT SURVEYS						
06/12/1998	Begin: 1200 End: 1600				Summer-blooming Species Survey	Holly Boessow, Elyssa Robertson, Robin Church
08/20/1998	Begin: 0800 End: 1200				Late Summer-blooming Species Survey	Holly Boessow, Elyssa Robertson, Robin Church
05/03/2001	Begin: 0920 End: 1200				Spring Rare Plant and Dudleya Survey	Catherine MacGregor
05/10/2001	Begin: 0800 End: 1430				Spring Rare Plant and Dudleya Survey	Catherine MacGregor
05/11/2001	Begin: 1530 End: 1730				Spring Rare Plant and Dudleya Survey	Catherine MacGregor

Date	Time	Temp (°F)	Sky	Wind (MPH)	Survey Type	Personnel
05/25/2001	Begin: 1300 End: 1530				Spring Rare Plant and Dudleya Survey	Catherine MacGregor
06/13/2001	Begin: 0850 End: 1245				Summer Rare Plant and Dudleya Survey	Catherine MacGregor
06/14/2001	Begin: 1050 End: 1510				Summer Rare Plant and Dudleya Survey	Catherine MacGregor
06/15/2001	Begin: 0915 End: 1015				Summer Rare Plant and Dudleya Survey	Catherine MacGregor
04/02/2004	Begin: 1115 End: 1145				Spring Rare Plant Check-up	Catherine MacGregor
07/07/2005	Begin: 0910 End: ~0945				Summer Rare Plant Check-up	Catherine MacGregor
05/30/2006	Begin: 0945 End: 1015				Spring Rare Plant Check-up	Catherine MacGregor
02/24/2015	Begin: 0955 End: 1730				Early Rare Plant Survey	Catherine MacGregor, Lee BenVau
04/23/2015	Begin: 1000 End: 1235				Spring Rare Plant and Dudleya Survey	Catherine MacGregor
06/03/2015	Begin: 0945 End: 1135				Summer Rare Plant and Dudleya Survey	Catherine MacGregor
2016	Checked	During	Other	Surveys	Spring Rare Plant	Catherine MacGregor
BURROWING OWL SURVEYS						
02/24/2015	Begin: 0955 End: 1730	Begin: 60° End: 62°	Clear	Begin: 6-9 End: 6-11	BUOW Winter Season Check	Catherine MacGregor
04/23/2015	Begin: 1000 End: 1235	Begin: 63° End: 63°	Overcast	Begin: 2-5 End: 4-8	BUOW	Catherine MacGregor
06/03/2015	Begin: 0945 End: 1135	Begin: 74° End: 74°	Hazy	Begin: 2-3 End: 3-9	BUOW	Catherine MacGregor
06/23/2015	Begin: 0700 End: 1000	Begin: 67° End: 79°	Clear	Begin: 1-3 End: 0-5	BUOW	Catherine MacGregor,
02/04/2016	Begin: 0945 End: 1415	Begin: 61° End: 66°	Sunny, hazy	Begin: 0-1 End: 0-2	BUOW Habitat Assessment	Catherine MacGregor
04/01/2016	Begin: 0705 End: 1000	Begin: 53° End: 63°	Partly cloudy to sunny, hazy	Begin: 1-2 End: 0-2	BUOW 1a	Catherine MacGregor, Lee BenVau
04/05/2016	Begin: 0700 End: 1010	Begin: 57° End: 64°	Hazy with light clouds	Begin: 0 End: 1-2	BUOW 1b	Catherine MacGregor, Lee BenVau
04/28/2016	Begin: 1735 End: 1955	Begin: 66° End: 57°	Sunny with clouds, to partly cloudy	Begin: 5-8 End: 2-5	BUOW 2a	Catherine MacGregor, Lee BenVau

Date	Time	Temp (°F)	Sky	Wind (MPH)	Survey Type	Personnel
04/29/2016	Begin: 1730 End: 1955	Begin: 64° End: 57°	Light clouds to partly cloudy	Begin: 3.5-6 End: 2-5	BUOW 2b	Catherine MacGregor, Lee BenVau
05/03/2016	Begin: 1800 End: 1910	Begin: 71° End: 64°	Clear with light clouds	Begin: 5-10 End: 1-3	BUOW 2c	Catherine MacGregor
05-26-2016	Begin: 0600 End: 1005	Begin: 57° End: 67°	Overcast	Begin: 0-3 End: 2-6	BUOW 3b	Catherine MacGregor, Lee BenVau
05/27/2016	Begin: 0600 End: 0950	Begin: 60.5° End: 64°	Overcast	Begin: 3-5 End: 2.5-7	BUOW 3b	Catherine MacGregor, Lee BenVau
06/21/2016	Begin: 0615 End: 1015	Begin: 69° End: 77°	Partly cloudy to overcast	Begin: 0 End: 3-7	BUOW 4a	Catherine MacGregor, Lee BenVau
06/22/2016	Begin: 0625 End: 1035	Begin: 68° End: 84°	Sunny with light clouds	Begin: 0-2 End: 0-3	BUOW 4b	Catherine MacGregor, Lee BenVau
QUINO CHECKERSPOT BUTTERFLY SURVEYS						
03/03/1999	Begin: 1130 End: 1315	Begin: 64.6° End: ±70°	Clear	Begin: 4.4-10.3 End: 3-8	Habitat Assessment/ Adult Survey	Royce B. Riggan, Denise Dixon, Danielle Flynn
03/2/1999	Begin: 1230 End: 1400	Begin: 70.4° End: ±70°	Clear	Begin: 2.7-7.9 End: 3-7	Habitat Assessment/ Adult Survey	Royce B. Riggan, Elyssa Robertson
03/19/1999	Begin: 1400 End: 1630	Begin: 74.6° End: <70°	Clear / 2%	Begin: 5.1-10.4 End: 4-8	Habitat Assessment/ Adult Survey	Royce B. Riggan
03/28/1999	Begin: 1230 End: 1400	Begin: 74.6° End: ±78°	Clear	Begin: 3.2-9.7 End: 3-8	Habitat Assessment/ Adult Survey	Royce B. Riggan
04/04/1999	Begin: 1345 End: 1515	Begin: 69.9° End: 66.1°	Clear	Begin: 1.7-4.7 End: 3-7	Habitat Assessment/ Adult Survey	Royce B. Riggan
04/10/1999	Begin: 1230 End: 1345	Begin: 71.5° End: ±75°	Clear	Begin: 3.5-7.8 End: 3-7	Habitat Assessment/ Adult Survey	Royce B. Riggan
04/17/1999	Begin: 1330 End: 1500	Begin: 87.2° End: ±86°	Clear	Begin: 4.8-10.4 End: 4-8	Habitat Assessment/ Adult Survey	Royce B. Riggan
03/14/2001	Begin: 0845 End: 1315	Begin: warm End: 70.7°	Clear	Begin: 0 End: 1.6-3.9	Adult Survey	Royce B. Riggan
03/27/2001	Begin: 1245 End: 1515	Begin: 77.8° End: 70.5°	[Sunny]	Begin: 2.2-4.6 End: 4.2-8.7	Adult Survey	Royce B. Riggan
04/16/2001	Begin: 1300 End: 1545	Begin: 76.8° End: 77.2°	[Sunny]	Begin: 3.7-9.0 End: 3.2-8.7	Adult Survey	Royce B. Riggan
04/21/2001	Begin: 1130 End: 1430	Begin: 78.9° End: 80.3°	[Sunny]	Begin: 0.0-5.7 End: 2.3-8.6	Adult Survey	Royce B. Riggan
04/26/2001	Begin: 1445 End: 1700	Begin: 83.6° End: 69.7°	[Sunny]	Begin: 1.5-6.3 End: 0.3-3.8	Adult Survey	Royce B. Riggan
02/04/2016	Begin: 0930 End: 1340	Begin: 61.3° End: 73.8°	Clear	Begin: End:	Habitat assessment, initial host plant mapping	Gretchen Cummings

Date	Time	Temp (°F)	Sky	Wind (MPH)	Survey Type	Personnel
03/01/2016	Begin: 0900 End: 1015	Begin: 67.5° End: 73.1°	30% cloud cover	Begin: End:	Completion of host plant mapping	Gretchen Cummings
03/01/2016	Begin: 1015 End: 1400	Begin: 73.1 End: 73.8	30% cloud cover	Begin: End:	QCB Survey 1	Gretchen Cummings
03/08/2016	Begin: 1000 End: 1330	Begin: 60.1° End: 65.1°	Clear	Begin: End:	QCB Survey 2	Gretchen Cummings
03/18/2016	Begin: 1355 End: 1555	Begin: 71.9° End: 73.4°	Clear	Begin: End:	QCB Survey 3	Gretchen Cummings
03/24/2016	Begin: 1330 End: 1530	Begin: 79.7° End: 79.5°	Clear	Begin: End:	QCB Survey 4	Gretchen Cummings
03/04/2015	Begin: 1430 End: 1630	Begin: 73.5° End: 74.2°	20% cloud cover	Begin: End:	QCB Survey 5	Gretchen Cummings
FAIRY SHRIMP SURVEYS						
08/20/1998					Dry Season Sampling	Charles Black
02/08/1999					Wet Season Sampling	Charles Black
Spring 2016	Attempted	After	Rain	Events	Wet Season Sampling	Greg Mason

Survey Limitations

It is assumed that the results of these surveys under-represent animal species that are nocturnal, strictly crepuscular, or especially difficult to detect. Annuals and herbaceous perennials that bloom unusually early could have been undetected. Although these surveys were conducted in January, February, March, April, May, June, July, and August, survey results are still influenced by timing and seasonal variations that affect detection of species. The 2015 and 2016 surveys were conducted during severe drought and are assumed to under-represent annual and deciduous herbaceous perennial plants, as well as wildlife that depend on those species.

Naming Conventions

Scientific nomenclature and common names for animal species in this report follow American Ornithological Union (AOU 2012) for birds, Stebbins (2003) and Center for North American Herpetology (CNAH 2013) for reptiles and amphibians, Baker et al. (2003) for mammals, and Powell (1979) and Butterflies and Moths of North America (BMNA 2013) for insects, as well as the San Diego Natural History Museum butterfly, spider, amphibian, reptile, bird, and mammal checklists for subspecies (SDNHM 2002, 2005, and undated). Scientific nomenclature for plants follows *The Jepson Manual* 2nd edition (Baldwin et al. 2012), with common names from Rebman and Simpson (2006) and the CNPS Rare Plant Inventory (CNPS 2013, 2014).

1.4 Environmental Setting

The Project site includes nine undeveloped parcels located approximately 1.25 miles north of the US-Mexican border. Harvest Road (unpaved) bisects the site north-south. Portions of the site have been altered by historical agricultural activity, but are not currently farmed.

The site is highest in the central area and slopes downward in all directions. The northwestern area slopes steeply down into Johnson Canyon, along the northern property boundary. Site elevation ranges from approximately 445 feet above mean sea level (AMSL) in Johnson Canyon at the northeastern corner of the site, to approximately 600 feet AMSL in the central portion of the property.

Otay Mesa is an ancient marine terrace, and, with the exception of Johnson Canyon, site geology is mapped as Otay Formation (Oligocene to Miocene) of sandstone, siltstone, and claystone, interbedded with bentonite lenses (USGS 2002). The Otay Formation consists of alluvial fan deposits along the western slope of the San Ysidro Mountains, and includes dacite/andecite rocks from eroded volcanic plugs in those Mountains (Brown, undated). Johnson Canyon slopes are Otay Formation alluvial fan conglomerate, while the canyon bottom is much older Pleistocene alluvium (USGS 2002).

Six soil types in four soil series are mapped onsite (USDA 1973, 2015), as shown in **Figure 4**: Diablo clay 2-9% slopes (DaC), Diablo clay 9-15% slopes (DaD), and Diablo clay 15-30% slopes, eroded (DaE2); Linne clay loam 9-30% slopes (LsE); Salinas clay 0-2% slopes (ScA); and Stockpen gravelly clay loam 2-5% slopes (SuB). These soils are described below (USGS 1973).

- The **Diablo** series consists of well-drained, moderately deep to deep clays derived from soft, calcareous sandstone and shale. These soils are on uplands and have slopes of 2-50%. In a representative profile, the upper approximately 27 inches are clay, overlying approximately 5 inches of calcareous heavy sandy loam, over a substratum of soft, calcareous decomposed sandstone. DaC is gently sloping to moderately sloping and is 34-40 inches deep over rock. DaD is strongly sloping and is 26-37 inches deep over rock. DaE2 is 20-32 inches deep over rock. The Diablo series is the most common soil series onsite and is mapped in all areas of the site except for small areas in the center, extreme south and extreme north of the site.
- The **Linne** series consists of well-drained, moderately deep clay loams derived from soft calcareous sandstone and shale. In a representative profile the surface layer is approximately 15 inches of calcareous heavy clay, over approximately 13 inches of heavy clay loam, over calcareous clay loam, with a substratum of soft, white, calcareous shale at a depth of approximately 37 inches. LsE occurs on uplands and is a rolling to hilly soil with an average slope of 16%. It is only mapped in the northeastern portion of the site.
- The **Salinas** series consists of well drained and moderately well drained clay loams that formed in sediments washed from Diablo, Linne, Las Flores, Huerhuero, and Olivenhain soils. These soils are on flood plains and alluvial fans and have slopes of

0-9%. In a representative profile the surface layer is clay loam about 22 inches thick, over approximately 24 inches of calcareous clay loam, over a substratum of calcareous clay loam and loam. In some areas the surface layer is clay. ScA is nearly level with a surface layer of clay and a substratum of clay to clay loam. It is only present onsite in a small pocket running southwest to northeast at the southern central edge of the site.

- The **Stockpen** series consists of moderately well drained, moderately deep gravelly clay loams. These soils are on marine terraces and have slopes of 0-5%. In a representative profile, the surface layer is gravelly clay loam about 3 inches thick, over subsoil of calcareous gravelly clay and clay about 31 inches thick. The substratum is clay. The gently sloping SuB is the second most common soil series onsite and occurs in the central region of the site, corresponding to mima mound topography.

1.4.1 Regional Context

The Project is located on eastern Otay Mesa in southern San Diego County. The Otay Mesa area consists of a relatively level mesa top that meets the foothills of the San Ysidro Mountains at the eastern end of the mesa, and slopes down to the coastal terrace at the western end. The northern limit is formed by the Otay River Valley, and tributary canyons cut through the mesa down to the river valley below. The southern limit of the area within the United States is the US-Mexican border. Historically, the flat land in eastern Otay Mesa was used for agriculture. In the 1960s, land use began to shift from agriculture, with its relatively high water and labor costs, to industrial and commercial development. In the 1980s, the Mexican maquiladora program further increased the demand for industrial distribution and warehousing just north of the border.

The Project site falls within the South County segment of the Multiple Species Conservation Program (MSCP). The site lies within the northwestern area of the EOMSP, which provides comprehensive development guidelines for the area. Most of the southern and western section of the site, south of the Lone Star Road alignment, is classified in the EOMSP Amendment (2015) as a Minor Amendment Area; the entire property to the north of Lone Star Road is classified as a Major Amendment Area with G-Designator; and a small area in the center of the site is classified as a Minor Amendment Area Subject to Special Consideration and with G-Designator (see **Figure 5** and Section 1.5).

1.4.2 Vegetation/Land Cover Categories

Seven vegetation categories or land cover types, classified according to Oberbauer et al. (2008), were observed within the Project area in 2015-2016, and are shown in **Figure 6**. Vegetation/land cover categories and acreages are summarized in Table 1-2, below, and described in the following paragraphs. Changes in vegetation since the 2000 FSEIR are also noted in the paragraphs below. Some small changes in acreage are attributable to the refinement of mapping based on use of satellite imagery and GIS-based digital mapping.

Table 1-2. Vegetation/Land Cover Categories and Acreages

Category (County Habitat Code)	Acres Onsite
Wetlands	
Disturbed Wetland (11200)	0.11
Non-Native Riparian (65000)	0.39
San Diego Mesa Claypan Vernal Pool (44322)	0.21
Uplands	
Developed Land (12000)	2.97
Disturbed Land (11300)	7.26
Native Grassland (42100)	1.96
Non-Native Grassland (42200)	240.24
Totals	253.14

1.4.2.1 Wetland Vegetation Categories

Disturbed Wetland (County Habitat Code 11200), 0.11 Acre

Disturbed wetlands are areas permanently or periodically inundated by water, which have been significantly modified by human activity. These wetlands are often unvegetated, but may contain scattered native or non-native vegetation. This habitat type includes portions of wetlands with obvious artificial structures and lined channels, Arizona crossings, detention basins, culverts, and ditches. (Oberbauer et al. 2008)

One of the two areas of disturbed wetland onsite is a shallow swale along the western edge of the site, in which water intermittently ponds after rain. The swale does not appear to drain to another location, and may have formed when an agriculture-related berm was created along the western side. During the 2015 surveys, the only hydrophytic vegetation observed was a very small patch of pale spike-rush (*Eleocharis macrostachya*). The 1998 and 1991 surveys also reported spike-rush (*Eleocharis* sp.). This swale was classified as a vernal pool in the 1993 EOMSP Biological Technical Report (BTR); however, no obligate vernal pool indicator plants were observed in the swale in 2015-2016, and it was reclassified as disturbed wetland in 1998. The size of “wetland” within the swale varies depending on rainfall, but based on review of historical satellite imagery and 1998 habitat mapping it appears to occupy approximately 0.09 acre.

The second area of disturbed wetland is within an abandoned excavated agriculture-related pond in the central area of the site. The upper banks of the former pond consist of minimally vegetated soil and upland vegetation. Much of the bottom also supports only upland vegetation, such as filarees (*Erodium* spp.), red brome (*Bromus madritensis* subsp. *rubens*), telegraph weed (*Heterotheca grandiflora*), and oats (*Avena* spp.) The basin has relatively low cover that includes many of the non-native grasses that occur in the surrounding non-native grassland described below. Along the lower banks are dead and drought-damaged hydrophytic shrubs and trees such as a red willow (*Salix*

laevigata), a black willow (*S. gooddingii*), small amounts of mule-fat (*Baccharis salicifolia* subsp. *salicifolia*), and tamarisk (*Tamarix ramosissima*) among upland plants. Within the lowest part of the basin bottom is a small area of disturbed wetland where water ponds after rain, and patches of herbaceous hydrophytes such as spike-rush grow. This small disturbed wetland covers approximately 0.02 acre.

Disturbed wetland habitat covers 0.11 acre total.

Non-Native Riparian (County Habitat Code 65000), 0.39 Acre

Non-native riparian habitat consists of densely vegetated riparian thickets dominated by non-native, invasive species. This habitat is common along major river channels, often where disturbance has occurred. This designation is used only where non-native, invasive species account for greater than 50% of the total vegetative cover within a mapping unit. Characteristic plants include non-native species such as giant reed (*Arundo donax*), pampas grass (*Cortaderia* spp.), Bermuda grass (*Cynodon dactylon*), eucalyptus (*Eucalyptus* spp.), non-native palms (*Phoenix* spp. and *Washingtonia* sp.), and tamarisk (*Tamarix* spp.), as well as native species such as arrow weed (*Pluchea sericea*), western cottonwood (*Populus fremontii*), and willows (*Salix* spp.). (Oberbauer et al. 2008)

Onsite non-native riparian habitat is a thicket of tamarisk with a sparse understory composed almost entirely of non-natives such as dwarf nettle (*Urtica urens*) and scarlet pimpernel (*Anagallis arvensis*). Other invasives along the disturbed edges included stinkwort (*Dittrichia graveolens*) and milk thistle (*Silybum marianum*). Scattered natives species saltgrass (*Distichlis spicata*), salt heliotrope (*Heliotropium curassavicum* var. *oculatum*), and Coulter's fleabane (*Laennecia coulteri*) were also observed along the edges of the riparian vegetation. In 1998, this area was mapped as 0.35 acre of disturbed southern willow scrub, but no willows were observed in 2015. Since the original 1998 mapping, the area of riparian vegetation has increased slightly. The non-native riparian habitat now covers approximately 0.39 acre.

San Diego Mesa Claypan Vernal Pool (County Habitat Code 44322), 0.21 Acre

Seven vernal pools have been documented onsite. Vernal pools are seasonally flooded depressions that support a distinctive living community adapted to extreme variability in hydrologic conditions (seasonally very dry and very wet conditions). In San Diego, vernal pools often retain pooled water for about two weeks after significant rain events. Vernal pools are differentiated from other temporary wetlands by the following criteria: (1) the basin is at least partially vegetated during the normal growing season or is unvegetated due to the heavy clay (or hardpan) soils that do not support plant growth; and (2) the basin contains at least one vernal pool indicator species (e.g. *Psilocarphus* spp., *Downingia cuspidata*, *Eryngium aristulatum* var. *parishii*, or crustaceans such as *Branchinecta* spp., and *Streptocephalus* spp.). Two types of vernal pools are found in San Diego County: San Diego mesa hardpan vernal pools and San Diego mesa claypan vernal pools. The pools on Otay Mesa are of the claypan type, occurring on fine-textured soils where water ponds due to a clay impermeable layer rather than a hardpan layer.

These claypan pools are almost entirely restricted to marine terraces between San Diego and Ensenada, Mexico, and have been much reduced by agriculture and development. (Oberbauer et al. 2008).

The claypan vernal pools are typically associated with a small-scale topography of low hummocks, called mima mounds, clustered on the mesa top. The vernal pools form in the depressions between the mima mounds. In drier years, the pools are typically isolated with very small watersheds of surrounding mima mound slopes. During wet years, pools between mima mounds may join if water levels are high enough. The area of mima mound topography onsite is clearly visible in satellite imagery, and occurs over the Stockpen soil unit. This soil type has a surface layer of gravelly clay loam to 3 inches deep over a subsoil of calcareous gravelly clay and clay from 3 to 31 inches, and is often associated with mima mounds.

Seven vernal pools were mapped onsite by REC in 1998. The group of pools onsite is known as the J22 complex and has been documented since at least 1978, when it was mapped in the “San Diego Vernal Pool Study, 1978” prepared for CDFW (Beauchamp 1979). Although only three J22 pools were documented in the 1979 publication and in Bauder’s 1986 “San Diego Vernal Pools” report for CDFW (Bauder 1986), the 1993 EOMSP BTR indicated seven pools were present (County of San Diego 1993). One of the seven vernal pools in the 1993 EOMSP BTR was a swale parallel to a man-made berm, which has since been reclassified as a disturbed wetland (see above). One more vernal pool was identified by REC in 1998, so the total number of pools remains seven.

Vernal pool plants documented in the J22 pools in the 1993 EOMSP BTR include dwarf woolly-marbles (*Psilocarphus brevissimus*), annual hairgrass (*Deschampsia danthonioides*), water pygmyweed (*Crassula aquatica*), American pillwort (*Pilularia americana*), flowering quill wort (*Triglochin [Lilaea] scilloides*), waterwort (*Elatine* sp.), San Diego button-celery (*Eryngium aristulatum* var. *parishii*), and prostrate navarretia (*Navarretia fossalis*). One pool (presumably the manmade swale) contained only pale spike-sedge and no obligate vernal pool plants. The 1979 report, which mentioned only special-status vernal pool plants, reported San Diego button-celery and prostrate navarretia.

Due to the severe drought beginning in 2011, no evidence of vernal pool ponding or vernal pool indicator species was observed in 2015-2016. The vernal pool locations provided in REC’s 2000 BTR and incorporated in the 2000 FSEIR are used in this BTR update, with minor mapping refinements through use of Google Earth satellite imagery between 1994 and present. Locations of the seven vernal pool locations, as of 1998, are shown in **Figure 6**. All seven pools occupy approximately 0.21 acre.

1.4.2.2 Upland Vegetation Categories

Native Grassland (Habitat Code 42100) 1.96 Acres

Native grassland, and more specifically valley needle grass grassland, is described as “A midheight (to 2 ft) grassland dominated by perennial, tussock-forming *Stipa (Nasella) pulchra*. Native and introduced annuals occur between the perennials, often actually exceeding the bunchgrasses in cover. In San Diego County, native perennial herbs such as *Sanicula*, *Sidalcea*, *Sisyrinchium*, *Eschscholzia*, or *Lasthenia* are present. The percentage cover of native species at any one time may be quite low, but is considered native grassland if 20% aerial cover of native species is present.” Native grassland usually occurs on fine-texture (often clay) soils, moist or even waterlogged during winter, but very dry in summer. (Oberbauer et al. 2006)

Although patches with varying concentrations of needle grass occur within the non-native grassland in the mima mound area, the patches currently lack the plant density that would qualify them as native grassland. Larger and denser patches occur on the north-facing slope of Johnson Canyon. These larger patches, apparently limited to the Diablo clay soil 15-30% percent slope, are overwhelming dominated by native needle grass (*Stipa cernua* and *pulchra*). Individual bunchgrasses are well spaced, to the degree that the pattern of the large individual bunches is visible in satellite imagery. Native herbs such as red-skin onion (*Allium haematochiton*) and morning-glory (*Calystegia macrostegia*) grow among the bunchgrasses. The native grassland patches had visibly lower cover of invasive species than any other habitat onsite. The areas of native grassland did not have distinct boundaries, but were mapped over approximately 1.96 acres based on site observations and Google Earth satellite imagery.

It should be noted that the 7.29 acres of native grassland mapped within the coastal sage scrub-grassland matrix in the mima-mound area in 2000 are no longer present. The entire mima mound area is now vegetated with non-native grassland heavily infested with Russian-thistle. As mentioned above, needle grass individuals occur in the mima mound area but are too diffuse to qualify as native grassland habitat. The loss of native grassland (and coastal sage scrub) in this area since 2000 may be related to fire(s) that burned across the site at an unknown date between 2004 and 2015. The 7.29 acres of former native grassland are now included in the non-native grassland acreage described below.

Non-Native Grassland (County Habitat Code 42200), 240.24 Acres

According to the County of San Diego, non-native grassland is described as “A dense to sparse cover of annual grasses with flowering culms 0.2-0.5 (1.0) m high. Often associated with numerous species of showy-flowered, native annual forbs (“wildflowers”), especially in years of favorable rainfall. In San Diego County the presence of *Avena*, *Bromus*, *Erodium*, and *Brassica* are common indicators. In some areas, depending on past disturbance and annual rainfall, annual forbs may be the dominant species; however, it is presumed that grasses will soon dominate. Germination occurs with the onset of the late fall rains; growth, flowering, and seed-set occur from

winter through spring. With a few exceptions, the plants are dead through the summer-fall dry season, persisting as seeds. Remnant native species are variable. This can include grazed and even dry-farmed (i.e., disked) areas where irrigation is not present.” (Oberbauer et al. 2008) Additional habitat identification information provided in the County’s “Report Format and Content Requirements” (County of San Diego 2010a) specifies that “Non-native grasses typically comprise at least 30 percent of the vegetation [...]. Usually, the annual grasses are less than 1 m (3 ft) in height, and form a continuous or open cover. Emergent shrubs and trees may be present, but do not comprise more than 15 percent of the total vegetative cover. Characteristic non-native grassland species include foxtail chess (*Bromus madritensis* ssp. *rubens*), ripgut grass (*Bromus diandrus*), wild oats (*Avena* spp.), fescues (*Vulpia* spp.), red-stem filaree (*Erodium cicutarium*), mustards (*Brassica* spp.), lupines (*Lupinus* spp.) and goldfields (*Lasthenia* spp.), among others. (Oberbauer et al. 2008)

The onsite non-native grassland community is characterized by annual non-native grasses such as oats, brome grasses (*Bromus* spp.), and glaucous barley (*Hordeum murinum* subsp. *glaucum*); and forbs such as black mustard (*Brassica nigra*), short-pod mustard (*Hirschfeldia incana*), London rocket (*Sisymbrium irio*), filarees, and Russian-thistle (*Salsola* sp.). Plant density and dominance vary throughout the site. Some areas are strongly dominated by Russian-thistle, other areas are characterized by thick, tall stands of black mustard, and some areas are dominated by London rocket. Within the mima mound area, vegetation is characterized by shorter and more open grasses and abundant prickly Russian-thistle (*Salsola tragus*), with scattered native herbs such as needle grass, splendid mariposa lily (*Calochortus splendens*), common goldenstar (*Bloomeria crocea* var. *crocea*), and fascicled tarweed (*Deinandra fasciculata*). The Lone Star Road alignment, formerly a dirt road, supports greater numbers of native herbs and wildflowers such as small-flower soap plant (*Chlorogalum parviflorum*), fascicled tarweed, rayless gumplant (*Grindelia camporum*), and common goldfields (*Lasthenia gracilis*). The 7.29 acres of former native grassland in the mima mound area that apparently did not recover after the fire(s) onsite are now included in non-native grassland. Non-native grassland occupies approximately 240.24 acres onsite.

1.4.2.3 Other Upland Land Cover Categories

Developed Land (County Habitat Code 12000), 2.97 Acres

Urban and/or developed land consists of “Areas that have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported. Developed land is characterized by permanent or semi-permanent structures, pavement or hardscape, and landscaped areas that require irrigation. Areas where no natural land is evident due to a large amount of debris or other materials being placed upon it may also be considered urban/developed (e.g. car recycling plant, quarry).” (Oberbauer et al. 2008) Additional habitat identification information provided in the County’s “Report Format and Content Requirements” (County of San Diego 2010a) includes “Land that has been constructed upon or otherwise covered with a permanent unnatural surface shall be considered Developed...”

The portion of the parcel overlapping Otay Mesa Road is developed land lacking native vegetation. Developed areas cover 2.97 acres along the southern edge of the site.

Disturbed Land (County Habitat Code 11300), 7.26 Acres

The County of San Diego describes disturbed land as “Areas that have been physically disturbed (by previous legal human activity) and are no longer recognizable as a native or naturalized vegetation association, but continue to retain a soil substrate. Typically vegetation, if present, is nearly exclusively composed of non-native plant species such as ornamentals or ruderal exotic species that take advantage of disturbance, or shows signs of past or present animal usage that removes any capability of providing viable natural habitat for uses other than dispersal. Examples of disturbed land include areas that have been graded, repeatedly cleared for fuel management purposes and/or experienced repeated use that prevents natural revegetation (i.e. dirt parking lots, trails that have been present for several decades), recently graded firebreaks, graded construction pads, construction staging areas, off-road vehicle trails, and old homesites.” (Oberbauer et al. 2008) Additional habitat identification information provided in the County’s “Report Format and Content Requirements” (County of San Diego 2010a) specifies that “Disturbed land includes areas in which the vegetative cover comprises less than 10 percent of the surface area (disregarding natural rock outcrops) and where there is evidence of soil surface disturbance and compaction from previously legal human activity; or where the vegetative cover is greater than 10 percent, there is soil surface disturbance and compaction, and the presence of building foundations and debris...resulting from legal activities (as opposed to illegal dumping). Examples include recently graded firebreaks, graded construction pads, construction staging areas, off-road vehicle trails, and old homesites.” (Oberbauer et al. 2008)

Harvest Road and the larger unpaved roads and trails throughout the site are considered disturbed land. These roads and trails have small amounts of herbaceous vegetation at the edges, but are almost entirely bare highly compacted soil. Most trails in the southern and central areas are likely associated with historical agricultural activity. Disturbed land in the more sloping northern section of the site includes off-road recreational vehicle trails used by trespassers, and a trail across the creek in Johnson Canyon. Disturbed land covers approximately 7.26 acres onsite.

1.4.2.4 Vegetation Categories Included in the 2000 FSEIR but No Longer Present on the Site

Coastal sage scrub - At the time of REC’s 2000 BTR, the site supported disturbed coastal sage scrub vegetation, including patches of native grassland, within the mima mound area. Although this area was already dominated by non-native species such as brome grasses, oats, and black mustard, several coastal sage scrub species such as coastal sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and prickly-pear (*Opuntia* sp.) were scattered throughout. Since that time, the disturbed coastal sage scrub vegetation has become non-native grassland. Only a very low number of coastal sage scrub plants remain in this area. Blackened shrub stumps and burned

barrel cacti and needle grass bunches indicate that a fire (date unknown) removed woody vegetation. In 2015-2016, regrowth of the coastal sage shrubs was almost non-existent. For this 2017 BTR update, disturbed coastal sage scrub habitat (including native grassland patches) was updated to non-native grassland.

Southern willow scrub - At the time of REC's 2000 BTR, the site supported 0.20 acre of southern willow scrub in the abandoned agricultural pond and 0.35 acre in the Johnson Creek drainage in the northeastern corner of the site. During the 2015 survey, too few willows remained to map this area as southern willow scrub. Only three non-contiguous willows occur on the northwest side and the southeast side. Dead trees without new living shoots, including fire blackened stumps, were observed on the banks. It appears that willow scrub habitat in the agricultural pond was changed by drought and/or fire. The 0.35 acre of willow scrub originally mapped in Johnson Canyon has been replaced by 0.39 acre non-native riparian vegetation – almost entirely tamarisk.

1.4.3 Flora

Based on compilation of plant observations from REC's 1998, 1999, 2001, 2015, and 2016 site surveys, and 1998 and 1999 biological subcontractor surveys, 101 plant taxa have been observed onsite by the Project team. Of these, 50 were native, 50 non-native, and one (identified to genus only) undetermined. Characteristic species of each habitat are included in the habitat descriptions above. Non-native grassland had the greatest observed species diversity, with 90 taxa. The taxa observed in the greatest number of vegetation categories were the non-native annual grasses (brome grasses in particular), black mustard, fasciated tarweed, nodding needle grass, and purple needle grass. Plant taxa and vegetation in which they were observed are listed in **Appendix A**.

1.4.4 Fauna

Based on compilation of wildlife observations from REC's 1998, 1999, 2001, 2015, and early 2016 site surveys; and 1998 and 1999 biological subcontractor surveys, 104 animal taxa were documented on or over the site: 45 invertebrate taxa, 1 amphibian, 6 reptile taxa, 42 bird taxa, and 10 mammal taxa. Of these, all but eight are native species. The most common wildlife species included funnel weaver spider (Family Agelenidae), orthopterans (crickets and grasshoppers), checkered white butterfly (*Pontia protodice*), western white-throated swift (*Aeronautes saxatalis*), horned lark (*Eremophila alpestris actia*), song sparrow (*Melospiza melodia*), meadowlark (*Sturnella vulgaris*), and Botta's pocket gophers (*Thomomys bottae*). Animal taxa, estimated number of individuals, and habitats in which they were observed are listed in **Appendix B**.

1.4.5 Special-status Plant Species

For the purposes of this report, a sensitive or special-status plant is any plant taxon (species, subspecies, or variety) that is officially listed by the State of California or the federal government as Endangered, Threatened, or Rare; a candidate for one of those listings; included in California Rare Plant Ranks (CRPR) 1 through 4; or included in the

County of San Diego Sensitive Plant Lists A through D. A list of special-status plants with the potential to occur on the Project site was generated from the CNDDDB RareFind5 database and a list provided by the County of San Diego. The resulting list includes any special-status plant documented within the Project site's USGS 7.5' quadrangle (Otay Mesa) as well as any taxa specifically identified by the County for this project. **Appendix C** provides information on these species, as well as an evaluation of the potential for each species to occur onsite, based on CNDDDB and SanBIOS search results, the CNPS Inventory of Rare and Endangered Plants (on-line version, 2013), Reiser's "Rare Plants of San Diego County" (2001), historical Otay Mesa vernal pool complex documentation, professional experience in Otay Mesa, and field observations.

1.4.5.1 Special-status Plant Species Documented Onsite

Six special-status plant species have been documented onsite since 1993: San Diego sunflower, small-flower bindweed, coast barrel cactus, variegated dudleya, San Diego button-celery, and prostrate navarretia. Information on each of these is provided below, and locations are shown in **Figure 6**.

San Diego sunflower (*Bahiopsis laciniata*, Asteraceae) is CRPR 4.2 and County Group D shrub with small, rough, dark green leaves and bright yellow daisy-like flowers; it typically grows in drier and hotter parts of coastal sage scrub (and sometimes chaparral), often on south- and west-facing slopes. This species was observed onsite in the mima mound area among the coastal sage scrub plants in 1999, but has not been observed onsite since the site burned (burn date unknown).

Small-flower bindweed (*Convolvulus simulans*, Convolvulaceae) is a CRPR 4.2 and County Group D species that prefers clay soils in open habitat such as grasslands or openings in chaparral and coastal scrub. This species was not detected onsite in surveys prior to 2015, but in February 2015, a patch was observed growing on sloping cracked-clay soil immediately upslope of the creek in Johnson Canyon and below native grassland. In 2016, a single plant was observed on the apron of an abandoned burrowing owl burrow in the southeastern corner of the site. These locations are shown in **Figure 6**.

Coast barrel cactus (*Ferocactus viridescens*, Cactaceae) is a CRPR 2B.1, County Group B, and MSCP-covered species that is limited to San Diego County and Baja California. In San Diego County this species occurs occasionally on dry slopes below 1500 meters AMSL and is found along the coastal slope from Oceanside south to Boundary Monument. Coast barrel cactus is threatened by urbanization, off-road vehicles and commercial exploitation. This species was found in non-native grassland onsite, especially within the mima mound area. Approximately 110 individuals were documented onsite during the 1998-1999 and 2001 surveys. In 2015-2016, presence of coast barrel cactus in the biological open space was confirmed.

Variegated dudleya (*Dudleya variegata*, Crassulaceae) is a CRPR 1B.2, County Group A, Narrow Endemic, MSCP-covered species that is restricted in distribution to southern San Diego County and northwestern Baja California. It occurs in clayey or loamy soils in

sage scrub, grassland, and chaparral habitat, including isolated rocky substrates in open grasslands, and in proximity to vernal pools in mima mound topography. Typically, this dudleya grows in small areas devoid of shrub cover.

Variegated dudleya has been documented onsite in several locations in the past. According to the 1993 EOMSP BTR, 361 individuals were previously documented in the J22 vernal complex (WESTEC 1985 in County of San Diego 1993), of which 73 were south of Lone Star Road and 288 north of Lone Star Road. The 1998-1999 surveys found a total population size of 100-200 individuals in three locations. In 2001, those three locations were not detected, but a different group of several hundred plants was found on the western side of the site, north of the Lone Star Road alignment and approximately 10 more individuals were observed east of that group. In May 2006, 11 individuals were observed near the northern 1998 location, north of Lone Star Road. The 1998-2006 observation locations are shown in **Figure 6**. No variegated dudleya was detected in 2015 or 2016. A focused survey in a year of adequate rainfall would be necessary to estimate the size of any remaining population onsite.

San Diego button-celery (*Eryngium aristulatum* var. *parishii*, Apiaceae) is a federal and State Endangered, CRPR 1B.1, County Group A and MSCP-covered species. It is a prostrate, herbaceous, deciduous, biennial or perennial species that occurs in or near vernal pools in Riverside and San Diego Counties and in northern Baja California, and typically blooms between March and May. The 1979 San Diego vernal pool survey reported this species in the J22 vernal pool complex. The 1993 EOMSP BTR documented approximately 65 individuals in three of the J22 vernal pools. It was documented in five of the vernal pools onsite in 1998 (see **Figure 6**), but not counted at that time. In 2001, it was not observed in any of the seven mapped pools, but was found in a mima mound depression to the southeast of the vernal pool that is south of Lone Star Road (see **Figure 6**), and in 2004, approximately 30 individuals were observed in this same depression. The location of the 2001 and 2004 observations is within the area of mima mound topography closer to the southeastern boundary of the mima mound area, near where ground level begins to slope downhill toward the southeast. These plants were growing in the concave area between mima mounds. Based on review of prior vernal pool and sensitive species mapping, including the EOMSP BTR, San Diego button-celery was not previously documented at this location. No San Diego button-celery was detected in 2015 or 2016. A focused survey in a year of adequate rainfall and vernal pool ponding would be necessary to estimate the size of any remaining population onsite.

Spreading navarretia (*Navarretia fossalis*, Polemoniaceae) is a federal Threatened, CRPR 1B.1, County Group A, MSCP-covered species. This white-flowered annual occurs in western Riverside and southwestern San Diego Counties, as well as in northwestern Baja California. It generally occurs in vernal pools or roadside depressions below 450 meters AMSL, and can be locally common despite its rarity. Historically, prostrate navarretia occurred in relatively few of the San Diego County vernal pools. The species is known from just three areas within the County including San Marcos, National City, and Otay Mesa. During the 1991 County of San Diego surveys (in the 1993

EOMSP BTR), approximately 12 individuals were detected in the J22 vernal pool complex north of Lone Star Road. It has not been documented onsite since that time.

Copies of the CNDDDB forms for these special-status plant occurrences are provided at the end of **Appendix C**.

1.4.5.2 Special-status Plant Species with Moderate to High Potential to Occur Onsite

Based on results of decades of surveying the Project area, the only special-status species with high potential to occur onsite are those that were historically found onsite but not detected in recent years: San Diego sunflower, variegated dudleya, and San Diego button-celery. Each of these is described in Section 1.4.5.1, above. (Because prostrate navarretia has not been reported onsite since the 1979 vernal pools survey, it is unlikely to have high potential to occur onsite.)

Three species may have moderate potential to occur onsite: San Diego goldenstar (*Bloomeria clevelandii*), Palmer's grappling-hook, (*Harpagonella palmeri*), and golden-ray pentachaeta (*Pentachaeta aurea* subsp. *aurea*). Evaluations of each of these are provided in **Appendix C**.

1.4.6 Special-status Animal Species

For the purposes of this report, sensitive or special-status wildlife is any animal taxon (species or subspecies) that is officially listed by the State of California or the federal government as Endangered, Threatened, or Rare; a candidate for one of those listings; classified as Fully Protected, Species of Special Concern, or Watch List by CDFW; or included in the County of San Diego Sensitive Animals Lists.

A list of special-status animal species with the potential to occur on the Project site was generated from the CNDDDB RareFind5 database, SanBIOS database, and a list provided by the County of San Diego. The resulting list includes any special-status animals documented within the Project site's USGS 7.5' quadrangle and surrounding quadrangles, within an applicable elevation range, as well as any taxa specifically identified by the County for this project. **Appendix D** provides information on these species, as well as an evaluation of the potential for each to occur onsite, based on species requirements, CNDDDB and SanBIOS search results, other biological reports conducted in this area, professional experience, and field observations.

1.4.6.1 Special-status Animal Species Observed on or over the Site

Fourteen special-status wildlife species have been documented on or over the site since 1993: San Diego fairy shrimp, San Diego ring-neck snake, Cooper's hawk, grasshopper sparrow, Southern California rufous-crowned sparrow, ferruginous hawk, turkey vulture, northern harrier, white-tailed kite, burrowing owl, California horned lark, loggerhead

shrike, barn owl, and San Diego black-tailed jackrabbit. Information on each of these is provided below.

San Diego fairy shrimp (*Branchinecta sandiegensis*) is a federal Endangered and County Narrow Endemic and Group 1 MSCP-covered branchiopod that inhabits vernal pools and other unvegetated ephemeral basins in Orange and San Diego Counties and Baja California. Suitable pools are typically more than 30 centimeters deep, within 64 kilometers of the Pacific Ocean, and less than 701 meters AMSL. USFWS critical habitat for San Diego fairy shrimp includes approximately 72.5 acres onsite that was designated in 2007 (although the majority of this is currently non-native grassland; the remaining critical habitat [vernal pools] is located within the open space easements). Protocol dry season surveys were conducted on August 20, 1998, and an additional wet season sample was collected from the abandoned agricultural pond basin in January 1999 after fairy shrimp were observed in ponded water in the bottom of the basin. San Diego fairy shrimp cysts were found in all vernal pools and the small disturbed wetland northeast of the abandoned agricultural pond, and adults were found in the disturbed wetland within the agricultural pond (see locations in **Figure 6**). The 1998-1999 fairy shrimp survey report is provided in **Appendix E**. In February 2016, wet season sampling was attempted in order to update survey results; however, the pools did not receive adequate rainfall to pond, and wet season sampling was not possible. The consultant's letter summarizing this attempt is also provided in **Appendix E**. All vernal pools and both disturbed wetlands are considered occupied by San Diego fairy shrimp

San Diego ring-neck snake (*Diadophis punctatus similis*) has no State or federal special-status, but is a County Group 2 taxon. It typically occurs in moist habitats such as wet meadows, farmland, grassland, and woodlands along the coast into the Peninsular Ranges, but is generally hidden during the day. One individual was observed onsite during the 1999 QCB surveys, in the northern part of the mima mound area. None were observed in 2015-2016.

Cooper's hawk (*Accipiter cooperii*) is a CDFW Watch List, and County Group 1 MSCP-covered raptor that inhabits riparian woodlands with cottonwoods and sycamores, oak woodlands, eucalyptus groves and other forested areas at 500-3000 feet AMSL. Nesting occurs in second-growth conifer stands or deciduous riparian woodland areas. Cooper's hawk forages in open areas near forests, and in winter, open woodlands and fields may also be used. One Cooper's hawk was observed flying over the site in 2015. It may have been drawn to the power plant on the south side of Otay Mesa Road by a recorded Cooper's hawk call played at the power plant (to deter bird nesting). After flying from north of the site to the power plant, it turned and flew back to the north. None were observed in 2016.

Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*) is a CDFW Watch List and County Group 1 MSCP-covered taxon. This bird favors moderately vegetated slopes of coastal sage scrub dominated by coastal sagebrush, and coastal bluff scrub and chaparral with grass and forb patches, 0-3000 feet AMSL. It nests on the ground at the base of rocks, grass tufts, or saplings, or slightly above ground in the

branches of shrubs or trees. This species was observed within the non-native grassland and former coastal sage scrub during 1999 Quino checkerspot butterfly surveys. None were observed in 2015-2016.

Grasshopper sparrow (*Ammodramus savannarum*) is a State Species of Special Concern, County Narrow Endemic, MSCP-covered and County Group 1 taxon. It is San Diego County's bird most restricted to native grassland, which is one of southern California's most threatened habitats. Native grassland is dominated by *Stipa (Nassella)* bunchgrasses, and, where used by grasshopper sparrows, usually contains some shrubs characteristic of coastal sage scrub. Native grassland has been removed and degraded by development, invasive plant species, and conversion to agriculture, and grasshopper sparrows are now uncommon and localized. Nests are hidden on the ground under clumps of grass and very difficult to find. (Unitt 2004). During the 2001 QCB survey, grasshopper sparrows were noted in the mima mound area, calling in territorial behavior. Although the mima mound area supported better quality habitat at that time, in a matrix of grassland and coastal sage scrub shrubs, native grassland and limited shrubs remain onsite and habitat is still suitable for grasshopper sparrow. Based on habitat descriptions and mapping in the 2001 QCB report, the grasshopper sparrows were detected north of the Lone Star Road alignment within the northern biological open space, where mima mound topography has not been altered by agricultural activity. No grasshopper sparrows were detected during 2015 and 2016 surveys.

Burrowing owl (*Athene cunicularia*) is a State Species of Special Concern, USFWS Bird of Conservation Concern, and County Narrow Endemic and Group 1 MSCP-covered raptor that hunts for small rodents in open grassland and agricultural land. This owl is unusual in that it enlarges and then lives and nests in burrows of small mammals, particularly California ground squirrel (*Spermophilus beecheyi*). Burrowing owls have drastically declined in San Diego County since the 1970s, from approximately 250-300 pairs to approximately 46 pairs in 2007 (County of San Diego 2010). They appear to have suffered, like other grassland birds, from loss of habitat, sensitivity to habitat fragmentation, proliferation of terrestrial predators, and high mortality from collision with cars (Unitt 2004). East Otay Mesa is the area with largest number of remaining breeding burrowing owls; migratory burrowing owls are also present in the area during winter months (Unitt 2004).

Records of burrowing owls in the Project area can be found in the CNDDDB, including four within a mile to the south and southeast, two a short distance to the southwest, and another two within a mile to the west. The four records to the south and southeast are from 2006 and 2009, but appear to be located in areas that are now developed. The locations of the two nearby records to the southwest are from 2006, within the footprint of the SR-125 extension. The two records to the west are also from 2006 and 2009; one appears to be on Brown Field Municipal Airport land, and the other is close to SR-125. No newer records were found in CNDDDB, but the Lone Star mitigation conservation area to the northwest of the site has reportedly had success with introduction of breeding burrowing owls in manmade burrows.

No burrowing owls, burrows, or sign were detected onsite during the 1998, 1999, or 2001 site surveys. During the 2015 burrowing owl survey, a group of approximately 7 abandoned burrows was found onsite just east of Harvest Road and south of the east-west dirt road (see **Figure 6**). The burrow holes were filling with soil, spider webs, and plant debris, and no burrowing owl sign (or evidence of use by any other animals) was observed on the aprons. In early 2016, the burrows were further degraded, and appeared to have been eroded and filled with silt by rainstorms early in the year. Remains of another two to three even older burrows were found in 2015 down-slope and slightly east of these, immediately north of Otay Mesa Road, east of Harvest Road (see **Figure 6**); these burrows were degraded to the point that they were only marginally identifiable, and one could not be identified as a burrowing owl burrow with certainty.

During the 2016 breeding season protocol surveys, additional inactive burrows were found. The survey field work was supplemented by use of Google Earth satellite imagery. That imagery shows burrows in 2012 and 2014. All burrows found during the survey are shown in **Figure 6**. In total, 15 burrows were found within the Project footprint, and 24 were found in the northern biological open space. No burrowing owls were observed on or near the site, and no burrows were currently or recently active. Most burrow holes were filled, and very few had prey remains on the aprons. Only one burrow had detectable remains of pellets, and those were degraded into small piles of shell and fossorial mammal bones and fur. Because burrows were not active, the habitat is considered non-native grassland, per County guidelines. A copy of REC's 2016 burrowing owl report is provided in **Appendix F**.

Ferruginous hawk (*Buteo regalis*) is a USFWS Bird of Conservation Concern, CDFW Watch List, and County Narrow Endemic and Group 1 MSCP-covered species that is an uncommon winter visitor to San Diego County. This raptor forages over larger tracts of grassland, especially those less than 12 miles inland, as well as desert and sparsely brushy land. It tends to avoid areas near human activity and areas without large open spaces. One ferruginous hawk was observed soaring high over the site in December 1998. None were observed in 2015-2016.

Turkey vulture (*Cathartes aura*) is not a State or federal special-status species, but is a County Group 1 and MSCP-covered species. Turkey vultures soar over dry open country such as coastal sage scrub, mixed and chamise chaparral, grassland, mixed conifer and closed cone forest habitats, as well as riparian habitat and roadsides, in search of the carrion upon which they feed. One turkey vulture was observed soaring over the site in 2015. None were observed in 2016.

Northern harrier (*Circus cyaneus*), a State Species of Special Concern and County Group 1 MSCP-covered species, forages over grasslands like many other raptors, but is unusual in building its nest on the ground within grassland, marsh or other dense vegetation. According to the San Diego Bird Atlas, a breeding population of four to six pairs was present on Otay Mesa at the time of that book's publication (2004), and even more birds may be present in winter. Breeding pairs have been observed onsite repeatedly during the REC team surveys, beginning in 1999. In February 2016, a pair and a single

male were observed on and over the site. The female limited her activity to a specific area in grassland north of Lone Star Road and the mima mound area (see location in **Figure 6**). One male foraged over a larger area of grassland, while the other male was observed only over the mima mound area grassland.

White-tailed kite (*Elanus leucurus*) is a CDFW Fully Protected and County Group 1 MSCP-covered raptor. This species is widespread over the coastal slope and prefers riparian woodlands, oak groves, or sycamore groves adjacent to grassland. In California, this species was known to feed almost exclusively on California vole (*Microtus californicus*), but composition of prey varies geographically and California white-tailed kites may be adapting to other locally available rodent prey such as mice. One pair was observed foraging over non-native grassland in the northern part of the site during the 1998-1999 surveys. None were observed in 2015-2016.

California horned lark (*Eremophila alpestris actia*), a CDFW Watch List and County Group 2 species, favors open patches of bare land alternating with low vegetation in grasslands, montane meadows, and sagebrush plains. Horned larks occurred throughout non-native grassland and disturbed areas onsite in 2016. Locations of pairs, flocks, and pinpointed individuals are shown in **Figure 6**.

Loggerhead shrike (*Lanius ludovicianus*), a USFWS Bird of Conservation Concern, State Species of Special Concern, and County Group 1 MSCP-covered species, inhabits open country with scattered trees and shrubs, agricultural land, desert washes and desert-edge scrub, broken chaparral and, occasionally, open woodland. Suitable hunting perches are an important part of the habitat. In 2015, a loggerhead shrike was observed in a snag on the bank of the agricultural pond (see locations in **Figure 6**). None were observed in 2016.

Barn owl (*Tyto alba*) is not a State or federal special-status species, but is a County Group 2 species that forages in dense grassland or agricultural fields. Barn owls nest in cut bank burrows and cliff recesses, as well as bases of palm leaves and a wide variety of artificial cavities. In winter, this species often roosts in dense conifers or in nest boxes if available. Of the owls occurring in San Diego County, this species is most adapted to suburban and urban environments. During the 1998-1999 surveys, one barn owl was observed on/over the site. In 2016, feathers and a pellet were found below a perch in the mima mound portion of non-native grassland at the location shown in **Figure 6**.

San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), a State Species of Special Concern and County Group 2 mammal, inhabits grasslands, agricultural fields, margins of citrus groves, and sparse shrublands on the coastal side of the southern California mountains from Ventura County south into San Diego County (and continuing into Baja California), and mostly west of the National Forest lands within San Diego County. In 2015 two individuals were observed, and in 2016 approximately five, including two juveniles, were observed in non-native grassland at the locations shown in **Figure 6**.

Copies of the CNDDDB forms for these special-status wildlife sightings are provided at the end of **Appendix D**.

1.4.6.2 Special-status Animal Species with High Potential to Occur Onsite

Based on site observations and CNDDDB and SanBIOS records, special-status species that were not observed during 2015-2016 surveys but have been documented onsite in the past have high potential to (re-)occur onsite.

1.4.6.3 Special-status Animal Species with Moderate Potential to Occur Onsite

Five species may have moderate potential to occur onsite: Riverside fairy shrimp (*Streptocephalus woottoni*), Coronado skink (*Plestiodon skiltonianus interparietalis*), coast patch-nosed snake (*Salvadora hexalepis virgultea*), golden eagle (*Aquila chrysaetos*), and prairie falcon (*Falco mexicanus*). Riverside fairy shrimp has been assumed present and is discussed in Section 1.4.6.4, below. Golden eagle is discussed in this section because of its high sensitivity and relevance to the Project. Evaluations of Coronado skink, coast patch-nosed snake and prairie falcon are provided in **Appendix D**.

Golden eagle (*Aquila chrysaetos*) is a USFWS Bird of Conservation Concern, CDFW Watch List, CDFW Fully Protected, and County Narrow Endemic and Group 1 MSCP-covered raptor that lives in the mountains and foothills, adjacent grassland, and other open areas and canyons in San Diego County. No golden eagles were observed on or over the Project site during any of the REC team surveys between 1998 and 2016. No suitable nesting cliffs or trees are present within the Project site.

1.4.6.4 Special-status Animal Species with Assumed Presence Onsite

Riverside fairy shrimp (*Streptocephalus woottoni*), like the San Diego fairy shrimp, is a federal Endangered and County Narrow Endemic and Group 1 MSCP-covered branchiopod. It occupies vernal pools and other unvegetated ephemeral basins in inland Riverside, Orange and San Diego Counties (Ramona area), and coastal San Diego County and Baja California. Riverside fairy shrimp critical habitat does not occur onsite; the closest is approximately 1,513 ft from the Project boundary. This fairy shrimp does not appear until later in the season compared to San Diego fairy shrimp, as it requires deeper basins and longer inundation. The most likely location for Riverside fairy shrimp onsite is within the abandoned agricultural pond basin, which has the potential to pond more deeply than the vernal pools onsite. It was not detected onsite in the 1998 dry season survey of the vernal pools and northern disturbed wetland, nor in the 1999 wet season survey of the agricultural pond basin. However, because the water level in the agricultural basin was lower than previously observed and ponded water was likely too shallow to support Riverside fairy shrimp in 1999, these negative finds were considered inconclusive. For the purposes of the 2000 BTR, the agricultural pond basin (disturbed wetland) was assumed occupied by Riverside fairy shrimp. Wet season fairy shrimp sampling could not be conducted in 2016 due to lack of adequate rainfall and ponding.

1.4.6.5 Other Special-status Animal Species with Project Significance

Quino checkerspot butterfly (*Euphydryas editha quino*) is federal Endangered, and County Narrow Endemic and Group 1 taxon. This rare butterfly inhabits open grassy areas in the interior foothills, including the slopes of the nearby San Ysidro Mountains. Its primary larval host plant is dot-seed plantain (*Plantago erecta*); desert/woolly plantain (*Plantago patagonica*), purple owl's-clover (*Castilleja exserta*), and possibly also (dark-tip) bird's beak (*Cordylanthus rigidus* [subsp. *setigerus*]) and Coulter's snapdragon (*Antirrhinum coulterianum*) may also be used. No QCB critical habitat occurs onsite; the closest is approximately 1,300 ft north and west of the Project boundary. In 1998, the Project site was evaluated by REC principal biologist Elyssa Robertson (Quino permit TE 0786714-1) for the potential to support QCB. Based on absence of host plants, historical disturbance of site, and density of non-native grassland, it appeared that the potential for QCB to occur onsite was not high. However, a protocol survey was conducted by RBRiggan and Associates in 1999 over the northern mima mound area. In the 1999 survey, no QCB were detected, and no primary host plant dot-seed plantain was found onsite. A "small number of widely scattered individuals" of purple owl's-clover was observed in the survey area. No other potential host plants were reported. The 1999 report concluded "Given the complete lack of *Plantago erecta* on this site (and virtual lack of *Castilleja exserta* or any possible alternative larval food plants for the Quino Checkerspot), and the lack of any Quino sightings on the Sunroad Centrum property, it would appear that the site can be developed without concern for a possible take of the Quino Checkerspot." A copy of the 1999 QCB report is provided in **Appendix G**.

In 2001, QCB surveys were conducted by RBRiggan & Associates over the mima mound area and an "extremely limited, low density, localized population" of dot-seed plantain was found on the Project site. This dot-seed plantain population consisted of two groups of a few scattered individuals each. A limited population of purple owl's-clover was also found in the mima mound area. No QCB were detected. The 2001 report concluded "In that neither larvae nor adults of the QCB were identified during the protocol survey; and, only an extremely limited population of food plants suitable for the Quino Checkerspot were identified within the boundaries of the property, it would appear that development of the Sunroad Centrum Property will have no effect on the endangered Quino checkerspot Butterfly." A copy of the 2001 QCB report is provided in Appendix G.

In 2015 and early 2016, primary host plant dot-seed plantain was found onsite, where vegetation was recolonizing the disturbed Lone Star Road alignment. Nectar plants, including common goldfields (*Lasthenia gracilis*), were also observed. Based on the presence of dot-seed plantain, a third protocol survey was conducted in 2016 by Gretchen Cummings. Results of this survey were negative for QCB. The 2016 report concluded "Although a medium density population of a Quino larval host plant was identified on-site, no larvae nor adults of the Quino Checkerspot were identified during the 2016 protocol survey. Therefore, any proposed future development of the Sunroad Centrum 250 property will have no effect on the endangered Quino Checkerspot Butterfly." A copy of her 2016 QCB report is also provided in **Appendix G**.

1.4.6.6 Other Federal and State Protection for Birds

Raptors and native birds are also afforded protection under federal and State law. California Fish and Game Code Section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the Fish and Game Code or any regulation made pursuant to the Code. The federal Migratory Bird Treaty Act prohibits the killing or transport of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation (such as for “game” birds). Therefore, all native, non-game birds on the Project site, and the nests and eggs of all native non-game birds, are protected during the nesting season even if these birds are not special-status or otherwise protected. Birds are assumed to nest onsite. Northern harriers appear to regularly nest in northern non-native grassland onsite, and California horned larks likely nest onsite.

California Fish and Game Code Section 3503.5 specifically protects all birds in the orders Falconiformes or Strigiformes (raptors, including owls). It is unlawful to take, possess, or destroy any such raptors or their nests and eggs except as otherwise provided in the Fish and Game Code. Seven raptor species were directly observed on or over the site: Cooper’s hawk, red-tailed hawk (*Buteo jamaicensis*), ferruginous hawk, northern harrier, white-tailed kite, barn owl (*Tyto alba*), and American kestrel (*Falco sparverius*). Although burrowing owl was not directly observed, evidence of past use of the site by this raptor was observed.

1.4.7 Wetlands / Jurisdictional Waters

Wetland and water features onsite remain essentially unchanged since 2000 except for the effects of drought, and consist of the following four features or sets of features:

1. The creek with non-native riparian vegetation in Johnson Canyon;
2. Vernal pools;
3. Small area of disturbed wetland in the abandoned agricultural pond; and
4. Small area of disturbed wetland along berm northeast of the agricultural pond.

These wetlands/waters, shown on **Figure 6**, are afforded protection by the County of San Diego, State of California, and US Environmental Protection Agency through the US Army Corps of Engineers (USACE). Jurisdictions are summarized below.

1.4.7.1 County of San Diego Wetlands/Waters

The County of San Diego, through its Resource Protection Ordinance (RPO), controls impacts to sensitive habitats including wetlands and floodplains. For the RPO, “wetland” is defined in Section 86.602(q)(1) as “lands having one or more of the following attributes:

- (a) at least periodically, the land supports a predominance of hydrophytes (plants whose habitat is water or very wet places);
- (b) the substratum is predominantly undrained hydric soil; or

- (c) an ephemeral or perennial stream is present, whose substratum is predominantly non-soil and such lands contribute substantially to the biological functions or values of wetlands in the drainage system.”

In Section 86.602(q)(2), the RPO definition of a wetland is qualified to exclude lands that have those wetland attributes solely due to man-made structures such as culverts, ditches, road crossings, or agricultural ponds, provided that the Director of Planning and Development Services determines that they

- (i) have negligible biological function or value as wetlands;
- (ii) are small and geographically isolated from other wetland systems;
- (iii) are not vernal pools; and,
- (iv) do not have substantial or locally important populations of wetland dependent sensitive species.

Also excluded in Section 86.602(q)(2) are lands that have been degraded by past legal land disturbance activities, to the point that they meet the following criteria, as determined by the Director of Planning and Development Services:

- (i) have negligible biological function or value as wetlands even if restored to the extent feasible; and
- (ii) do not have substantial or locally important populations of wetland dependent sensitive species.

Allowed uses of and impacts to RPO wetlands are limited by the RPO. The wetlands must be protected by upland buffers, which also have use and impact limitations. (Wetlands that do not qualify as RPO wetlands are less strictly regulated by the County, but are still considered County wetland *habitats* and are protected as sensitive habitat.)

Based on the definitions listed above, all four (sets of) features would currently qualify as RPO wetlands.

1. The creek with non-native riparian vegetation in Johnson Canyon, because it is an ephemeral to intermittent creek with areas of riparian and wetland vegetation, as well as areas of non-soil substrate, and is a tributary to the Otay River.
2. Vernal pools, because they are specifically included as RPO wetlands.
3. Small area of disturbed wetland in the abandoned agricultural pond because it contained live San Diego fairy shrimp during the last completed protocol survey (any fairy shrimp on Otay Mesa are part of a locally important population).
4. Small area of disturbed wetland along berm northeast of the agricultural pond because it contained San Diego fairy shrimp cysts during the last completed protocol survey (again, any fairy shrimp on Otay Mesa are part of a locally important population).

It should be noted that, at the time the FSEIR was approved, the term “wetlands” was more narrowly defined in the RPO. The 1991 RPO, in Article II part 16, defined “wetland” as “All lands which are transitional between terrestrial and aquatic systems where the water table is usually at or near the surface of where land is covered by water. All lands having one or more of the following attributes are “wetlands”:

- (a) At least periodically, the land supports predominantly hydrophytes (plants whose habitat is water or very wet places);
- (b) The substratum is predominantly undrained hydric soil; or
- (c) The substratum is nonsoil and is saturated with water or covered by water at some time during the growing season of each year.”

No exclusions were included with the definition at the time of the approved FSEIR, and vernal pools were not explicitly included as RPO wetlands at that time. Because the disturbed wetlands and vernal pool do not support predominately hydrophytes, or have undrained hydric soil or a nonsoil substrate, they did not qualify as RPO wetlands when the 2000 FSEIR was approved.

1.4.7.2 US Army Corps of Engineers (USACE) Wetlands/Waters

Pursuant to Section 404 of the Clean Water Act (CWA), the USACE regulates the discharge of dredged and/or fill material into waters of the United States. The term "waters of the United States" is defined in USACE regulations at 33 CFR Part 328.3(a) as:

- (1) *All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters, which are subject to the ebb and flow of the tide;*
- (2) *All interstate waters including interstate wetlands;*
- (3) *All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect foreign commerce including any such waters:*
 - (i) *Which are or could be used by interstate or foreign travelers for recreational or other purposes; or*
 - (ii) *From which fish or shell fish are or could be taken and sold in interstate or foreign commerce; or*
 - (iii) *Which are used or could be used for industrial purpose by industries in interstate commerce...*
- (4) *All impoundments of waters otherwise defined as waters of the United States under the definition;*
- (5) *Tributaries of waters identified in paragraphs (a) (1)-(4) of this section;*
- (6) *The territorial seas;*
- (7) *Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) (1)-(6) of this section.*
- (8) *Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with the U.S. Environmental Protection Agency (EPA).*

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

In the absence of wetlands, the limits of USACE jurisdiction in non-tidal waters, such as intermittent streams, extend to the ordinary high water mark (OHWM) which is defined in 33 CFR 328.3(e) as:

...that line on the shore established by the fluctuation of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

The term “wetlands,” a subset of “waters of the United States,” is defined in 33 CFR 328.3(b) as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” In 1987 the USACE published a manual to guide its field personnel in determining jurisdictional wetland boundaries. The methodology set forth in the 1987 “Wetland Delineation Manual and the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region” generally require that, in order to be considered a wetland, the vegetation, soils, and hydrology of an area exhibit at least minimal hydric characteristics.

At the time of the 2000 BTR and FSEIR, vernal pools and the small disturbed wetland areas were considered USACE-jurisdictional despite the fact that they are isolated waters. However, under the current enforcement of CWA regulations, the USACE does not claim isolated wetlands such as vernal pools or upland agricultural ponds. Therefore, only the Johnson Canyon drainage in the northeastern corner of the site would fall under USACE jurisdiction, as a Waters of the US (which could contain USACE wetlands). This area was not delineated beyond the level of habitat mapping because it will be preserved in BOS in the northeastern corner of the site.

1.4.7.3 California Waters of the State

Wetlands and waters are also protected by the State of California under the Porter-Cologne Water Quality Control Act (CWC 2013) as “Waters of the State,” which is defined as “any surface water or groundwater, including saline waters, within the boundaries of the state.” The Porter-Cologne Act designated the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) as the principal state agencies with primary responsibility for the coordination and control of water quality.

As with the CWA definition of wetlands, certain exemptions exist: exemptions from CWA section 404 permits are also excluded from the State dredge and fill procedures. These exemptions are prior converted cropland, constructed treatment wetlands, and

certain aquatic areas determined not to be waters of the State, such as treatment wetlands and sedimentation/storm water detention basins.

Because the RWQCB claims jurisdiction over all surface waters except for those specifically exempted, and the onsite wetland/water features periodically contain surface water and are not covered by those exemptions, all four (sets of) features would fall under RWQCB jurisdiction.

1.4.7.4 California Department of Fish and Wildlife (CDFW) Lakes and Streams

Pursuant to Division 2, Chapter 6, Section 1602 of the California Fish and Game Code, the CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake, which supports fish or wildlife. CDFW defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." CDFW's definition of "lake" includes "natural lakes or man-made reservoirs." CDFW jurisdiction within altered or artificial waterways is based upon the value of those waterways to fish and wildlife. CDFW does not typically claim jurisdiction over small isolated waters such as vernal pools or detention basins.

Because CDFW jurisdiction over lakes and streams does not extend to small isolated waters, only the Johnson Canyon drainage in the northeastern corner of the site would be CDFW-jurisdictional.

1.4.8 Habitat Connectivity, Wildlife Corridors, and Nursery Sites

The County defines a corridor as "A specific route that is used for movement and migration of species. A corridor may be different from a 'linkage' because it represents a smaller or more narrow avenue for movement." A linkage is "An area of land which supports or contributes to the long-term movement of wildlife and genetic exchange by providing live-in habitat that connects to other habitat areas." (County of San Diego 2010) Wildlife corridors or linkages between significant wildlife areas are important because of their role in preserving species diversity and viability. Without some connection or corridor to other areas, wildlife areas become virtual islands surrounded by development. Carlquist's principals of island biogeography predict that species diversity of an island is a function of the size of the island, the distance from the mainland, and the length of time it has been isolated (Carlquist 1974). These principles have been shown to apply to wildlife areas within the urban fabric (Soule et al. 1988). As shown by Soule, small fragmented areas of habitat ultimately support lower numbers of species than similarly situated larger blocks of habitat. Therefore, it is important to design development with the goal of maximizing large contiguous open space and minimizing isolated wildlife habitat.

As described in the 1993 EOMSP BTR, the Project site and overall EOMSP area are located at the southwestern edge of an extensive natural open space system that includes Bureau of Land Management (BLM) land to the north and east, City of San Diego lands around Lower Otay Reservoir, and the Otay River Valley to the north of the site. The San Ysidro Mountains to the east are one the largest continuous undisturbed tracts of natural open space in southwestern San Diego County. These mountains have been identified as a high-priority core preserve area under the MSCP program. Lower Otay Reservoir to the north is the major year-round water source in the area. The Otay River Valley is a major linkage between the fragments of habitat remaining to the west of the site, and the large areas of open space to the north and east of the site. Johnson Canyon and O'Neal Canyon provide access to the river valley from Otay Mesa, as well as relatively protected habitat and riparian resources. O'Neal Canyon, with its steep canyon walls, trees, natural habitats, stream, and rocky pools, provides cover, food, and water for wildlife. It is a major linkage between the San Ysidro Mountains and the Otay River Valley and is used by large mammals, golden eagles, California gnatcatchers, and a variety of other wildlife species. Johnson Canyon, which traverses the northern edge of the Project site, is of somewhat lower value as a movement corridor because it ends west of Alta Road and no longer directly connects to the mountains. As analyzed in the EOMSP BTR, the western portion of the SPA (in which the site is located) supports poor habitat for wildlife movement because the open agricultural fields provide little topographical or vegetative cover, and the region west and south of the Otay River is largely developed or otherwise constrained by human activity. (County of San Diego 1993)

As identified in the 1993 EOMSP BTR and included in the 2000 Project BTR, the slopes of Johnson Canyon in the northern part of the Project site provide wildlife corridor function. The portion of Johnson Canyon and its drainage on and adjacent to the site represents the upper end of a wildlife corridor that leads to the Otay River Valley, but it does not provide a high quality corridor to the extensive open space to the east. However, it does provide a degree of connectivity between the northern section of the site and the Lone Star mitigation bank/preserve located on the canyon approximately 0.6 mile downstream and 0.3 mile overland to the east.

Because the site is bordered by Otay Mesa Road and industrial development to the south, and SR-125 to the west, it does not provide a corridor or connectivity in those directions.

Native wildlife nursery sites are sites where wildlife concentrates for hatching and/or raising young, such as rookeries, spawning areas and bat colonies (County of San Diego 2010). Although wildlife species breed onsite, breeding activity is not concentrated, and the site would not be considered a wildlife nursery.

1.5 Applicable Regulations

A variety of federal, State, and local regulations established to protect and conserve biological resources apply to the Otay 250 Project, and these are summarized below.

1.5.1 Federal Regulations and Standards

Federal Endangered Species Act

The US Congress passed the federal Endangered Species Act (ESA) in 1973 to provide a means for conserving the ecosystems that Endangered and Threatened species require in order to avoid extinction. The federal ESA has four major components: 1) Section 4, which provides for listing species and designating critical habitat; 2) Section 7, which requires federal agencies, in consultation with the USFWS, to ensure that their actions are not likely to jeopardize the continued existence of species or result in the modification or destruction of critical habitat; 3) Section 9, which prohibits against “taking” listed species; and 4) Section 10, which provides for permitting incidental take of listed species.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 (as amended) was passed by Congress to prohibit the killing or transportation of native migratory birds and the parts, nests and eggs of such birds, except as allowed by other legislation. All birds in California except those specifically excluded (such as non-native birds and certain “game” birds) are protected by this act.

Bald and Golden Eagle Protection Act

The Bald Eagle Protection Act was enacted in 1940 to prohibit the take, transport, or sale of bald eagles, their eggs, or any part except where expressly allowed by the Secretary of Interior, and was amended in 1962 to also cover golden eagles and in 2010 to prohibit “take of important use areas”.

Clean Water Act

The 1948 federal Water Pollution Control Act was amended in 1972 to become the Clean Water Act (CWA), which established the basic structure for regulating discharges of pollutants into the waters of the United States and regulating surface water quality standards. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters of the United States unless a permit is obtained.

Under Section 404 of the CWA, the US Army Corps of Engineers (USACE) regulates the discharge of dredged and/or fill material into Waters of the US. This agency claims jurisdiction over waters of the US, including wetlands in or adjacent to Waters of the US. Impacts to USACE wetlands and other Waters of the US generally require a permit from the USACE. Such impacts may be permitted under pre-approved Nationwide permits, but Individual permits may be required when projects propose impacts greater than what is covered by individual permits. Compensatory mitigation is required to achieve the USACE goal of “no net loss.”

1.5.2 California Regulations and Standards

California Endangered Species Act

The California Endangered Species Act (CESA) of 1984 generally parallels the main provisions of the federal ESA and is administered by the California Department of Fish and Wildlife (CDFW); it prohibits take of any species that the California Fish and Game Commission has classified as Threatened or Endangered, or that is experiencing a significant decline that could lead to such as designation, and it permits take incidental to otherwise lawful development projects with approval from CDFW.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) of 1970 (as amended) requires that proposed projects be reviewed for environmental impacts, including impacts to biological resources. CEQA does not specifically define what constitutes an “adverse effect” on a biological resource; instead, lead agencies are charged with determining what should be considered a significant impact according to the CEQA guidelines, and establishing the appropriate mitigation measures regarding biological impacts. CEQA guidelines provide criteria that the County of San Diego uses in determining whether a Project may have significant effects.

California Fish and Game Code

California Fish and Game Code regulates the taking and possession of birds, mammals, fish, amphibians, and reptiles, as well as impacts to natural resources such as Waters of the State. It includes the CESA described above, Streambed Alteration Agreement regulations (Sections 1600-1616), provisions for legal hunting and fishing, tribal agreements for activities involving take of native wildlife, protection of nests and eggs of all birds except as otherwise provided by Fish and Game Code (Section 3503), protection of all raptors and their nests and eggs except as otherwise provided (Section 3503.5), and the California Native Plant Protection Act (Section 1900-1913).

California Native Plant Protection Act

The California Native Plant Protection Act of 1977 directed CDFW to carry out the legislature’s intent to “preserve, protect and enhance Rare and Endangered plants in this State” and gave CDFW the power to designate native plants as Endangered or Rare and to protect such designated plants from take.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (CWC 2013) provides State-wide coordination for protection of Waters of the State. It established the State Water Resources Control Board (SWRCB) as the State agency with primary responsibility for the control of water quality, and nine Regional Water Quality Control Boards (RWQCBs) to oversee water quality at the regional level. Impacts to Waters of the State require notification/permitting through the RWQCB and usually also require compensatory mitigation, although this mitigation is typically handled through USACE and/or CDFW.

Natural Communities Conservation Planning Act

The State of California passed the Natural Communities Conservation Planning (NCCP) Act (Fish and Game Code 2800 *et seq.*) in 1991. Under this Act, NCCP Plans are designed to conserve natural communities at the ecosystem scale while accommodating compatible land use. It is broader in its orientation and objectives than the California and federal Endangered Species Acts, which are designed to identify and protect individual species that have already declined significantly in number. CDFW is the principal State agency that implements the NCCP Program. NCCP Plans developed in accordance with the Act provide for comprehensive management and conservation of multiple wildlife species, and identify and provide for regional or area-wide protection and perpetuation of natural wildlife diversity while allowing compatible and appropriate development and growth. For planning purposes, some subregions are organized into “Subareas” that correspond to geographic boundaries of participating jurisdictions and/or landowners. In each subregion and subarea, a local lead agency coordinated the collaborative planning process. Working with landowners, environmental organizations, and other interested parties, the local lead agency oversees development of a conservation plan, and CDFW and USFWS provide the necessary support and guidance. Because the Project site is within the County of San Diego MSCP subarea, the NCCP is largely supplanted by the MSCP plan; however, portions of eastern Otay Mesa are classified as Amendment Areas, in which take to State and federally protected species must still be negotiated with the Wildlife Agencies (see MSCP below).

1.5.1 Local Regulations and Standards

County of San Diego Resource Protection Ordinance

The Resource Protection Ordinance (RPO) was adopted in 1989 and amended in 1991 and 2007. It restricts, to varying degrees, impacts to natural resources including wetlands, wetland buffers, floodplains, steep slopes, sensitive habitat lands, and historical sites. Certain permit types are subject to the requirement to prepare Resource Protection Studies under the RPO. RPO-permitted uses in wetlands, as defined by the ordinance, are aquaculture, scientific research, wetland restoration projects, limited removal of diseased or invasive plant species, and limited road, driveway, or trail crossings when specific findings are made for these uses. In addition, the ordinance requires that a wetland buffer be provided to further protect the wetland resources. Improvements necessary to protect the adjacent wetlands and those uses allowed within the actual wetland are the only allowed uses within the buffer.

The RPO also limits impacts to sensitive habitat lands. Habitats considered sensitive or significant under CEQA are not necessarily considered RPO sensitive habitat lands. RPO sensitive habitat lands include, but are not limited to:

- Lands that include habitats of rare or endangered species or subspecies of animals or plants as defined under Section 15380 of CEQA Guidelines (State- and federal-listed species or species that would qualify for such listing);
- Lands that contain unique vegetation communities that are rare or substantially depleted; and

- Lands which are critical to the proper functioning of a balanced natural ecosystem or which served as a functioning wildlife corridor.

Examples of lands that would not automatically be considered RPO sensitive habitat lands include, but are not limited to: coastal sage scrub, oak woodland, chaparral, and non-native grasslands, provided that these habitats: (a) do not include populations of State- and federal-listed species); (b) are not critical to a balanced ecosystem; or (c) are not part of a functioning wildlife corridor. Impacts to RPO sensitive habitat lands are only allowed when: (a) all feasible measures have been applied to reduce impacts; and (b) mitigation provides an equal or greater benefit to the affected species.

The RPO includes the provision that when “the extent of environmentally sensitive lands on a particular legal lot is such that no reasonable economic use of such lot would be permitted by these regulations, then an encroachment into such environmentally sensitive lands to the minimum extent necessary to provide for such reasonable use may be allowed”.

Multiple Species Conservation Program

The MSCP is a long-term regional conservation plan designed to establish a connected preserve system that protects the County’s sensitive species and habitats. The MSCP covers 582,243 acres in over 12 jurisdictions, and each jurisdiction will have its own subarea plan. The Subarea Plan for the County’s main jurisdictional area (now also known as the South County MSCP) covers 252,132 acres in the southwestern area, and is implemented by the Biological Mitigation Ordinance (BMO), which outlines the specific criteria and requirements for projects within the MSCP boundaries. As an NCCP Plan, the MSCP allows the County to authorize take for certain federal- and state-protected “covered” species and thereby simplifies the administrative process of environmental permitting and development in the County.

MSCP Amendment Areas: In some areas, locations of preservation and development were not resolved at the time the County Subarea Plan was published, and these areas are called Amendment Areas. Amendment Areas are not included in County take authorizations otherwise provided by the MSCP until an amendment process is completed; processing involves consultation with not only County biologists, but also representatives of CDFW and USFWS to ensure compliance with CEQA, ESA, and CESA.

Major Amendment Areas contain habitat of higher value, including dedicated or designated preserve areas. Projects in Major Amendment Areas must be fully processed by USFWS and CDFW in conformance with all applicable laws and regulations, including those listed above.

Minor Amendment Areas contain habitat that could be lost without significant negative impacts to the County Subarea Plan. Minor Amendments require approval of the USFWS field office supervisor and the CDFW Natural Communities Conservation Program Manager. Processing a Minor Amendment requires preparation of a CEQA document, a biological resources report, identification of any

mitigation required by the BMO, and concurrence by the wildlife agencies. Before development may occur, the Minor Amendment must be granted and the required mitigation implemented. Minor Amendment requests are currently being processed on a case-by-case basis. Most of the Minor Amendment Area is covered by non-native grasslands habitat.

Minor Amendment Areas with Special Considerations are transitional areas located primarily between the Minor and Major Amendment Areas where the likelihood of the presence of biologically sensitive resources is higher. If particularly sensitive species are identified as occurring in one of these Areas, onsite preservation may be required. The process for a Minor Amendment Area with Special Considerations is similar to a Minor Amendment area, but onsite preservation may be required if particularly sensitive species are identified. Minor Amendment Areas with Special Considerations are processed on a case-by-case basis.

Amendment Areas on the Project site as mapped in the 2015 EOMSPA (see following paragraph) are shown in **Figure 5**. Most of the southern and western section of the site, south of the Lone Star Road alignment, is classified as a Minor Amendment Area. A small area in the center of the site, corresponding to the mima mound area, is classified as a Minor Amendment Area Subject to Special Consideration with “G Designator”. The G Designator applies to areas that have steep slopes and/or are biologically sensitive, and are subject to the Sensitive Resource Area Regulations of the Zoning Ordinance. The entire area to the north of Lone Star Road is classified as a Major Amendment Area with G-Designator.

East Otay Mesa Specific Plan and Amendments

The EOMSP is a regulatory document that established standards for development, environmental conservation, and public facilities to implement the objectives of the County of San Diego General Plan and Otay Subregional Plan. The Specific Plan area contains approximately 3,013 acres of land, of which approximately 2,110 acres are planned as a modern industrial and business center and approximately 552 acres would be set aside for conservation or very low-density residential use. Planning for the EOMSP began in the 1990s in response to expansion of industrial development in the City portion of Otay Mesa, opening of the Otay Mesa Border Crossing, and improvement of Otay Mesa Road/SR-905, which prompted County property owners to plan for future development in eastern Otay Mesa. The Board of Supervisors approved the original Specific Plan in 1994. Amendments to the original plan have been approved and implemented since that time, the latest of which is the eighth amendment approved in April 2015. The latest version of Amendment Area mapping is provided in the April 2015 EOMSPA. The Project site is located in the northwestern section of the EOMSP area, as shown in **Figure 5**.

End of Section 1.0

2.0 PROJECT EFFECTS

The Project proposes development of the portion of the site south of Lone Star Road, with the exception of one vernal pool and its watershed which will be protected with a biological open space (BOS) easement; and conservation of all land north of Lone Star Road within BOS (**Figure 7**). Development of the Project footprint may result in the loss or degradation of biological resources, which would be considered an adverse effect. Adverse, potentially significant impacts resulting from development of the Project site were assumed in the 1994 EOMSP and EIR, and mitigation measures were developed at that time. Project impacts were re-addressed in the 2000 FSEIR, 2003 RCP, 2003 Minor Amendment, and 2012 Conditions of Approval, with the addition of updated mitigation measures as well as inclusion of prior applicable mitigation measures. (Note: the 2000 FSEIR supplants the 1994 EIR for the Project site.) The analysis of Project effects in this 2017 BTR update incorporates information from those prior analyses, addresses new biological resources data gathered since the 2000 FSEIR, updates the significance analysis to the current 2010 Guidelines, and identifies changes in impact significance analysis since two previous certified EIRs.

Significant adverse effects on biological resources can be direct, indirect, or cumulative impacts. Project impacts within each of these categories are detailed below.

2.1 Direct Impacts

Direct impacts are generally obvious, absolute, or quantifiable, such as direct destruction of vegetation, sensitive habitats, and plant and animal populations; loss of foraging, nesting, breeding, or burrowing habitat; clearing of a particular species' required habitat (directly impacting that species); or blocking a wildlife corridor. They may occur as a result of the Project itself, or activities necessary for implementation of the Project such as construction staging areas. This Project's direct impacts within the development footprint are shown in **Figure 7**. Off-site impact areas are also identified on **Figure 7**.

2.1.1 Direct Vegetation/Habitat Impacts

Direct vegetation/habitat impacts resulting from implementation of the Project are summarized in Table 2-1, below. Direct impacts of the Project consist of removal of habitat (including Fuel Modification Zone impacts), with the potential to directly impact special-status species. As shown in Table 2-1, 201.39 acres would be directly impacted onsite, and another 2.69 acres offsite, for a total of 204.08 acres. Approximately 51.75 acres (with 49.43 acres of natural habitat), will be protected from direct impacts in BOS.

Table 2-1. Direct Vegetation/Habitat Impacts

Habitat	Existing (acres)	Onsite Impacts (acres)	Offsite Impacts (acres)	Total Impacts (acres)	Remaining in BOS
Disturbed Wetland	0.11	0.11	-	0.11	-
Non-Native Riparian	0.39	-	-	-	0.39
San Diego Mesa Claypan Vernal Pool	0.21	-	-	-	0.21
Native Grassland	1.96	-	-	-	1.96
Non-native Grassland	240.24	193.37	2.62	195.99	46.87
Developed Land	2.97	2.97	-	2.97	-
Disturbed Habitat	7.26	4.94	0.07	5.01	2.32
Totals	253.14	201.39	2.69	204.08	51.75

Disturbed wetland and non-native grasslands will be directly impacted. Non-native riparian habitat, vernal pools, and native grassland will not be directly impacted.

Table 2-2 provides a comparison between Project impact acreages in the 2000 FSEIR and in this 2017 BTR update.

Table 2-2. Comparison of 2017 BTR and 2000 FSEIR Vegetation/Habitat Impacts

Habitat	2016 Impacts (acres)			2000 Impacts (acres)			Change from 2000 to 2016 (acres)
	Onsite	Offsite	Total	Onsite	Offsite	Total	
Disturbed Wetland	0.11	-	0.11	0.11	-	0.11	0
Non-Native Riparian	-	-	-	NA	NA	-	0
San Diego Mesa Claypan Vernal Pool	-	-	-	-	-	-	0
Southern Willow Scrub	NA	NA		0.20	-	0.20	-0.20
Coastal Sage Scrub	NA	NA		2.1	-	2.1	-2.1
Native Grassland	-	-	-	4.2	-	4.2	-4.2
Non-native Grassland	193.77	2.62	195.99	186.37	0.13	186.5	+9.49
Developed Land	2.97	-	2.97	NA	NA	-	+2.97
Disturbed Land	4.94	0.07	5.01	5.9	-	5.9	-0.89
Totals	201.39	2.69	204.08	198.88	0.13	199.01	+5.07

2.1.2 Direct Special-status Species Impacts

Project direct impacts to special-status species consist of the loss of:

- Approximately 55 coast barrel cacti;
- The observed location of a patch of variegated dudleya observed in 1998;
- Approximately 30 San Diego button-celery in a mima mound depression observed in 2001 and 2004;
- One small-flower bindweed;
- San Diego fairy shrimp in disturbed wetland habitat;
- Riverside fairy shrimp (assumed present in the agricultural pond disturbed wetland in 2000);
- Observed locations and breeding habitat of California horned larks;
- Observed location and foraging habitat of (one) loggerhead shrike;
- Observed locations and habitat of approximately five San Diego black-tailed jackrabbits;
- Loss of burrowing owl breeding and foraging habitat; and
- Loss of northern harrier, turkey vulture, and raptor foraging habitat through direct impacts to 195.99 acres of non-native grassland.

2.2 Indirect Impacts

Indirect impacts may be the result of secondary effects from direct impacts, or those impacts that over time cause degradation of a resource by changing its function, health, or quality. Unlike direct impacts that are typically one-time effects, indirect impacts often continue in the long term and may actually increase. Indirect impacts commonly result from “edge effects.” Edge effects from development can extend several hundred feet into adjacent areas, causing significant changes in species composition, diversity and abundance in those nearby lands. Projects may result in a wide variety of indirect impacts depending on project context. Examples of indirect impacts include edge effects such as increase in human encroachment into the natural environment, particularly through off-road vehicle use; harassment and/or collection of wildlife species by people; predation upon wildlife by domestic animals that intrude into open space areas; and increased wildlife mortality along roads. Other less visible indirect impacts include decline in the availability of a resource such as water or prey, reduction in habitat viability as a result of altering moisture regime or vegetation, habitat fragmentation, and damage to or loss of ecosystem and/or watershed integrity.

As described in the Project’s original June 2000 BTR, potentially significant indirect Project impacts could include noise and lighting, water quality, and introduced plant or animal species.

The effects of industrial and residential noise on wildlife are poorly understood. Excessive noise could potentially affect communication, prey detection, and predator awareness in a variety of species. Project-related noise, both during and after construction, could deter wildlife from using the southern portion of the BOS and

effectively cause a loss of usable habitat. Light reaching the BOS would likely exclude a number of nocturnal species from the lighted zone, again effectively causing a loss of usable habitat for those species. The responses of sensitive vernal pool animals, including vernal pool plant pollinators, to light from an adjacent development are not known.

Impacts to water quality could result from the proposed Project. Siltation could occur during or after grading if proper erosion control measures are not followed, potentially resulting in a temporary degradation of surface waters and alteration wetlands and other water resources. Another potential water quality impact would be introduction of toxins from onsite sources to habitats, wetlands, and other water resources. This could result from industrial and residential runoff or from illegal dumping of waste. Vernal pool species in the BOS, already subject to drought, fire, and invasive species infestation, could be unusually vulnerable to contaminated runoff or dumping. As reported in the 1993 EOMSP BTR, vernal pools onsite could also be adversely affected by hydrological changes associated with construction of Lone Star Road (County of San Diego 1993). Another potential vernal pool indirect impact described in the EOMSP BTR is loss of genetic diversity associated with reduction of this already rare habitat.

Development adjacent to natural habitat often introduces domestic and urban-adapted species into that habitat. Animals that follow development (e.g. opossum, black rat) compete with native animals for food, and may provoke poisoning or trapping that can impact native animals. Other introduced animals such as cats and dogs, and urban-adapted native species such as skunks and ravens, may increase predation on native species in adjacent natural habitat. Even increased human intrusion from new adjacent development could significantly impact sensitive habitats and species in BOS.

These potential indirect impacts, addressed in the 2000 FSEIR, remain applicable to the Project. Indirect impacts are, overall, potentially significant but mitigable.

2.3 Cumulative Impacts

Cumulative impacts occur as a result of the additive effect of multiple or ongoing direct and indirect impacts to a resource over time. A project's direct and indirect impacts may not be individually significant, but the additive effect when viewed in the context of past, present and probable future project impacts may cause significant loss or degradation of a resource.

The geographic scope for a cumulative impact analysis includes past, present and future development projects (tentative tract maps, major use permits, etc.) within a geographic area sufficiently large to provide a reasonable basis for evaluating cumulative impacts. The geographic scope of the analysis is based on the nature of the geography surrounding the Project site and the characteristics and properties of each resource and the region to which they apply. In this case, the cumulative impact study area would be the entirety of Otay Mesa, as bounded by the Otay River Valley to the north, the Interstate (I) 805 to the west, the US-Mexican border to the south, and the San Ysidro Mountains to the east, with limited extensions northward to Lower Otay Reservoir and eastward to Jamul. Based on

this geographic scope, 60 other projects were included in the cumulative analysis list for this Project. The source of this list is an August 2013 search of the SANGIS Discretionary Permit GIS Database, (SanGIS 2012), the 2009 “Corrections Corporation of America Otay Mesa Facility Biological Technical Report” (Helix 2009), and a list provided by the County of San Diego in 2016. Cumulative projects are identified below in Table 2-3, below, and key locations are shown in **Figure 8**.

Table 2-3. Projects Included in Cumulative Impact Analysis

Map Reference	Project Name	Project Number(s)	Non-native grassland	
			Impacts	Mitigation
1 (Proposed Project)	Otay 250 SPA	TM5607	195.99	98.00
County Projects				
2	Saeed TM/Airway Business Center	TM 5304	38.5	19.3
3	Roll County LLC/ Enrico Fermi Industrial Park	TM 5394	NA	NA
4	Otay Hills	P04-004, RP04-001, ER04-19-004	40.4	26.9
5	Burke Minor Subdivision	TPM 20701RPL1, ZAP 99-029, STP 05-018	40.0	20.0
6	East Otay Mesa Auto Storage/ Aaron Construction Auto Auction Park	MUP 00-012, Minor Deviation 00-012-02	NA	NA
7	Family Motocross Park	MUP 00-024, SPA 04- 006	NA	NA
8	Otay Mesa Auto Transfer/Rowland	MUP 03-001	NA	NA
9	Bradley/Robertson Copart Salvage Auto Auctions	MUP 88-020, STP 00- 070	NA	NA
10	National Enterprises Storage and Recycling Facility	MUP 98-001 RPL1	103.61	24.29
11	Calpine PG&E	TPM 20570	NA	NA
12	Otay Business Park	TM 5505	176.1	NA
13	Otay Crossings Commerce Park	TM 5405	273.3	NA
14	San Diego Correctional Facility/ Corrections Corporation of America	SPA 06-005, MUP 06- 074, P06-074	36.7	NA
15	Otay Mesa Travel Plaza	TPM 20414, MUP 98- 024 and Mod-01	NA	NA
16	Pilot Travel Center	TPM 20894, STP 05- 021	12.9	6.5
17	East Otay Temporary Fire Facility	STP 00-070	NA	NA
18	International Industrial Park, Johnson Canyon	TM 5549	Part of 118.4	35.9
19	OMC Properties	TPM 21140	NA	NA
20	Pio Pico Energy Center Project	11-AFC-1C	NA	NA
21	California Crossings	P06-102, TPM 21046	23.4	15.4

22	COPART County Sales Yard Time Extension	P 88-020W1	NA	NA
23	FEDEX Site Plan	S08-018	NA	NA
24	Insurance Auto Auctions	P00-012TE	NA	NA
25	Sunroad Interim Uses - Sunroad Center I Harvest Ranch Nursery	P 09-009, P 09-005	NA	NA
26	Travel Plaza	P 98-024W1, TPM 20424	NA	NA
27	Vulcan	S 07-038	NA	NA
28	Piper Otay Park	TM 5527	NA	NA
29	Hawano	10-0123176	79.6(?)	NA
31	Rabago	TM 3100 5568	Part of 71.1	NA
32	Otay Mesa Generating (Calpine)	TPM 20570	NA	NA
33	Otay Business Park	TM 5505	179.9	179.9
34	Otay Ranch Village 12 (Otay Ranch Preserve and Resort)	GPA04-003, SP04-002, REZ04-009, TM5316A & B, ER LOG 04-19-005	NA	Part of 1,089 acres of preserved open space
35	Simpson Farms	PDS2005-3100-YM5460, TM5200RPL	NA	NA
36	SR-11 Phase II and East Otay Mesa port of Entry	PM0.0/2.7 EA 056300	171.9	NA
City Projects				
A	Sunroad/Interstate Industrial Center	TPM 98-0759	NA	NA
B	Sunroad Otay Park	TM 91-0394	NA	NA
C	La Media Truck Park II	77518	NA	NA
D	Robinhood Ridge Phase I	96580	9.7	19.4
E	Semitrailer Storage Facility	Planned Development Permit 12083	NA	NA
F	Airway 18 Truck Terminal/Airway Auto Park Storage	2246	NA	NA
G	California Terraces Planning Areas 13 & 14 Phase I	4987	NA	NA
H	Dennery Ranch Village 2/3	5091	NA	NA
I	Hidden Trails	6738	--	--
J	Southview	2204	NA	NA
K	Candlelight Villas	50591/40329	--	--
L	Handler Otay Mesa Phase I	92122	31.8	15.9
M	Otay Corporate Center North	NA	NA	NA
N	Otay Corporate Center South	98825	NA	NA
O	Las Californias Center	4281	NA	NA
P	Opus Phases I and II	6626	NA	NA
Q	Just Rite	5751	NA	NA
R	World Petrol III	32284/97452	NA	NA
S	Pardee Commercial	NA	NA	NA
T	Martinez Ranch Business Park	100994/45445	NA	NA
U	Siempre Viva Business Park	102899	NA	NA
V	Southwestern Community College	NA	NA	NA
W	Brown Field Tech Park	208889	Part of 33.1	NA

X	Ingalls Property	NA	NA	NA
Y	Lonestar Ridge	50728	112.7	56.4

NA: Not available

End of Section 2.0

3.0 SPECIAL-STATUS SPECIES

The way that project impacts are organized and analyzed has changed since the time of the Project's 2000 FSEIR. Some policies, such as the RPO, have also changed. This 2017 BTR update follows the current "Guidelines for Determining Significance and Report Format and Content Requirements" (County of San Diego 2010) and "Report Format and Content Requirements" (County of San Diego 2010a). As a result, the impact analysis in this and following sections is more detailed and impacts are analyzed more specifically than in the certified 2000 FSEIR.

3.1 Guidelines for the Determination of Significance for Special-status Species

The following analysis determines if the Project would have a substantial adverse effect, either directly or through habitat modifications, on one or more species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service. Items 3.1.A through L, below, are addressed as either a significant impact (SI) or less than significant impact (LSI) in Section 3.2.

- 3.1.A.** The project would impact one or more individuals of a species listed as federally or State Endangered or Threatened.
- 3.1.B.** The project would impact an onsite 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.
- 3.1.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.
- 3.1.D.** The project may impact arroyo toad aestivation, foraging or breeding habitat.
- 3.1.E.** The project would impact golden eagle habitat.
- 3.1.F.** The project would result in a loss of functional foraging habitat for raptors.
- 3.1.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.
- 3.1.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. The following issues should be addressed: increasing human access; increasing 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.
- 3.1.I.** The project would impact occupied burrowing owl habitat.
- 3.1.J.** The project would impact occupied cactus wren habitat, or formerly

occupied coastal cactus wren habitat that has been burned by wildfire.

3.1.K. The project would impact occupied Hermes copper habitat.

3.1.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:

- Tree-nesting raptors
- Ground-nesting raptors
- Golden eagle (*Aquila chrysaetos*)
- Coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*)
- Southwestern willow flycatcher (*Empidonax traillii extimus*)
- Coastal California gnatcatcher (*Polioptila c. californica*)
- Light-footed clapper rail (*Rallus longirostris levipes*)
- Least Bell's vireo (*Vireo bellii pusillus*)

3.2 Analysis of Project Effects for Special-Status Species

The Project would result in significant impacts [SI] to special-status species, based on the following:

SI 3.1.A. *Guideline: The project would impact one or more individuals of a species listed as federally or State Endangered or Threatened.*

Two federal and/or State Endangered species have been documented within the Project's direct impact area: San Diego button-celery (State and federal Endangered) and San Diego fairy shrimp (federal Endangered), Riverside fairy shrimp (federal Endangered) was assumed present.

The Project would directly impact approximately 46% (~30 individuals) of all San Diego button-celery (federal and State Endangered) plants documented onsite (~65 individuals) through loss of a previously undetected group of approximately 30 plants in a mima mound depression south of Lone Star Road, and southeast of the vernal pool located south of Lone Star Road. The Project could also result in indirect impacts to San Diego button-celery close to Lone Star Road, due to edge effects. These direct and indirect impacts would be considered significant and require mitigation. San Diego button-celery was not found onsite during the 2015-2016 surveys. San Diego button-celery has been reported onsite in previous studies and may have been undetectable in 2015-2016 due to drought conditions. Therefore, in accordance with County guidelines, potential impacts and mitigation were evaluated based on the earlier reports. Spring surveys during a year of average or better rainfall would be necessary to update the number of San Diego button-celery individuals impacted.

Based on the 2000 FSEIR, development of the Project would directly impact San Diego fairy shrimp (federal Endangered) through loss of two small disturbed wetlands in which it was found. In addition,

although 72.65 acres of the site is designated critical habitat, based on recent surveys, 26.8 acres of suitable habitat (mima mound topography with pools typically more than 30 centimeters deep, within 61 kilometers of the Pacific Ocean, and less than 701 meters AMSL) exist onsite. The remaining 45.7 acres of designated critical habitat are currently non-native grassland without mima mounds or vernal pools. All mima mound topography with vernal pools is located within the open space easement. Therefore, existing critical habitat would be preserved.

Based on the 2000 FSEIR, development of the Project could also result in significant indirect impacts to San Diego fairy shrimp in vernal pools that are close to Lone Star Road and vulnerable to edge effects. These indirect impacts would be considered significant and require mitigation.

Riverside fairy shrimp (federal Endangered) is assumed present in the disturbed wetland of the agricultural basin, as stated in the 2000 BTR. Therefore, based on the 2000 FSEIR, direct Project impacts to this species are assumed significant and would require mitigation.

In summary, development of the Project site would result in significant impacts to three State/federal Endangered species (San Diego button-celery, San Diego fairy shrimp, and Riverside fairy shrimp). Significant impacts to these species would require mitigation.

SI 3.1.B. *Guideline: The project would impact an onsite 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.*

Three County List A or B plant species were documented within the Project's direct impact area in the surveys conducted for the 2000 FSEIR and the more recent surveys: variegated dudleya (Group A), San Diego button-celery (Group A), and coast barrel cactus (Group B). For the purposes of quantifying impacts in this 2016 update, the 1993 EOMSP BTR dudleya plant count is used because it included dudleya found in the same general areas as in later surveys, and is the only population count with a precise number. Based on the numbers provided in the 1993 EOMSP BTR, 73 (in the SPA Industrial land use area south of Lone Star Road) of the 361 individuals associated with the J22 vernal pool complex would be impacted (20% of the J22 population found at that time). The Project's direct impacts to variegated dudleya would be considered significant and require mitigation. Variegated dudleya was not found onsite during the 2015-2016 surveys and may have been undetectable in 2015-2016 due to drought conditions. Therefore, in accordance with County guidelines, potential impacts and mitigation were evaluated based on the earlier reports. Spring surveys during a year of average or better rainfall would be necessary to update the number of variegated dudleya individuals impacted.

Significant Project impacts to San Diego button-celery are described in 3.1.A, above.

Approximately half (55 individuals) of the coast barrel cacti found onsite were located within the Project impact area. This significant direct impact would require mitigation. As described below in Section 3.4.1.3, below, an approved Barrel Cactus Transplantation Plan was implemented and received County sign-off for completion in 2012; therefore, mitigation for significant direct impacts to this species is complete.

Twelve County Group 1 or State Species of Special Concern animal species have been documented in or over the Project's direct impact area: San Diego fairy shrimp (Group 1), Riverside fairy shrimp (Group 1) (assumed present), Cooper's hawk (Group 1), Southern California rufous-crowned sparrow (Group 1), grasshopper sparrow (Species of Special Concern, Group 1), burrowing owl (Species of Special Concern, Group 1), ferruginous hawk (Group 1), turkey vulture (Group 1), northern harrier (Species of Special Concern, Group 1), white-tailed kite (Group 1), loggerhead shrike (Species of Special Concern, Group 1), and black-tailed jackrabbit (Species of Special Concern).

Significant Project impacts to San Diego fairy shrimp (and Riverside fairy shrimp) are described in 3.1.A, above.

The Project would impact burrowing owl habitat. No active or recently active burrows were found onsite during the 2015 and 2016 surveys. Fifteen abandoned burrows were found within the Project development footprint (and another 24 within proposed BOS). This direct impact to burrowing owl habitat would be significant and requires mitigation, but because the burrows are unoccupied, the habitat is treated like non-native grassland and the mitigation ratio is 0.5:1 (also see 3.1.I below).

The turkey vulture that was observed foraging onsite would be impacted by loss of foraging habitat; this direct impact could be considered significant and require mitigation.

Northern harriers have been observed foraging and nesting onsite since REC's 1998 surveys through the present. The location of nesting behavior observed in 2016 will not be directly impacted. However, as documented in the 2000 FSEIR, development of the Project site would result in direct impacts to northern harrier breeding and foraging habitat. These impacts would be considered significant and require mitigation.

White-tailed kites were observed foraging over the site during surveys conducted for the 2000 FSEIR. Development of the Project site would result in the loss of non-native grassland habitat, which would impact foraging habitat for this species. This direct impact would be considered significant and require mitigation.

The Project would impact the 2015 observed location of a loggerhead shrike and its foraging and nesting habitat; this direct impact would be considered significant and require mitigation.

The Project would impact the 2016 observed locations of approximately three black-tailed jackrabbits and remove a substantial

portion of their breeding and foraging habitat onsite; this direct impact would be considered significant and require mitigation.

See LSI 3.1.B below for Cooper's hawk, Southern California rufous-crowned sparrow, grasshopper sparrow, and ferruginous hawk.

In summary, development of the Project site would result in significant direct impacts to three County List A or B plant species (variegated dudleya, San Diego button-celery, coastal barrel cactus), and eight County List 1 or Species of Special Concern (San Diego fairy shrimp, Riverside fairy shrimp, turkey vulture, northern harrier, white-tailed kite, loggerhead shrike, San Diego black-tailed jackrabbit, and burrowing owl). Significant direct impacts to these species would require mitigation. As described below in Section 3.4.1.3, mitigation for significant direct impacts to coast barrel cactus is complete.

SI 3.1.F. *Guideline: The project would result in a loss of functional foraging habitat for raptors.*

The County of San Diego (2010) defines raptor foraging habitat as "land that is a minimum of 5 acres (not limited to project boundaries) of fallow or open areas with any evidence of foraging potential (i.e., burrows, raptor nests, etc.)." The site qualifies as raptor foraging habitat due to its extensive grassland acreage, as well as the presence of suitable prey animals such as California ground squirrel and Botta's pocket gopher (*Thomomys bottae*). Seven raptor species were seen on or over the site: Cooper's hawk, red-tailed hawk, ferruginous hawk, norther harrier, white-tailed kite, American kestrel, and barn owl. Evidence of past site use by burrowing owl was also observed. Implementation of the Project would result in the direct loss of 195.99 acres of non-native grassland. This direct loss of functional raptor foraging habitat would be considered significant and require mitigation.

SI 3.1.H. *Guideline: 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. The following issues should be addressed: increasing human access; increasing 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.*

As discussed in Section 2.2 and previously analyzed in the 2000 FSEIR, the Project could cause indirect impacts to preserved land in BOS by increasing human access; increasing predation or competition from domestic animals, pests or exotic species; altering natural drainage (and in particular impacting vernal pool hydrology); and increasing noise and/or nighttime lighting to a level above ambient. These indirect impacts would potentially be significant and require mitigation.

SI 3.1.I. *Guideline: The project would impact occupied burrowing owl habitat.*

The Project would impact burrowing owl habitat. No active or recently active burrows were found onsite during the 2015 and 2016 surveys. However, direct impacts to burrowing owl habitat would be significant and would require mitigation, but because the burrows are unoccupied, the habitat is treated like non-native grassland and the mitigation ratio is 0.5:1.

SI 3.1.L. *Guideline: The project would impact nesting success of [Section 3.1.L species] through grading, clearing, fire fuel modification, and/or other noise generating activities such as construction.*

Tree-nesting raptors, golden eagles, coastal cactus wren, southwestern willow flycatcher, coastal California gnatcatcher, light-footed clapper rail, and least Bell's vireo have not been documented onsite and would not be expected to nest on or adjacent to the site. Northern harrier is a ground-nesting raptor, and appears to have been nesting onsite over the course of REC's team surveys. Direct Project-related impacts to northern harrier nesting success, due to grading, clearing, fire fuel modification, and/or other noise generating activities such as construction, would be considered significant and require mitigation.

The Project would not result in significant impacts [LSI] to special-status species according to the following evaluation topics:

LSI 3.1.B. *Guideline: The project would impact an onsite 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.*

As described above in SI 3.1.B, eleven County Group 1 or State Species of Special Concern animal species have been documented in or over the Project's direct impact area. Of these, three will not experience significant impacts.

The Project would directly impact non-native grassland over which one Cooper's hawk was flying. However, because the Cooper's hawk was not observed foraging over the site, and its observed activity in the Project area was limited to investigating the recorded Cooper's hawk call from the adjacent power plant, loss of non-native grassland onsite should not be assumed a significant impact to this particular species. Significant loss of foraging habitat for raptors as a group is addressed in 3.1.F, below.

The Project would directly impact approximately half of the former open coastal sage scrub vegetation growing in the mima mound area onsite, where Southern California rufous-crowned sparrows were observed. Because the patchy coastal sage vegetation has not regenerated since it burned (date unknown), it appears unlikely that these sparrows would still use the site; therefore, Project impacts to Southern California rufous-crowned sparrow would not be considered significant.

Because the area in which grasshopper sparrows were observed in 2001 will be preserved within BOS, and all remaining native grassland onsite will be preserved, Project impacts to grasshopper sparrow would not be considered significant.

The one ferruginous hawk soaring high over the site did not appear to be foraging onsite, and loss of non-native grassland onsite should not be assumed to be a significant impact to this particular species. Significant loss of foraging habitat for raptors as a group is addressed in 3.1.F, below.

See SI 3.1.B above for significant impacts to County Group and State Species of Special Concern wildlife.

LSI 3.1.C. *Guideline: 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.*

Two County List D (and no List C) plant species have been documented onsite: San Diego sunflower (observed in the 1999 surveys; not observed in the 2015-2016 surveys) and small-flower bindweed (not previously detected; observed in the 2015-2016 surveys).

The locally common San Diego sunflower has not been observed onsite since the former sparse coastal sage scrub vegetation in the mima mound area burned; if this species does return, a substantial portion would be expected to occur within the mima mound area of the BOS. Therefore, Project impacts to this CRPR 4.2 species would be less than significant.

A population of small-flower bindweed occurs onsite near the northern property boundary. This location will be preserved within the BOS. Only a single individual was found within the development footprint, near the southeastern property boundary. Therefore, Project impacts to this species would be less than significant.

Four County Group 2 animal species have been observed onsite within or near the Project impact area: San Diego ring-neck snake, California horned lark, barn owl, and San Diego black-tailed jackrabbit. San Diego ring-neck snake, California horned lark, and barn owl are discussed below; impacts to San Diego Black-tailed jackrabbit are significant and discussed above in SI 3.1.B.

The exact location of the San Diego ring-neck snake observation is not known; however, in the 1999 QCB report, it was documented in the northern part of the mima mound area. Its location will be protected within BOS. Therefore, Project impacts to this species would be less than significant.

California horned larks observed onsite were on and adjacent to dirt roads within non-native grassland in the Project impact area. The direct loss of their observed locations and habitat would impact this species onsite, but is not expected to impact the long-term survival locally due to their lower degree of sensitivity (CDFW Watchlist rather than Species of Special Concern) and the abundance of non-native grassland to remain

onsite in BOS and offsite nearby. Project impacts to this species are anticipated to be less than significant.

One barn owl was observed on/over the site during the 1998-1999 surveys, and recent use was documented in 2016. Although the site may lack suitable roosts, barn owl(s) likely use the site for foraging. Barn owls are relatively well adapted to suburban and urban environments, and may roost in trees or structures near the Project site. Because barn owls are not uncommon, are unlikely to roost onsite, and are relatively tolerant of urban/suburban conditions, loss of foraging habitat onsite would be less than significant.

In summary, Project impacts to the long-term survival of County List D plants San Diego sunflower and small-flower bindweed, and County Group B animals San Diego ring-neck snake, California horned lark, and barn owl, are unlikely to adversely impact the local long-term survival of these species, and Project impacts to the long-term survival of these species would be considered less than significant.

LSI 3.1.D. *Guideline: The project may impact arroyo toad aestivation, foraging or breeding habitat.*

No arroyo toads were observed on the Project site or are expected to occur on the site. Although disturbed wetlands and riparian areas occur onsite, there are no riparian areas with sandy streambanks, stable terraces and areas of quiet water or sandy/gravel-bottom, silt-free pools suitable for breeding. No suitable breeding habitat was observed adjacent to the site during field surveys. Without breeding habitat, upland habitat onsite would not be considered potential foraging or aestivation habitat. No CNDDDB records of arroyo toad in the Otay Mesa quad were found. The nearest documented occurrence is approximately 10 miles east of the Project site in the Otay Mountain quad (CNDDDB 2015). Therefore, potential Project impacts to arroyo toad aestivation or breeding habitat would be less than significant.

LSI 3.1.E. *Guideline: The project would impact golden eagle habitat.*

A pair of golden eagles is reported to nest in O'Neal Canyon, and their foraging radius could potentially overlap the Project site. The Wildlife Agencies review all nests and important eagle-use areas within ten miles of a project to determine impacts (Federal Register/Vol. 74, No. 175). If the Wildlife Agencies' review determines that development of the Project may reduce eagle foraging habitat, this would trigger federal requirements under the Eagle Protection Act and would be potentially significant and require mitigation. However, there are no historical sightings of eagles nesting on or using the site, and little evidence to support a finding that the site is an important eagle-use area. Therefore, this impact would be less than significant.

LSI 3.1.G. *Guideline: 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.*

Development of the Project site has been clustered in the southern half of the site, closest to existing development. The southern half of the site is unlikely to be a core wildlife area because it is bounded by SR-125 to the west, Otay Mesa Road and industrial development to the south, and rural residential development to the east. The only critical area/feature needed for wildlife movement, the portion of Johnson Canyon that occurs in the northeastern corner of the site, will be preserved within BOS. Therefore, implementation of the Project would not impact the viability of a core wildlife area and this potential impact would be less than significant.

LSI 3.1.J. *Guideline: The project would impact occupied cactus wren habitat, or formerly occupied coastal cactus wren habitat that has been burned by wildfire.*

In 1990, one occurrence of sixteen coastal cactus wren individuals was reported approximately 0.28 mile north-northeast of the Project site (CNDDDB 2015). However, no occupied or formerly occupied coastal cactus wren habitat was identified onsite. Therefore, Project impacts to coastal cactus wren would be less than significant.

LSI 3.1.K. *Guideline: The project would impact occupied Hermes copper habitat.*

Habitat suitable for the Hermes copper butterfly, specifically mature spiny redberry in proximity to buckwheat scrub, has not been found onsite; therefore, Project impacts to this species would be less than significant.

3.3 Cumulative Impact Analysis for Special-Status Species

A summary of projects in the Otay Mesa cumulative impact study area is provided in Table 2-3, and the location of key project is shown in **Figure 8**.

Several of the cumulative projects listed in Table 2-3 have or will result in loss of habitat or edge effects that significantly impact special-status plant and wildlife species. One such project is the SR-11 East Otay Mesa Point-of-Entry project, which would result in direct and indirect impacts to special-status species including small-flower bindweed, variegated dudleya, coast barrel cactus, San Diego fairy shrimp (critical habitat), burrowing owl, northern harrier, white-tailed kite, turkey vulture, loggerhead shrike, California horned lark, and San Diego black-tailed jackrabbit, as well as 171.9 acres of non-native grassland. Two other projects that have large impacts to non-native grassland are Otay Business Park (176.1 acres) and Otay Crossings Commerce Park (273.3).

Due to the rarity and restricted distribution of San Diego button-celery, San Diego fairy shrimp, Riverside fairy shrimp (assumed present), coast barrel cactus, variegated dudleya, loggerhead shrike, San Diego black-tailed jackrabbit, and burrowing owl, Project impacts to these species would be considered cumulatively significant. The loss of 195.99 acres of non-native grassland raptor foraging habitat in an area where substantial acreage of non-native grassland has already been developed would also be cumulatively significant.

3.4 Mitigation Measures and Design Considerations for Special-Status Species

The Project's mitigation measures specified in the "Final Supplemental Environmental Impact Report, East Otay Mesa Specific Plan, Sunroad Centrum, TM 5139, LOG 98-19-013, SCH No. 92101099" (FSEIR) (T&B 2000) were approved by the County of San Diego in December 2000. Some of the approved mitigation measures were revised and updated in the December 2003 "Sunroad Centrum Resource Conservation Plan, TM 513RPL⁶R" (RCP) (REC 2003). Project mitigation measures for special-status plant species, as published in the FSEIR are provided below. Following the FSEIR measures are any revised or updated mitigation measures described in the Project's December 2003 RCP; those RCP measures replace the earlier FSEIR versions. Any mitigation measures added or revised based on the Conditions of Approval in the March 2012 "Resolution of San Diego County Conditionally Approving Tentative Map No. 31000 5538 (TM)" are provided after the 2003 RCP measures. Mitigation measures for this 2017 BTR update are included after FSEIR, RCP, and Conditions of Approval measures. An updated 2016 version of all applicable mitigation measure elements is provided at the end of each mitigation element (i.e. variegated dudleya). A summary table of the currently applicable mitigation measures is provided in Table 8-1.

Mitigation measures for vegetation impacts, listed in Section 4.4, would also provide mitigation for special-status species.

3.4.1 Mitigation Measures for Plant Species

3.4.1.1 Variegated dudleya mitigation measures

FSEIR mitigation measures for variegated dudleya:

2.3.4.4: Preservation of the majority of this population will occur within the designated open space, north of Lone Star Road, thereby significantly reducing the overall impacts to this population. However, the impacts to the plants located south of Lone Star road would be impacted by development. Transplantation and re-introduction within the onsite open space preserve areas will be required for the impacts to the plants located south of Lone Star Road. Based on the species' biology, this species may lend itself to transplantation efforts. The re-introduction program for this species shall consist of salvaging; site selection, based on habitat characterization and other factors (e.g., hydrology, topography, soils, site protection); development of a

detailed plan (including an experimental component and horticultural and botanical monitoring), and a long-term (5-year) monitoring program. The receiver sites with the open space preserve area shall be similar to the impacted site with respect to topography, habitat, hydrology, and soils, and shall be in proximity to the impacted site. This transplanting program is discussed in more detail with the required RCP.

- 2.3.4.4.b: If salvage/transplantation is not successful (80% success criteria or 64 individuals), offsite mitigation through the purchase of habitat to the extent determined unsuccessful and as acceptable to the County and the Resource Agencies shall be required. It is anticipated that Hollenbeck Canyon would satisfy this off-site purchase obligation, should it arise. The proposed mitigation would reduce the impacts to a level below significant.

2003 RCP mitigation measures for variegated dudleya:

Through additional discussions with the County and a subsequent revision to the Project's Conditions of Approval, Condition 14.p.(3) states that the applicant shall "Provided 1:1 off-site mitigation for 80 impacted variegated dudleya plants to the satisfaction of the Director of Planning and Land Use." It was agreed by the applicant and the County that this offsite purchase would be for ¼ acre of offsite mitigation land supporting no less than 80 individuals of variegated dudleya. The offsite mitigation land or credit purchase shall occur at a location approved by the County. (This RCP mitigation plan was formalized in the "Agreement to Mitigate Variegated Dudleya Impacts, County of San Diego, Tract No. 5139-1.")

2012 Conditions of Approval mitigation measures for variegated dudleya:

GP (Grading Plan condition) 5: The applicant shall provide 1:1 offsite mitigation for impacted dudleya plants. The potential impact area shall be surveyed for variegated dudleya plants during the blooming period (May to June). If variegated dudleya are found onsite and outside of the open space easement within lots 28 and 55, the applicant shall purchase and preserve habitat supporting the same number of variegated dudleya plants to be impacted, located at a County approved location as indicated below.

Option 1: If purchasing mitigation credit the mitigation bank shall be approved by the California Department of Fish and Game [now CDFW]. The mitigation should be located within the County MSCP. If mitigation is proposed outside of the County County MSCP, provide documentation that a current and thorough search was done and that mitigation land is not available within our subarea. The evidence of purchase shall include the following information to be provided by the mitigation bank:

1. Confirmation that the habitat credits purchase support at least the same number of variegated dudleya plants found in the impact area. Surveys of the impact site and mitigation site should be conducted within the same blooming season.

2. A copy of the purchase contract referencing the project name and numbers for which the habitat credits were purchased.
3. If not stated explicitly in the purchase contract, a separate letter must be provided identifying the entity responsible for the long-term management and monitoring of the preserved land.
4. To ensure the land will be protected in perpetuity, evidence must be provided that a dedicated conservation easement or similar land constraint has been placed over the mitigation land.
5. An accounting of the status of the mitigation bank. This shall include the total amount of credits available at the bank, the amount required by this project and the amount remaining after utilization by this project.

Option 2: If habitat credits cannot be purchased in a mitigation bank, then the applicant shall provide for the conservation of habitat supporting at least the same number of variegated dudleya plants found in the impact area to the satisfaction of the Department of Planning and Land Use [DPLU, now PDS] as indicated below:

1. The type of habitat and the location of the proposed mitigation must be pre-approved by DPLU, PCC before purchase or entering into any agreement for purchase.
2. The mitigation should be located within the South County MSCP. If mitigation is proposed outside the South County MSCP, provide documentation that a current and thorough search was done and that mitigation land is not available within our subarea.
3. If an offsite mitigation property is pursued that does not have an existing management plan, then a Resource Management Plan (RMP) shall be prepared and approved pursuant to the County of San Diego Biological Report Format and Content Requirements to the satisfaction of the Director of DPLU . If the offsite mitigation is proposed to be owned and/or managed by DPR [Department of Parks and Recreation], the RMP shall also be approved by the Director of DPR.
4. An open space easement over the land shall be dedicated to the County of San Diego or like agency or the land shall be protected in perpetuity by other suitable mechanism to the satisfaction of the Director of DPLU [now PDS].
5. The final RMP cannot be approved until the following has been completed to the satisfaction of the Director of DPLU: The land shall be purchased, the easements shall be dedicated, a Resource Manager shall be selected, and the RMP funding mechanism shall be in place.
6. In lieu of providing a private habitat manager, the applicant may contract with a federal, State or local government agency with the primary mission of resource management to take fee title or function as grantee under an easement and manage the mitigation land. Evidence of satisfaction must include a copy of the contract with the agency, and a written statement from the agency that (1) the land contains the specified acreage and the specified habitat, or like-functioning habitat, and (2) the land will be managed by the agency for conservation of natural resources in perpetuity.

2017 BTR update mitigation measures for direct impacts to variegated dudleya:

The 2012 Conditions of Approval mitigation measures shall apply, with the understanding that updated variegated dudleya surveys have not been possible due to drought, and unless climatic conditions permit an effective new population count prior to implementation of the mitigation measures, the population numbers provided in the EOMSP BTR shall be used to quantify impacts to this species. Use of the EOMSP BTR population numbers results in a mitigation requirement for approximately 80 variegated dudleya individuals. If a new population count is obtained during a year of adequate rainfall, and comparison of onsite conditions to conditions at a County-approved variegated dudleya reference site indicates that the new population count should accurately represent the current onsite population, that new population count may be used to update the number of individuals to mitigate.

3.4.1.2 San Diego button-celery mitigation measures

FSEIR mitigation measures for San Diego button-celery:

2.3.4.5: This species occurs in the vernal pool complex. All populations of this species onsite would be preserved within the proposed open space easement and protected under the RCP (Appendix B of this SEIR). Any potential indirect impacts to vernal pools (and the San Diego button-celery) due to construction activities and the alignment of Lone Star Road would be fully mitigated through long term management and protection and of the complex, as discussed in the RCP and through the implementation of the various mitigation measures listed below in the discussion titled *Indirect Impacts to Biological Resources*. Accordingly, the button-celery would be protected, and the potential impacts would be reduced to a level below significant.

2017 BTR update mitigation measures for direct impacts to San Diego button-celery:

Based on results of the 2001 and 2004 surveys, the Project would directly impact approximately 46% (~30 individuals) of all San Diego button-celery plants documented onsite (~65 individuals) through loss of the previously undetected group of approximately 30 plants in a mima mound depression south of Lone Star Road. To mitigate for direct impacts to this group of San Diego button-celery, the plants in this location shall be salvaged and translocated to a preserved vernal pool within BOS, in conjunction with the approved Fairy Shrimp Translocation and Five Year Monitoring Mitigation Plan. An addendum to the Fairy Shrimp Plan shall be prepared, and will specify the methods, monitoring, and success criteria for the San Diego button-celery salvage and translocation. This plan will be reviewed by the County and Wildlife Agencies; additional measures may be required by the Wildlife Agencies during Minor Amendment re-evaluation and

will be incorporated into Project design. If a focused survey in a year of adequate rainfall and vernal pool ponding should demonstrate that this group of button-celery is no longer extant, this mitigation measure for direct impacts would not be required.

3.4.1.3 Coast Barrel Cactus mitigation measures

FSEIR mitigation measures for coast barrel cactus:

2.3.4.6: This species is found scattered throughout the coastal sage scrub habitat onsite. Impacts to this species is not considered significant on a project-specific basis, however, impacts would be cumulatively significant when impacts to this species from other projects are also taken into consideration. Preservation of a large portion of this species onsite would occur through preservation of the sage scrub habitat located in the proposed open space preservation easement.

2003 RCP mitigation measures for coast barrel cactus:

Approximately 50% of the individuals will be impacted by the proposed Project. Although the loss of these individuals does not constitute a significant impact on a Project-specific basis, it does represent a cumulative loss. Therefore, this direct impact is significant and mitigated to below a level of significance by onsite preservation and a transplantation plan. See the attached Barrel Cactus Transplantation Plan.

2017 BTR update mitigation measures for direct impacts to coast barrel cactus:

The approved Barrel Cactus Transplantation Plan was implemented and received County sign-off for completion in 2012 (County of San Diego 2012a); therefore, mitigation for significant direct impacts to this species is complete.

3.4.1.4 Special-status plant indirect impacts mitigation measures

FSEIR mitigation measures for indirect impacts to biological resources:

2.3.4.8.a: Human Activities. The adverse effects on vegetation due to the increase in human activity in the area can be minimized by: 1) creating buffer zones adjacent to the open space easements to minimize the effects from noise and lighting; 2) limiting pedestrian and equestrian trails to existing roads or non-sensitive habitats; and 3) discouraging entry into native habitats such as the riparian and vernal pool habitats by installing fencing and barrier plantings and/or signage. In addition, the RCP will require fencing around the entire open space preserve easement to discourage trespassing and illegal dumping.

2.3.4.8.b: Construction Activities. Indirect impacts to habitats may result from construction activities, such as construction of Lone Star Road. To avoid the

potential impacts, the limits of the vernal pool habitats shall be surveyed and staked prior to construction. These limits shall be clearly shown on all construction drawings as 'no impact zones.' This area will have temporary fencing prior to construction to prevent vehicular or pedestrian access, equipment storage, storage of spoils materials, and refuse disposal.

- 2.3.4.8.c: Introduced Species. The use of non-native, invasive plant species will be prohibited in the proposed landscaping palettes (including container stock and hydroseed material) for the streetscapes and commercial/industrial. A qualified biologist or native plant horticulturist shall review and sign all landscaping plans to determine the appropriate species to be used in landscaping, prior to project approval. These measures would reduce the potential impacts to below significant.
- 2.3.4.8.d: Increased Runoff, Erosion, and Sedimentation. The proposed construction of Lone Star Road would result in the removal of vegetation on hillsides that could result in a temporary increase in runoff into the onsite vernal pools. Increased runoff can, in turn, result in erosion and sedimentation that could adversely affect wetland vegetation or other drainages. Erosion and sedimentation impacts can also be mitigated by employing standard erosion control procedures, such as, sandbagging, diversion ditches, and stream bank stabilization. Prior to project approval, a construction erosion control plan will be reviewed and approved by the County. In addition, the project will be required to obtain a National Pollutant Discharge Elimination System (NPDES) Permit for construction activities from the Regional Water Quality Control Board, of which will require an approved Storm Water Pollution Prevention plan. That plan will require the permit applicant to implement measures to prevent contamination of the surrounding drainages during construction. These measures would mitigate the potential for significant impacts to a level below significant.
- 2.3.4.8.e: Toxic Materials. Spills of toxic materials could occur during both construction and operational phases of the project. These spills could contaminate drainages and create a significant impact to habitat and water quality. In order to prevent these impacts, a 'no fueling' zone shall be designated within 25 feet of all drainages during the construction period. In addition, all equipment used near drainages during construction shall be routinely maintained and inspected for leaks. Major leaks shall be repaired immediately. Drip pans and tarps shall be placed under minor leaks. Used drip pans and tarps shall be properly disposed of at the end of each work day. Emergency provisions (e.g. straw bales) shall be placed at all drainage crossings, prior to the onset of construction to deal with unintentional spills. All of these measures will be included in approved Storm Water Pollution Prevention Plan (SWPPP) as a part of the RWQCB-required NPDES permit for construction activities. In addition, all commercial/industrial uses that plan to store materials within the proposed commercial/industrial complex would be required to obtain a NPDES permit for operational activities from RWQCB. That permit would also require a SWPPP for each facility to

prevent contamination of nearby drainages. These measures would mitigate the potential for significant impacts to a level below significant.

- 2.3.4.8.f: Habitat Fragmentation. Lone Star Road could potentially result in habitat fragmentation between the vernal pool complex to the north of Lone Star Road and the one vernal pool to the south of Lone Star Road. The southern vernal pool will be managed as a part of the larger vernal pool complex to the north. Integrated management of the southern pool with the rest of the vernal pool complex will ensure the long term viability of this pool and associated plant populations. The required RCP includes a management program for the vernal pools and would mitigate the potential for impacts to below significant.

In addition to the mitigation measures described above, the Project also would be required to implement the applicable mitigation measures from the certified 1994 EOMSP EIR. The following measures were incorporated into both the 2000 FSEIR and the 2003 RCP for the project.

- 2.3.4.9.a: *Provision should be made to inform the construction contractor(s) (prior to the construction process) about the biological constraints of this project. The contractor(s) will be responsible for impacts to biological sensitivities beyond those identified in this report and that occur as a direct result of construction activities. All sensitive habitat areas or occurrences of sensitive species to be avoided shall be clearly marked on project maps provided to the contractor. These areas shall be designated as "no construction" or "limited construction" zones. These areas will be flagged by the project biologist prior to the onset of construction activities. In some cases, resources may need to be fenced or otherwise protected from direct or indirect impacts.*
- 2.3.4.9.b: *A contractor education meeting shall be conducted to ensure that contractors and all construction personnel are fully informed of the biological sensitivities associated with this project. This meeting should focus on 1) the purpose for resource protection, 2) contractor identification of sensitive resource areas in the field (e.g., areas delineated on maps and by flags or fencing), 3) sensitive construction practices (see nos. 4-9, ...on Pages 4.3-106 and 4.3-107 of the Specific Plan EIR), and protocol to resolve conflicts that may arise during the construction process. This meeting shall be conducted by a qualified biologist, and shall be a requirement for all construction personnel.*
- 2.3.4.9.c: *Heavy equipment and construction activities shall be restricted to the development area. Prohibited activities within drainages or other wetland areas (including vernal pools) include staging areas, equipment access, and disposal or temporary placement of excess fill.*
- 2.3.4.9.d: *Staging areas are prohibited within sensitive habitat areas or any habitat included in open space. Staging areas shall be delineated on the grading plans and reviewed by a qualified biologist. Likewise, vehicle access shall be prohibited in all open space areas.*

- 2.3.4.9.e: *Fueling of equipment shall not occur adjacent to drainages. ...[F]ueling zones should be designated on construction maps and shall be situated a minimum distance of 7.6 m (25 ft) from all drainages the open space limits or near storm drains that may drain into Johnson Canyon.*
- 2.3.4.9.f: *Construction in or adjacent to sensitive areas should be appropriately scheduled to minimize potential impacts to biological resources. All work in or near wetlands or other "waters of the U.S." shall take place during periods of minimum flow (i.e., summer through the first significant rain of fall) to avoid excessive sedimentation and erosion.*
- 2.3.4.9.g: *The open space limits must be staked and flagged prior to clearing or grubbing. The limits of the open space must be fenced with a chain link fence at least five feet tall prior to clearing or grubbing. The fence location must be approved by County staff or monitoring biologist prior to receipt of grading permit and will be a permanent protection measure.*
- 2.3.4.9.h: *A Resource Conservation Plan detailing wetland enhancement, preservation, and maintenance, coastal sage scrub habitat preservation, sensitive species salvaging, and transplanting as well as success standards and report requirements must be completed prior to the initiation of construction.*

2003 RCP mitigation for indirect impacts to sensitive biological resources:

The following potentially significant indirect impact will be mitigated through Project and BOS design and compliance with water quality regulations:

Noise and Lighting: Project and open space design, in which only one border would be adjacent to development and also separated by Lone Star Road.

Water Quality: Mitigation measures approved in the FSEIR [see above] and storm water pollution prevention regulations.

Introduced Animal Species: Project design, in which the entire site is proposed to be industrial and therefore would not be expected to introduce pet animal species into the BOS.

Potentially significant indirect impacts will also be mitigated through implementation of the RCP, which includes the following mitigation design features:

- The southern boundary of the open space area north of Lone Star Road and the vernal pool to the south of Lone Star Road will be fenced using a 4-foot temporary fence installed prior to any clearing or grubbing on the Project site.
- The open space area along Lone Star Road (to the north of the easement dedicated for construction of Lone Star Road) shall be fenced with permanent four-foot chain-link fencing.
- In addition to the fencing along Lone Star Road, a 3-strand wire fence will be installed along the eastern and western edges of the open space area for a distance of 200 feet remaining open space boundary [sic].

- Four-foot chain-link fencing for the vernal pool south of Lone Star Road shall be placed around the perimeter of the vernal pool’s watershed.
- Signs, in English and Spanish, will be posted every 100 feet along the permanent fencing, stating that any persons found vandalizing or trespassing shall be prosecuted to the full extent of the law. Signs will also provide information as to why access to the site is restricted, as well as the contact number for both the biological monitor and maintenance contractor so that vandalism or suspicious activity can be reported.

2012 Conditions of Approval mitigation measures applicable to indirect impacts to sensitive biological resource:

Standard Condition 5: To mitigate for the impacts to vernal pools, fairy shrimp, and coastal sage scrub [no longer occurs onsite] and to provide for the long-term management of the open spaces on Lots 55 and 28, the applicant shall submit an updated cost estimate to implement the approved 2003 RCP (with revisions to cost estimate), including the Fairy Shrimp Translocation and Five Year Mitigation Monitoring Plan, Vernal Pool Management Plan, and Long-term Management, Maintenance, and Monitoring Plan. Standard Condition 12/15: To protect sensitive biological resources by limiting the need to clear or modify vegetation for fire protection purposes within the adjacent biological open space easement, grant to the County of San Diego a 30-ft Limited Building Zone (LBZ) easement on lot 28/38.

GP 1: To prevent inadvertent disturbance to San Diego barrel cactus, northern harrier, vernal pools, and other sensitive habitats and species, a County approved biologist “Project Biologist” shall perform biological monitoring pursuant to the most current version of the “County of San Diego Biological Report Format and Requirements” guidelines during all grading, clearing, grubbing, and trenching located within 100 feet of the Open Space [BOS] Easements... The Project Biologist shall also attend the preconstruction meeting to educate the grading contractor and personnel as to the site’s biological sensitivities.

GP 2: To prevent inadvertent disturbance to vernal pools and biological open space, the applicant installed temporary fencing as specified in the 2003 RCP. The existing fencing shall remain in place until the conclusion of grading activities, after which the fencing shall be removed.

GP 3: To mitigate for impacts to vernal pools, complete initial vernal pool restoration activities and commence the five-year maintenance and monitoring.

2017 BTR update mitigation measures for indirect impacts to sensitive biological resources including special-status plant species:

No 2016 mitigation measure updates are required for Project indirect impacts to special-status plant species.

3.4.2 Mitigation Measures for Animal Species

3.4.2.1 San Diego and Riverside fairy shrimp

2000 FSEIR mitigation measures for San Diego and Riverside fairy shrimp:

2.3.4.7.a: The San Diego fairy shrimp occur in the vernal pools and the ponds onsite. Although, the Riverside Fairy Shrimp was not identified in either the vernal pools or the ponds, it is assumed that the species occurs onsite. Vernal pool preservation would partially mitigate impacts to both species. However, impacts associated with the loss of the ponds would require additional mitigation. Accordingly, the project is proposing to create wetland habitat to mitigate wetland impacts that also would provide habitat for these two species in the proposed open space easement, as specified in the RCP. Creation of wetlands suitable for both species will fully mitigate impacts to these species to below a level of significance. The restoration effort will incorporate measures to salvage these species from the onsite ponds and relocate them into the created pools within the proposed open space easement. The pools will be monitored for fairy shrimp at intervals specified in the RCP for a five-year period. Quarterly reports will be prepared by the applicant's consultant for the first year and annual reports thereafter. If the success criteria listed in the RCP are not met at the end of a given year, remedial action will be taken, pursuant to the direction and approval from the US Army Corps of Engineers and US Fish and Wildlife Service.

See also FSEIR mitigation measures 2.3.4.8.a and 2.3.4.8.d-f and 2.3.4.9a-h in Section 3.4.1.4, above.

2003 RCP mitigation for San Diego fairy shrimp:

Impacts to this species would be mitigated to a level below significant by the creation of habitat and the preservation of the J-22 vernal pool complex as specified in the Fairy Shrimp Translocation and Five Year Monitoring Mitigation Plan.

2003 RCP mitigation for Riverside fairy shrimp:

Impacts to this species, which is assumed present, would be mitigated to a level below significance by the creation of habitat and the preservation of the J-22 vernal pool complex as specified in the Fairy Shrimp Translocation and Five Year Monitoring Mitigation Plan. As required by the 2003 USFWS Biological Opinion, wet season and dry season Riverside fairy shrimp surveys shall be conducted in 2016-2017. If a protocol survey (2 wet, or 1 dry and 1 wet survey) for Riverside fairy shrimp demonstrates that this species is not present in the agricultural pond, then the success criteria for Riverside fairy shrimp will be dismissed.

2017 BTR update mitigation for new impacts to San Diego and Riverside fairy shrimp:

All previously approved and required mitigation measures shall apply. No 2016 mitigation measure updates are required.

3.4.2.2 White-tailed kite:

2000 FSEIR mitigation measures for white-tailed kite:

2.3.4.7.b: Mitigation requirements for the loss of foraging habitat and potential breeding habitat for this species would be met by requiring a qualified biologist to monitor the construction area for suitable nesting habitat (e.g., trees) in the vicinity of construction during the breeding season. The RCP would require that a 'construction-free zone' be created around any identified nesting sites until fledging has occurred. The biologist would coordinate with County staff during the monitoring efforts to determine the size of any required construction zone. This would mitigate the impacts to a level below significant.

See also 2000 FSEIR mitigation measures 2.3.4.8.a and 2.3.4.8.d-f and 2.3.4.9a-h in Section 3.4.1.4, above.

2017 BTR update mitigation for new impacts to white-tailed kite:

Existing measures will reduce Project impacts to below a level of significance; no new mitigation measures specific to white-tailed kite are proposed.

3.4.2.3 Northern harrier:

2000 FSEIR mitigation measures for northern harrier:

2.3.4.7.b: Mitigation requirements for this species would be partially met by the preservation of foraging habitat... within the proposed open space easement. The enhancement of the habitat within the open space will further reduce impacts to this species. In addition, initial clearing of vegetation shall occur outside the nesting season (mid-April through July). If that is not possible, a raptor nesting survey shall be conducted. If an active nest is found, grading will cease in the immediate vicinity, and the monitoring biologist and County staff will determine and agree to an acceptable buffer between the nest location and grading activities. Table 3.5 in the 1996 MSCP Plan states that an acceptable buffer would be 900 feet. Once the nest becomes non-active, grading restrictions shall not longer apply. Mitigation in conformance with the BMO for both on- and offsite habitat preservation (as proposed above in the discussion of sage scrub and grassland habitat mitigation) will fully mitigate for the loss of foraging habitat for this species regionally.

See also FSEIR mitigation measures 2.3.4.8.a and 2.3.4.8.d-f and 2.3.4.9a-h in Section 3.4.1.4, above.

2017 BTR update mitigation for new impacts to northern harrier:

Existing measures will reduce Project impacts to below a level of significance; no new mitigation measures specific to northern harrier are proposed.

3.4.2.4 Burrowing owl:

2017 BTR update mitigation for new impacts to burrowing owl habitat:

Although no evidence of current burrowing owl use was detected during the 2016 protocol surveys, the site has been used by burrowing owls as recently as 2014. The Project would result in a significant impact to burrowing owl through loss of habitat (see SI 3.1.B and SI 3.1.I in Section 3.2). This impact would be largely mitigated through the existing plan to preserve and enhance habitat in the northern BOS, because the majority of owl burrows were located in the northern BOS. It will also be partially mitigated through the approved mitigation for onsite and offsite non-native grassland habitat. Dedication of the BOS, preservation of onsite grassland in the BOS, and purchase of offsite non-native grassland mitigation have been completed (see Section 4.4) and this portion of burrowing owl mitigation is complete. Mitigation measures shall also consist of a requirement for a pre-construction burrowing owl survey to be conducted in the Project development area prior to clearing of the development area, and a pre-construction burrowing owl survey to be conducted in the BOS prior to disturbance within the BOS (such as excavation of new vernal pool).

3.4.2.5 Turkey vulture:

2017 BTR update mitigation for new impacts to turkey vulture:

The Project would result in a significant impact to turkey vulture through loss of habitat (see SI 3.1.B in Section 3.2). Existing Project mitigation measures for impacts to other raptors, such as preservation and enhancement of the northern BOS and additional offsite mitigation for non-native grassland impacts, would also provide mitigation for this significant impact to turkey vulture.

3.4.2.6 Loggerhead shrike:

2017 BTR update mitigation for new impacts to loggerhead shrike:

The Project would result in a significant impact to loggerhead shrike through loss of habitat (see SI 3.1.B in Section 3.2). Existing Project mitigation measures for impacts to other special-status animals including raptors, such as preservation and

enhancement of the northern BOS and additional offsite mitigation for non-native grassland impacts, would also provide mitigation for this significant impact to loggerhead shrike.

3.4.2.7 Black-tailed jackrabbit:

2017 BTR update mitigation for new impacts to black-tailed jackrabbit:

The Project would result in a significant impact to black-tailed jackrabbit through loss of habitat (see SI 3.1.B in Section 3.2). Existing Project mitigation measures for impacts to other special-status animals, such as preservation and enhancement of the northern BOS and additional offsite mitigation for non-native grassland impacts, would also provide mitigation for this significant impact to black-tailed jackrabbit.

3.4.2.8 Raptors:

2017 BTR update mitigation for new impacts to raptors:

The Project would result in a significant impact to raptors as a group, through loss of habitat (see SI 3.1.B in Section 3.2). Existing Project mitigation measures for impacts to special-status raptor species, such as preservation and enhancement of the northern BOS and additional offsite mitigation for non-native grassland impacts, would also provide mitigation for this significant impact to all raptors.

3.4.2.9 Quino Checkerspot Butterfly:

2012 Conditions of Approval mitigation measure:

GP 4: To comply with the federal Endangered Species Act for impacts to Quino checkerspot butterfly, provide the Director of Planning and Land Use [now PDS] with a copy of a survey for Quino checkerspot butterfly conducted within the most recent survey season.

3.4.2.10 Cumulative impacts to special-status species:

2017 BTR update mitigation for cumulative impacts special-status species:

In the approved 2000 FEIR, cumulative impacts to variegated dudleya and coast barrel cactus were identified as cumulative significant but mitigated. The Project would also result in a significant cumulative impacts to San Diego button-celery, San Diego fairy shrimp, Riverside fairy shrimp (assumed present), burrowing owl, loggerhead shrike, raptors, and San Diego black-tailed jackrabbit (see Section 3.3). Existing Project mitigation measures described above are expected to mitigate for these significant cumulative impacts to special-status species.

3.5 Conclusions for Special Status Species

Implementation of the previously approved mitigation measures including updates and revisions and the implementation of **2017** BTR update measures would mitigate all significant Project impacts to special-status species. A summary of all currently applicable mitigation measures is provided in Table 8-1.

End of Section 3.0

4.0 RIPARIAN HABITAT OR SENSITIVE NATURAL COMMUNITIES

4.1 Guidelines for the Determination of Significance for Riparian or Sensitive Natural Communities

The following analysis determines if the Project would have a substantial adverse effect on any riparian habitat or other sensitive habitat identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service. Unless otherwise indicated as “new,” all impacts were previously identified and addressed in the 2000 FSEIR.

Any of the following conditions would be considered significant:

- 4.1.A.** Project-related grading, clearing, construction or other activities would temporarily or permanently remove sensitive native or naturalized habitat (as identified in County of San Diego Guidelines, excluding those without a mitigation ratio) on or off the project site.
- 4.1.B.** Any of the following will occur to or within jurisdictional wetlands and/or riparian habitats as defined by USACE, CDFW and the County of San Diego: removal of vegetation; grading; obstruction or diversion of water flow; adverse change in velocity, siltation, volume of flow, or runoff rate; placement of fill; placement of structures; construction of a road crossing; 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.
- 4.1.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.
- 4.1.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 habitats over the long term. The following issues should be addressed: increasing human access; increasing 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 by the best available science to adversely affect the functioning of sensitive habitats.
- 4.1.E.** The project does not include a wetland buffer adequate to protect the functions and values of existing wetlands. If the project is subject to the Resource Protection Ordinance, buffers of a minimum of 50 feet and a maximum of 200 feet to protect wetlands are required based on the best available science available to the County at the time of adoption of the ordinance.

4.2 Analysis of Project Effects for Riparian or Sensitive Natural Communities

The Project would result in significant impacts [SI] to riparian and other sensitive habitats, based on the following:

- SI 4.1.A.** *Guideline: Project-related grading, clearing, construction or other activities would temporarily or permanently remove sensitive native or naturalized habitat (as identified in County of San Diego Guidelines, excluding those without a mitigation ratio) on or off the project site.*

Development of the Project site would result in significant impacts associated with the permanent removal of 195.99 acres of naturalized non-native grassland habitat and 0.11 acre of disturbed wetlands. These impacts would be significant and require mitigation. Mitigation for impacts to non-native grassland has been completed (see Section 4.4).

- SI 4.1.B.** *Guideline: Any of the following will occur to or within jurisdictional wetlands and/or riparian habitats as defined by USACE, CDFW and the County of San Diego: [those identified in Section 4.1.B].*

The Project site supports three wetland/riparian habitats: disturbed wetlands, non-native riparian, and vernal pools.

The disturbed wetlands areas within the agricultural stock pond and man-made swale are County of San Diego RPO wetlands. Therefore, loss of the disturbed wetlands would be a significant direct impact and require mitigation.

Non-native riparian habitat in the northeastern corner of the site is an RPO wetland because, although it currently dominated by tamarisk, it was southern willow scrub habitat before tamarisk before the tamarisk changed it. The drainage within this habitat is also USACE- and CDFW-jurisdictional as Waters of the US and streambed, respectively. Because the non-native riparian habitat will be protected in BOS, Project impacts to this resource would be less than significant. *(The Project will no longer impact any southern willow scrub habitat.)*

Vernal pools are RPO wetlands. All documented vernal pools will be preserved in BOS; therefore, impacts to vernal pool RPO wetlands would be less than significant.

- SI 4.1.D.** *Guideline: 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 habitats over the long term. The following issues should be addressed: [those identified in Section 4.1.D].*

As discussed in Section 2.2 above, the Project could cause indirect impacts to preserved land in open space through increased human access; increasing competition from exotic species; alteration of natural drainage (and in particular impacting vernal pool hydrology). These indirect impacts are potentially significant and would require mitigation.

The Project would not result in significant impacts [LSI] for the following evaluation topics:

LSI 4.1.C. *Guideline: 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.*

The Project will not draw down the groundwater table. Project impacts to groundwater-dependent habitat would be less than significant.

LSI 4.1.E. *Guideline: The project does not include a wetland buffer adequate to protect the functions and values of existing wetlands. If the project is subject to the Resource Protection Ordinance, buffers of a minimum of 50 feet and a maximum of 200 feet to protect wetlands are required based on the best available science available to the County at the time of adoption of the ordinance.*

All remaining wetlands (vernal pools and the Johnson Canyon drainage) will be preserved within BOS. Within the northern BOS, the vernal pool closest to development is the westernmost vernal pool, which is 28 feet from the BOS boundary and 34 feet from the Lone Star Road right-of-way. This distance is probably greater than the width of the pool's watershed. The Fuel Modification Zone (FMZ) along the northern edge of Lone Star Road does not encroach into the northern BOS (see Section 4.4); therefore, the watershed of westernmost vernal pool and adjacent upland, which serve as a buffer, will not be impacted, and an adequate buffer is provided. All other vernal pools in the northern BOS and the Johnson Canyon drainage are much further from the road and BOS boundary, and will have much larger buffers. Additional buffering for wetlands in the northern BOS will be provided by the required Limited Building Zone (LBZ) along the southern boundary of the northern BOS. This LBZ will ensure that no structures requiring additional fuel modification can be built within 30 feet of the BOS (see Section 4.4). For the vernal pool preserved in BOS south of Lone Star Road, the closest habitat impact will be over 50 feet from the vernal pool. This southern vernal pool BOS is comprised of the pool and its entire watershed. A buffer is provided through conservation of the watershed (0.37 acre of non-native grassland around the pool). A 30-foot LBZ will also surround this BOS, as required. No FMZ encroaches into the BOS. The combination of vernal pool watershed preservation within the BOS, restriction of any fuel modification within the BOS, and the LBZ around the BOS will provide an adequate buffer for the southern vernal pool. Therefore, potential Project impacts pertaining to this guideline would be considered less than significant.

4.3 Cumulative Impact Analysis for Riparian or Sensitive Natural Communities

As described in the 1993 EOMSP BTR, “loss of any vernal pool habitat is considered an adverse, cumulative impact.” At the time that document was written, San Diego vernal pool loss was already estimated at 97%. The Proposed project would not directly impact any documented vernal pool, but could result in significant indirect impacts to hydrology and genetic diversity. Therefore, indirect Project impacts to vernal pools would be potentially cumulatively significant and require mitigation. Because recent and ongoing development on Otay Mesa is rapidly impacting and fragmenting non-native grassland habitat, loss of 195.99 acres of non-native grassland would be cumulatively significant (see Section 3.3). Due to the historical degree of wetland loss in San Diego County, loss of 0.11 acre of disturbed wetland would also be cumulatively significant.

4.4 Mitigation Measures and Design Considerations for Riparian or Sensitive Natural Communities

Habitat mitigation ratios are based on the location of both impact area and mitigation area(s) within a Biological Resource Core Area (BRCA). The Project site is partially a BRCA based on the following criteria in BMO Section 86.506(a)(1):

(iii) The land contains a high number of Sensitive Species and is adjacent or contiguous to surrounding undisturbed habitats, or contains soil derived from the following geologic formations which are known to support Sensitive Species:

- A. Gabbroic rock;
- B. Metavolcanic rock;
- C. Clay;
- D. Coastal sandstone.

The site contains a high number of sensitive (special-status) species and is adjacent or contiguous to surrounding undisturbed habitats, and site soils are predominantly clay. According to the Project’s MSCP Compliance BMO Findings (County of San Diego 2000), portions of the site that are underlain by clay soils (see **Figure 4**) qualify as BRCA.

As described in Section 3.4 above, the Project’s mitigation measures specified in the 2000 FSEIR were approved by the County of San Diego in December 2000. The 2000 FSEIR mitigation measures for significant impacts to riparian or sensitive natural communities are provided below. Following the 2000 FSEIR measures are any revised or updated mitigation measures based on current site conditions as documented in this **2017** BTR update. A summary table of the currently applicable mitigation measures is provided in Table 8-1. Any bracketed text in the pre-2016 mitigation measures is a 2016 annotation.

2000 FSEIR mitigation measures for vegetation:

2.3.4.1.a: Coastal Sage Scrub. Impacts to 2.1 acres of coastal sage scrub would be considered significant. Coastal sage scrub is a Tier II habitat within the Biological Maintenance Ordinance (BMO), and therefore must be mitigated at

a ratio of 1.5:1. Thus, 3.1 acres of sage scrub must be either preserved onsite or acquired and placed into the preserve system. The impacts would be fully mitigated onsite by preserving 3.3 acres of coastal sage scrub within the proposed open space preserve easement to the North of Lone Star Road. The preservation [of] coastal sage scrub onsite mitigates this impact to below a level of significant.

- 2.3.4.1.b: Native Grassland. Impacts to 4.2 acres of native grassland habitat would be considered significant. Native grassland habitat is Tier I habitat in the BMO and impacts to this habitat would require mitigation at a ratio of 2:1. Accordingly, 8.4 acres of Tier 1 habitat would require mitigation. The impacts would be partially mitigated by preserving 3.1 acres of Tier I habitat within the proposed open space preserve easement to the north of Lone Star Road, thereby leaving a deficit of 5.4 acres of habitat needing off-site mitigation. This habitat would be purchased off-site or within a pre-approved mitigation bank within the MSCP subregion. The combination of preservation on-site and the purchase of credits mitigates this impact to below a level of significant. [Note: native grasslands are no longer impacted, but this measure is included because it pertains to 2016 non-native grassland mitigation.]
- 2.3.4.1.c and 2.3.4.3: Non-Native Grassland. Impacts to 186.5 acres (186.37 onsite and 0.13 off-site) would be considered significant. Non-native grassland habitat is a Tier III habitat in the BMO and impacts to this habitat would require mitigation at a ratio of 0.5:1. Accordingly, 93.3 acres of this habitat would require mitigation. The impacts would be partially mitigated by preserving 44.7 acres of this habitat within the proposed open space preserve easement to the north of Lone Star Road, thereby leaving a deficit of 48.6 acres of habitat needing off-site mitigation. This habitat was to be purchased off-site or within a pre-approved mitigation bank within the MSCP subregion. The combination of preservation onsite and the purchase of credits mitigates this impact to below a level of significant.
- 2.3.4.1.d: Wetlands and Other "Waters of the US". Project implementation would result in the loss of wetlands and other "Waters of the US," including the loss of the agricultural pond (0.02 acre), the small pond (0.09 acre) to the north of the agricultural pond, and 0.20 acre of southern willow scrub. Thus, the loss of 0.31 acre of jurisdictional wetland habitat would be considered significant and would requires mitigation at a ratio of 2:1 (total includes creation of at least 1: 1). The project is proposing to create 0.22 acre of wetland habitat within the vernal pool complex located within the proposed open space easement onsite. An additional 0.4 acre of wetland habitat would either be created onsite adjacent to the existing southern willow scrub habitat near Johnson Canyon, or at a[n] off-site location that would be approved by the County and USACE. The objective of the onsite 0.22-acre wetland mitigation site would be to create basins that will collect water adequately to provide habitat for the endangered San Diego and Riverside fairy shrimp and to ensure no net loss of wetland habitat value. The on- or off-site 0.40-acre wetland mitigation site would be to create southern willow scrub habitat adjacent to existing wetland habitat. The precise proportions and ecological arrangement of plantings shall be specified

in the site-specific RCP (Appendix B of this SEIR). In addition, impacts to the wetlands will require a permit from the USACE under Section 404 of the Clean Water Act, and a 401 water quality certification from the Regional Water Quality Control Board. Those permits would require a qualified biologist to prepare a detailed site-specific mitigation and monitoring plan for the proposed mitigation plan. The proposed wetland mitigation plan would reduce the impacts to below significant.

2.3.4.2: Although the proposed project would not impact the seven onsite vernal pools, a vernal pool management plan will be required in accordance with the SPA. Additional mitigation measures that have been incorporated into the RCP include protection of the open space through the use of: perimeter fencing, maintenance of the trail easement, and signs along open space perimeter.

See also 2000 FSEIR mitigation measures for indirect impacts to biological resources, 2003 RCP mitigation measures for indirect impacts to sensitive biological resources, and 2012 Conditions of Approval mitigation measures applicable to indirect impacts to sensitive biological resources, in Section 3.4.1.4, above.

Additional detail on 2012 Specific Conditions 12 and 15 is provided here. Those conditions require protection of sensitive biological resources “by limiting the need to clear or modify vegetation for fire protection purposes within the adjacent biological open space easement” by granting to the County a 30-ft Limited Building Zone (LBZ) easement. Although lot numbers have changed since 2012, the requirement still applies to BOS onsite. The locations of the LBZ adjacent to the large northern BOS and southern vernal pool BOS are shown in **Figure 7b**.

Where the LBZ potentially overlaps a Fuel Modification Zone (FMZ), fuel modification may occur within the LBZ. However, fuel modification may not extend beyond the LBZ into BOS. As specified in the March 2003 TM Revision, clearing of vegetation is prohibited in the open space, with limited exceptions. Fuel modification may occur in the LBZ around the small southern vernal pool BOS, but not within the BOS itself. Where a FMZ is located along the northern edge of the Lone Star Road right-of-way (ROW), the FMZ is limited to the approximately 6 feet between the ROW and BOS boundary, and the strip of unbuilt land between the ROW and the edge of the road itself. This will provide adequate protection given the type of vegetation within the BOS – grassland with so few shrubs that fuel load, in combination with the barrier of the road itself, poses very low risk. Furthermore, growth of flammable invasive species within the adjacent northern BOS, such as Russian-thistle, will be controlled as part of the BOS long-term management. (This design of the road south of the BOS without a large FMZ was approved in the FSEIR and not revised in later approvals.) The arrangement of FMZs relative to LBZs adjacent to the BOS is also shown in **Figure 7b**.

The March 2003 TM Revision prohibition on clearing within BOS does refer to limited exceptions, including "Selective clearing of vegetation by hand to the extent required by written order of the fire authorities for the express purpose of reducing an identified fire hazard." In the event that fire authorities determine that conditions during a certain period

mandate clearing along the southern boundary of the BOS, this selective clearing of vegetation by hand could be implemented, but will not encroach into the watershed of a vernal pool.

2017 BTR update mitigation measures for impacts to riparian habitat and sensitive natural communities:

Habitat and vegetation features that changed between completion of the approved 2000 FSEIR and 2015-2016 update surveys are documented in this **2017** BTR update (see Section 2.1.1). Consequently, habitat mitigation acreages have also changed. All current habitat impact and mitigation acreage requirements are summarized in Table 4-1 and described in the following paragraphs.

Table 4-1. Summary of 2017 Habitat Impact and Mitigation Acreages

Habitat	Existing (acres)	Onsite Impacts (acres)	Offsite Impacts (acres)	Total Impacts (acres)	Remain-ing onsite in BOS	Miti-gation Ratio	Miti-gation Required (acres)	Onsite Miti-gation (acres)	Offsite Miti-gation (acres)
Disturbed Wetland	0.11	0.11	-	0.11	-	2:1	0.22	0.22	0.00
Non-Native Riparian	0.39	-	-	-	0.39				
San Diego Mesa Claypan Vernal Pool	0.21	-	-	-	0.21 ¹				
Native Grassland	1.96	-	-	-	1.96				
Non-native Grassland	240.24	193.37	2.62	195.99	46.87 ²	0.5:1	98.00	48.72 ³	49.28
Developed Land	2.97	2.97	-	2.97	-				
Disturbed Habitat	7.26	4.94	0.07	5.01	2.32				
Totals	253.14	201.39	2.69	204.08	51.75		98.22	48.94	49.28

¹ of which 0.04 acre is in the southern BOS

² of which 0.37 acre is in the southern BOS; 0.11 in northern BOS will be used for wetland creation

³ 48.72 acres = 46.87 NNG in BOS + 1.96 NG – 0.11 NNG used for wetland creation

2016 disturbed wetland mitigation

Significant impacts to 0.11 acre of disturbed wetland would be mitigated at a ratio of 2:1. Mitigation, as previously approved, would consist of 1:1 creation and 1:1 enhancement, in the form of creating 0.11 acre of new wetland habitat in the northern BOS (as required by the Fairy Shrimp Translocation and Five Year Monitoring Mitigation Plan), and enhancing 0.11 acre of wetland habitat in BOS. The enhancement element consists of enhancing all of the vernal pools in BOS as required by the Long Term Management, Maintenance, and Monitoring Plan, and will actually provide 0.21 acre of enhancement.

2016 non-native grassland

Significant impacts to 195.99 acres of non-native grassland would be mitigated at a ratio of 0.5:1, as previously approved in the 2000 FSEIR. The required 98.00 acres of non-native grassland mitigation would be provided through preservation of 46.76 acres of non-native grassland and 1.96 acres of native grassland within BOS, and purchase of 49.28 acres in an approved offsite mitigation bank. Onsite non-native grassland mitigation acreage will be within both the northern BOS and the smaller vernal pool BOS. The northern BOS will preserve 46.39 acres of non-native grassland and 1.96 acre of native grassland (totaling 48.35 acre of grassland). The southern vernal pool BOS will preserve of 0.37 acre of non-native grassland onsite within the southern vernal pool BOS. (Non-native grassland preservation acreages account for [do not include] the 0.11 acre that will be used for vernal pool wetland creation, see Table 4-1.) The offsite mitigation purchase was already completed after the FSEIR, through the \$243,450.00 purchase of 48.6 acres of non-native grassland and 5.4 acres of native grassland mitigation credits in Hollenbeck Canyon, an approved preserve area in the MSCP subarea. This purchase was to satisfy the original FSEIR non-native grassland and native grassland mitigation requirements. Native grassland mitigation is no longer required, and the combined native and non-native grassland offsite mitigation acreages (54 acres total) are now applied to the 2016 non-native grassland mitigation requirement of 49.28 acres of offsite non-native grassland mitigation. Therefore, mitigation for significant direct impacts to non-native grassland is complete.

Changes between the 2017 BTR update and 2000 FSEIR impact totals and mitigation acreage requirements are summarized in Table 4-2.

Table 4-2. Comparison of 2017 BTR and 2000 FSEIR Habitat Impacts and Mitigation

Habitat	2016 Impacts and Mitigation (acres)			2000* Impacts and Mitigation (acres)			Mitigation Change from 2000 to 2016 (acres)
	Impact Total	Ratio	Mitigation Total	Impact Total	Ratio	Mitigation Total	
Disturbed Wetland	0.11	2:1	0.22	0.11	2:1	0.22	0
Non-Native Riparian	-			NA			0
Vernal Pool	-			-			0
Southern Willow Scrub	NA			0.20	2:1	0.40	-0.40
Coastal Sage Scrub	NA			2.1	1.5:1	3.1	-3.1

Native Grassland	-			4.2	2:1	8.4	-8.4
Non-native Grassland	195.99	0.5:1	98.00	186.63	0.5:1	93.3	+4.7
Developed Land	2.97			NA			-
Disturbed Land	5.01			5.9			-
Totals	204.48		98.22	199.03		105.42	-7.2

*Acreages in FSEIR were slightly different than in associated 2000 BTR; this table provides acreages in the approved FSEIR, including the discrepancy in total acreage.

4.5 Conclusions for Riparian or Sensitive Natural Communities

Implementation of the applicable previously approved 2000 FSEIR measures, with adjustments to acreages based on current site conditions, would mitigate all significant Project impacts to riparian habitats and sensitive natural communities. A summary of all currently applicable mitigation measures is provided in Table 8-1.

End of Section 4.0

5.0 JURISDICTIONAL WETLANDS AND WATERWAYS

As specified in County Guidelines for Determining Significance, these guidelines refer only to federally protected wetlands, based on Section 4 guidelines 4.2.B, C, and E.

5.1 Guidelines for the Determination of Significance for Federal Jurisdictional Wetlands

The Project would 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.

- 5.1.A. Any of the following will occur to or within jurisdictional wetlands...as defined by USACE...: removal of vegetation; grading; obstruction or diversion of water flow; adverse change in velocity, siltation, volume of flow, or runoff rate; placement of fill; placement of structures; construction of a road crossing; 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.
- 5.1.B. The project would draw down the groundwater table to the detriment of [federally protected] groundwater-dependent [wetland] habitat, typically a drop of three feet or more from historical low groundwater levels.
- 5.1.C. The project does not include a wetland buffer adequate to protect the functions and values of existing [federally protected] wetlands...

5.2 Analysis of Project Effects to Federal Jurisdictional Wetlands

The Project would not result in significant impacts [LSI] to federally protected wetlands, based on the following:

- LSI 5.1.A. No federally protected wetlands will be impacted. (The onsite vernal pools are not currently USACE-jurisdictional wetlands). This guideline is no longer applicable, and potential impact would be less than significant.
- LSI 5.1.B. The Project will not draw down the groundwater table and no federally protected wetlands will be impacted. This guideline is not applicable, and potential impact would be less than significant.
- LSI 5.1.C. No federally protected wetlands potentially requiring a buffer would be impacted. (Wetlands formerly identified as USACE-jurisdictional are no longer classified as such because they are isolated. The federally protected Waters of the US within Johnson Canyon in the northeastern corner of the site will be protected within the BOS.) This guideline is not applicable, and potential impact would be less than significant.

5.3 Cumulative Impact Analysis for Federal Jurisdictional Wetlands

Because the Project does not impact any federally protected jurisdictional wetlands (or waters), it will not contribute to cumulative impacts to these resources.

5.4 Mitigation Measures and Design Considerations for Federal Jurisdictional Wetlands

Because the Project does not impact any federally protected wetlands (or waters), no mitigation for such impacts is required.

At the time the FSEIR was approved, the disturbed wetlands, riparian scrub, and vernal pools onsite were considered federally protected wetlands, subject to significant Project impacts. The following FSEIR mitigation measure (also applied to significant habitat impacts in Section 4.4, above) was provided for significant impacts to those wetlands.

2000 FSEIR mitigation measure for wetlands:

2.3.4.1.d: Wetlands and Other Waters of the US: Project implementation would result in the loss of wetlands and other Waters of the US, including the loss of the agricultural pond (0.02 acre), the small pond (0.09 acre) to the north of the agricultural pond, and 0.20 acre of southern willow scrub. Thus, the loss of 0.31 acre of jurisdictional wetland habitat would be considered significant and would require mitigation at a ratio of 2:1 (total includes creation of at least 1: 1). The project is proposing to create 0.22 acre of wetland habitat within the vernal pool complex located within the proposed open space easement onsite. An additional 0.4 acre of wetland habitat would either be created onsite adjacent to the existing southern willow scrub habitat near Johnson Canyon, or at a[n] off-site location that would be approved by the County and USACE. The objective of the onsite 0.22-acre wetland mitigation site would be to create basins that will collect water adequately to provide habitat for the endangered San Diego and Riverside fairy shrimp and to ensure no net loss of wetland habitat value. The on- or off-site 0.40-acre wetland mitigation site would be to create southern willow scrub habitat adjacent to existing wetland habitat. The precise proportions and ecological arrangement of plantings shall be specified in the site-specific RCP. In addition, impacts to the wetlands will require a permit from the US Army Corps of Engineers under Section 404 of the Clean Water Act, and a 401 water quality certification from the Regional Water Quality Control Board. Those permits would require a qualified biologist to prepare a detailed site-specific mitigation and monitoring plan for the proposed mitigation plan. The proposed wetland mitigation plan would reduce the impacts to below significant.

2017 BTR update mitigation measures for impacts to federally protected wetlands:

Because the Project will only impact wetlands that no longer fall under jurisdiction of the USACE, no mitigation for such impacts is proposed. A 401 water quality certification from the Regional Water Quality Control Board would still be required because the impacted disturbed wetlands would still be considered Waters of the State. Impacts to Waters of the State will require mitigation. Mitigation shall consist of wetland creation and enhancement/restoration as proposed for wetland habitat impacts in Section 4.4 above.

5.5 Conclusions for Federal Jurisdictional Wetlands

The Project will not impact jurisdictional wetlands or waterways, ensuring that Project impacts to such resources are less than significant. However, a 401 water quality certification with associated mitigation will be required, and mitigation (based on wetland habitat mitigation) will reduce impacts related to the 401 certification to below a level of significance.

End of Section 5.0

6.0 WILDLIFE MOVEMENT AND NURSERY SITES

6.1 Guidelines for the Determination of Significance for Wildlife Movement and Nursery Sites

The following analysis determines if the project would 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 impedes the use of native wildlife nursery sites.

Any of the following conditions would be considered significant:

- 6.1.A. The project would prevent wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for their reproduction.
- 6.1.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.
- 6.1.C. The project would create artificial wildlife corridors that do not follow natural movement patterns.
- 6.1.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.
- 6.1.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.
- 6.1.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 for Wildlife Movement and Nursery Sites

The Proposed Project would not result in significant impacts [LSI] under the following guidelines, based on the following:

- LSI 6.1.A.** *Guideline: The project would prevent wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for their reproduction.*

As analyzed in the EOMSP BTR, the western portion of the SPA (in which the site is located) supports poor habitat for wildlife movement because the open agricultural fields provide little topographical or vegetative cover. (County of San Diego 1993) Furthermore, the site is bordered by Otay Mesa Road and industrial development to the south, and SR-125 to the west. The only part of the site that is likely to serve as a wildlife corridor is Johnson Canyon along the northern edge of the site.

Development of the Project is concentrated in the southern portion of the site, and Johnson Canyon would be protected in BOS. The site is not a wildlife nursery per County guidelines. Therefore, Project impacts to wildlife access to these types of resources would be less than significant.

LSI 6.1.B. *Guideline: 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.*

As summarized above, the site is bordered by Otay Mesa Road and industrial development to the south, and SR-125 to the west. The only part of the site that is likely to serve as a wildlife corridor is Johnson Canyon along the northern edge of the site. Development of the Project is concentrated in the southern portion of the site, and Johnson Canyon would be protected in BOS contiguous with undeveloped land to the north, northwest, and east. Therefore, Project impacts to habitat connectivity and wildlife corridors/linkages would be less than significant.

LSI 6.1.C. *Guideline: The project would create artificial wildlife corridors that do not follow natural movement patterns.*

The Project would not create any wildlife corridors. It would preserve the most likely wildlife corridor (the onsite portion of Johnson Canyon) in BOS. Therefore, Project impacts pertaining to creation of artificial wildlife corridors would be less than significant.

LSI 6.1.D. *Guideline: 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.*

It is assumed that noise and nighttime lighting will increase near the southern edge of BOS due to Project development. However, the southern portion of BOS is on the mesa top. As analyzed in the EOMSP BTR, the fields on the mesa provide little topographical or vegetative cover and are poor habitat for wildlife movement. The most likely wildlife corridor (the onsite portion of Johnson Canyon) is located along the northern edge of the site, within BOS, and would be protected from significant increases in noise and nighttime lighting by both distance and the sheltering topography of the canyon slope. Therefore, Project noise- and lighting-related impacts to wildlife corridors or linkages would be less than significant.

LSI 6.1.E. *Guideline: 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.*

The most likely wildlife corridor (the onsite portion of Johnson

Canyon) is located along the northern edge of the site, within BOS. The BOS will prevent reduction in the width of, or increased constraints upon, any wildlife corridor/linkage in Johnson Canyon; therefore, Project impacts would be less than significant.

LSI 6.1.F. *Guideline: The project does not maintain adequate visual continuity (i.e., long lines-of-site) within wildlife corridors or linkage.*

As analyzed in the EOMSP BTR, the fields on the mesa provide little topographical or vegetative cover for wildlife movement, and the most likely wildlife corridor (the onsite portion of Johnson Canyon) is located along the northern edge of the site, within BOS. Therefore, Project impacts to visual continuity within any wildlife corridor/linkage would be less than significant.

6.3 Cumulative Impact Analysis for Wildlife Movement and Nursery Sites

The only part of the site that is likely to serve as a wildlife corridor is Johnson Canyon along the northern edge of the site. Development of the Project is concentrated in the southern portion of the site, and Johnson Canyon would be protected in BOS. The site is not a wildlife nursery per County guidelines. Therefore, cumulative Project impacts to wildlife access to these types of resources would be less than significant.

6.4 Mitigation Measures and Design Considerations for Wildlife Movement and Nursery Sites.

Because the Project does not impact wildlife movement or important nursery sites, no mitigation for such impacts is required. The 2000 FSEIR did not include mitigation measures for wildlife movement and nursery site impact

6.5 Conclusions for Wildlife Movement and Nursery Sites

The Project would not 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.

End of Section 6.0

7.0 LOCAL POLICIES, ORDINANCES AND ADOPTED PLANS

7.1 Guidelines for the Determination of Significance

The following analysis determines if the Project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, and/or conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or State habitat conservation plan. Analysis under this set of guidelines is new to this 2017 BTR update report, because the way that impacts are organized and analyzed has changed since the time of the approved 2000 FSEIR. However, most approved mitigation measures still apply.

Any of the following conditions would be considered significant:

- 7.1.A.** For lands outside of the MSCP, the project would impact coastal sage scrub (CSS) vegetation in excess of the County's 5% habitat loss threshold as defined by the Southern California Coastal Sage Scrub Natural Communities Conservation Planning Process (NCCP) Guidelines.
- 7.1.B.** The project would preclude or prevent the preparation of the subregional Natural Communities Conservation Planning Process (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.
- 7.1.C.** The project will impact any amount of wetlands or sensitive habitat lands as outlined in the Resource Protection Ordinance (RPO).
- 7.1.D.** The project would not minimize and/or mitigate coastal sage scrub habitat loss in accordance with Section 4.3 of the Natural Communities Conservation Planning Process (NCCP) Guidelines.
- 7.1.E.** The project does not conform to the goals and requirements as outlined in any applicable Habitat Conservation Plan (HCP), Habitat Management Plan (HMP), Special Area Management Plan (SAMP), Watershed Plan, or similar regional planning effort.
- 7.1.F.** For lands within the Multiple Species Conservation Program (MSCP), the project would not minimize impacts to Biological Resource Core Areas (BRCAs), as defined in the Biological Mitigation Ordinance (BMO).
- 7.1.G.** The project would preclude connectivity between areas of high habitat values, as defined by the Southern California Coastal Sage Scrub Natural Communities Conservation Planning Process (NCCP) Guidelines.
- 7.1.H.** The project does not maintain existing movement corridors and/or habitat linkages as defined by the Biological Mitigation Ordinance (BMO).
- 7.1.I.** The project does not avoid impacts to MSCP narrow endemic species and would impact core populations of narrow endemics.
- 7.1.J.** The project would reduce the likelihood of survival and recovery of listed species in the wild.

- 7.1.K. The project would result in the killing of migratory birds or destruction of active migratory bird nests and/or eggs (Migratory Bird Treaty Act).
- 7.1.L. The project would result in the take of eagles, eagle eggs or any part of an eagle (Bald and Golden Eagle Protection Act).

7.2 Analysis of Project Effects on Local Policies, Ordinances and Adopted Plans

The Project would result in significant conflicts [SI] with local policies, ordinances, and adopted plans, based on the following:

- SI 7.1.C. *Guideline: The project will impact any amount of wetlands or sensitive habitat lands as outlined in the Resource Protection Ordinance (RPO).*

Development of the Project would impact RPO wetlands (see Section 1.4.7.1). The Project would also impact RPO sensitive habitat lands. The mima mound depression south of Lone Star Road that supported approximately 30 San Diego button-celery individuals in 2004 would be considered sensitive habitat land based on the following criterion: “Lands that include habitats of Endangered species under Section 15380 of CEQA Guidelines (State- and federally listed species or species that would qualify for such listing).” This area would be directly impacted. Project impacts to RPO wetlands and sensitive habitat lands would be significant and require mitigation.

- SI 7.1.I. *Guideline: The project does not avoid impacts to MSCP narrow endemic species and would impact core populations of narrow endemics.*

Development of the Project would impact approximately 73 of 361 MSCP Narrow Endemic variegated dudleya individuals, or approximately 20% of the J-22 population, based on the 1993 EOMSP BTR (see Section 1.4.5.1 and Section 3.2 SI 3.1.B). The Project would impact two locations in which MSCP Narrow Endemic San Diego fairy shrimp was detected. These significant impacts would require mitigation.

- SI 7.1.J. *Guideline: The project would reduce the likelihood of survival and recovery of listed species in the wild.*

Development of the Project site would result in the loss of two San Diego fairy shrimp locations and one previously documented San Diego button-celery location would reduce the likelihood of survival and recovery of these listed species in the wild and would require mitigation.

The Project would not result in significant conflicts with local policies, ordinances, and adopted plans, based on the following:

- LSI 7.1.A. *Guideline: For lands outside of the MSCP, the project would impact coastal sage scrub (CSS) vegetation in excess of the County’s 5% habitat loss threshold as defined by the Southern California Coastal Sage Scrub Natural Communities Conservation Planning Process (NCCP) Guidelines.*

The Project is within the MSCP and will comply with MSCP requirements, including Wildlife Agency consultation pertaining to Minor and Major Amendment areas. This guideline is not applicable, and potential impacts would be less than significant.

- LSI 7.1.B.** *Guideline: The project would preclude or prevent the preparation of the subregional Natural Communities Conservation Planning Process (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.*

Because the Project is within the MSCP, and will comply with MSCP requirements including any Wildlife Agency consultation pertaining to Minor and Major Amendment areas, it would not interfere with preparation of the NCCP. This guideline is not applicable, and potential impacts would be less than significant.

- LSI 7.1.D.** *Guideline: The project would not minimize and/or mitigate coastal sage scrub habitat loss in accordance with Section 4.3 of the Natural Communities Conservation Planning Process (NCCP) Guidelines.*

The Project will not impact any coastal sage scrub habitat. Coastal sage scrub habitat no longer occurs onsite; it was replaced by non-native grassland after the area burned (date unknown). This guideline is not applicable, and potential impacts would be less than significant.

- LSI 7.1.E.** *Guideline: The project does not conform to the goals and requirements as outlined in any applicable Habitat Conservation Plan (HCP), Habitat Management Plan (HMP), Special Area Management Plan (SAMP), Watershed Plan, or similar regional planning effort.*

The Project will conform to the goals and requirements of the MSCP, Major and Minor Amendment Areas, and EOMSP. Impacts pertaining to this guideline would be less than significant.

- LSI 7.1.F.** *Guideline: For lands within the Multiple Species Conservation Program (MSCP), the project would not minimize impacts to Biological Resource Core Areas (BRCAs), as defined in the Biological Mitigation Ordinance (BMO).*

The Project is within the MSCP and qualifies as a BRCA (see Section 4.4). Project design minimizes impacts to the BRCA by (a) developing the least environmentally sensitive section of the site (non-native grassland adjacent to development), (b) preserving the higher value resources, designated as Major Amendment Area, in BOS (vernal pools, approximately half of the mima mound area, native grassland, and the wildlife corridor of Johnson Canyon). Therefore, Project impacts related to this guideline would be less than significant.

LSI 7.1.G. *Guideline: The project would preclude connectivity between areas of high habitat values, as defined by the Southern California Coastal Sage Scrub Natural Communities Conservation Planning Process (NCCP) Guidelines.*

Coastal sage scrub habitat no longer occurs onsite; it was replaced by non-native grassland after the area burned (date unknown). For other types of habitat, the Project would not preclude connectivity because the Project development is located in the southern portion of the site, closest to existing development. The site is bordered by Otay Mesa Road and industrial development to the south, and SR-125 to the west. Land to the east (on the south side) is rural residential with horse pasture. In the Project area, the site is located at the southern limit of undeveloped habitat, and will preserve the northern area closest to nearby preserve land. The Project would not block connectivity between areas of high value habitat, and would contribute to such connectivity by preserving the northern portion of the site, along Johnson Canyon, within BOS. Therefore, Project impacts to high-value habitat connectivity would be less than significant.

LSI 7.1.H. *Guideline: The project does not maintain existing movement corridors and/or habitat linkages as defined by the Biological Mitigation Ordinance (BMO).*

As defined in the BMO, a “corridor is a specific route that is used for movement and migration of species. A corridor may be different from a ‘linkage’ because it represents a smaller or more narrow avenue for movement.” A “linkage” is defined in the BMO as “an area of land which supports or contributes to the long-term movement of wildlife and genetic material.”

As analyzed in the EOMSP BTR, the mesa in the Project area supports poor habitat for wildlife movement because the open agricultural fields provide little topographical or vegetative cover (County of San Diego 1993). Furthermore, the site is bordered by Otay Mesa Road and industrial development to the south, and SR-125 to the west. The only part of the site that is likely to serve as a wildlife corridor or linkage is Johnson Canyon along the northern edge of the site. Development of the Project is concentrated in the southern portion of the site, and Johnson Canyon would be protected in BOS. Therefore, Project impacts to maintaining existing movement corridors and/or habitat linkages would be less than significant.

LSI 7.1.K. *Guideline: The project would result in the killing of migratory birds or destruction of active migratory bird nests and/or eggs (Migratory Bird Treaty Act).*

The Project would include restrictions on clearing, grading, and construction that would prevent killing of migratory birds or destruction of active migratory bird nests/eggs; therefore, potential Project impacts would be less than significant.

LSI 7.1.L. *Guideline: The project would result in the take of eagles, eagle eggs or any part of an eagle (Bald and Golden Eagle Protection Act).*

The Project would not result in take of eagles, eagle eggs, or any part of an eagle; therefore, Project impacts would be less than significant.

7.3 Cumulative Impact Analysis for Local Policies, Ordinances and Adopted Plans

The Project would impact RPO wetlands, RPO sensitive habitat lands, and a Narrow Endemic species (San Diego fairy shrimp); and potentially reduce the chance of survival and recovery for listed species San Diego Fairy Shrimp and San Diego button-celery (see SI 7.1.C, I, and J above). Given the rarity and restricted distribution of these species, Project impacts would be cumulatively significant.

7.4 Mitigation Measures and Design Considerations for Local Policies, Ordinances and Adopted Plans

2017 BTR update mitigation measures for impacts related to local policies, ordinances, and adopted plans:

The Project will result in an impact to RPO wetlands (SI 7.1.C) as a result of the change in the RPO definition of wetlands between the time the 2000 FSEIR was completed and now (see Section 1.4.7.1). The impacted disturbed wetlands were not RPO wetlands at the time of the 2000 FSEIR approval, and impacts to the disturbed wetlands habitat will be mitigated through creation of new wetlands in BOS. Therefore, with the approved mitigation measures, impacts to RPO wetlands would be reduced to less than significant.

The Project will result in impacts to sensitive habitat lands based on the presence of San Diego fairy shrimp in the disturbed wetlands and San Diego button celery in an impacted mima mound depression (SI 7.1.C). However, mitigation measures for impacts to the disturbed wetlands (as both wetlands and fairy shrimp habitat) were already approved in the 2000 FSEIR, and the direct impact to San Diego button-celery has been addressed in this 2016 update report in Section 3.4.1.2. Therefore, with these mitigation measures, impacts to sensitive habitat lands would be reduced to less than significant.

Similarly, the loss of approximately 20% of the J-22 population of variegated dudleya, two San Diego fairy shrimp locations, and one San Diego button-celery location would be significant impacts (SI 7.1.I and 7.1.J). As with the impacts to sensitive habitat lands, mitigation measures for impacts to variegated dudleya and fairy shrimp have already been approved in the 2000 FSEIR. The significant direct impact to San Diego button-celery has been addressed in this 2016 update report in Section 3.4.1.2.

7.5 Conclusions for Local Policies, Ordinances and Adopted Plans

Implementation of the approved 2000 FSEIR mitigation measures and 2016 update mitigation measures for San Diego button-celery and wetland impacts would mitigate all significant Project impacts related to local policies, ordinances, and adopted plans.

End of Section 7.0

8.0 SUMMARY OF PROJECT IMPACTS AND MITIGATION

Development of the Otay 250 Project will result in significant biological impacts to sensitive habitats and special-status species. Significant impacts are based on those identified in the 2000 SEIR, as well as those identified with the 2016 updated surveys. Tables 8-1 summarizes mitigation for significant impacts.

Table 8-1. Summary of Applicable Mitigation Measures for All Significant Impacts

	Proposed Mitigation	Applicable Guidelines	Level of Significance after Mitigation
MM-1	<p>A 51.34-acre Biological Open Space (BOS) easement in the northern portion of the site north of Lone Star Road, and a 0.41-acre BOS easement around one vernal pool south of Lone Star Road, shall be established to protect sensitive biological resources.</p> <p>The northern BOS shall contain 0.17 acre of natural vernal pools (seven pools) (0.28 acre after 0.11 acre vernal pool creation), 46.50 acres of non-native grassland (46.39 after 0.11 acre vernal pool creation), 1.96 acres of native grassland, and 0.39 acre of non-native riparian habitat. The southern BOS shall contain 0.04 acre of vernal pool and 0.37 acre of non-native grassland (the vernal pool's watershed).</p> <p>BOS protective measures:</p> <ul style="list-style-type: none"> The southern boundary of the open space area north of Lone Star Road and the vernal pool to the south of Lone Star Road shall be fenced using a 4-foot temporary fence installed prior to any clearing or grubbing on the Project site. Previously installed temporary fencing shall be replaced until permanent fencing is installed. The open space area along Lone Star Road (to the north of the easement dedicated for construction of Lone Star Road) shall be fenced with permanent four-foot chain-link fencing. In addition to the fencing along Lone Star Road, a 3-strand wire fence shall be installed along the eastern and western edges of the open space area for a distance of 200 feet north of fencing along Lone Star Road, to deter trespassers without blocking wildlife use. Four-foot chain-link fencing for the vernal pool south of Lone Star Road shall be placed around the perimeter of the vernal pool's watershed. Signs, in English and Spanish, will be posted every 100 feet along the permanent fencing, stating that any persons found vandalizing or trespassing shall be prosecuted to the full extent of the law. Signs shall also provide information as to why access to the site is restricted, as well as the contact number for both the biological monitor and maintenance contractor so that vandalism or suspicious activity can be reported. Fuel modification along Lone Star Road will not encroach into BOS. In the event that fire authorities issue a written order stating that conditions during a certain period mandate clearing along the southern boundary of the northern BOS, selective clearing of vegetation by hand may be undertaken, but no such clearing will not encroach into the watershed of a vernal pool. 	4.1.A, B, D; 4.3; also 3.1.A, B, F, H, I, L; 3.3; 7.3	<p>Less than significant</p> <p>PARTIALLY COMPLETE: Easements have been established</p>

	Proposed Mitigation	Applicable Guidelines	Level of Significance after Mitigation
MM-2	<p>The BOS shall be managed and maintained in perpetuity according to the approved Resource Conservation Plan (RCP) including the Long-Term Management, Maintenance, and Monitoring Plan (REC 2003).</p> <ul style="list-style-type: none"> The vernal pool preserved in BOS south of, and separate from, the BOS north of Lone Star Road, shall be managed as a part of the larger vernal pool complex to the north. The 2003 RCP shall be updated to reflect adjustments or additions based on this 2017 BTR update (e.g. MM-5, MM-10). 	3.1.A, B, F, I, L; 3.3; 4.1.A, B; 4.3; 7.1.C, I, J; 7.3	Less than significant
MM-3	Buffer zones shall be established adjacent to BOS to minimize effects from noise and lighting. The 30-ft LBZ to be established at the edge of each BOS shall provide such a buffer.	3.1.H	Less than significant
MM-4	<p>For non-native grassland mitigation, the required 98.00 acres shall be provided through</p> <ol style="list-style-type: none"> In northern BOS, preservation of 46.39* acres of non-native grassland and 1.96 acre of native grassland (totaling 48.35 acre of grassland) onsite, In southern vernal pool BOS, preservation of 0.37 acre of non-native grassland onsite within the southern vernal pool BOS, and purchase of an additional 49.28 acres offsite in an approved mitigation bank. <p>*46.50 remaining in northern BOS minus 0.11 acre for vernal pool creation</p>	4.1.A; 3.1.B, F, I, L; 3.3, 7.3	<p>Less than significant</p> <p>COMPLETE: 54 acres of grassland (5.4 native, 48.6 non-native) were already purchased to satisfy the approved FSEIR mitigation measures, and onsite non-native grassland mitigation acreage has been protected within the established BOS easement.</p>
MM-5	For wetland mitigation, 0.11 acre of wetland habitat shall be created and 0.11 acre of wetland habitat shall be enhanced within the northern BOS.	3.1.A, B; 3.3; 4.1.B, 7.1.I, J; 7.3	Less than significant
MM-6	Pedestrian and equestrian trails shall be restricted to existing roads or non-sensitive habits.	3.1.H	Less than significant
MM-7	The majority of onsite variegated dudleyas shall be preserved onsite within the northern BOS.	3.1.B, 3.3, 7.1.J	Less than significant, with MM-8

	Proposed Mitigation	Applicable Guidelines	Level of Significance after Mitigation
MM-8	Offsite mitigation land supporting at least the number of variegated dudleya plants documented in the Project impact area (approximately 80 on approximately one-quarter acre) shall be purchased at a location approved by the County. The location may be within an existing mitigation bank, or if that is not available, then outside a mitigation bank if the location is approved by the County and an open space easement and Resource Management plan are established and implemented. If a new population count is obtained prior to Project implementation, during a year of adequate rainfall, and comparison of onsite conditions to conditions at a County-approved variegated dudleya reference site indicates that the new population count should accurately represent the current onsite population, that new population count may be used to update the number of individuals to mitigate.	3.1.B, 3.3, 7.1.I	Less than significant, with MM-7
MM-9	San Diego button-celery individuals within BOS shall be preserved onsite.	3.1.A, 3.1.B, 3.3, 7.1.J, 7.3	Less than significant, with MM-10
MM-10	A San Diego Button-Celery Translocation and Mitigation and Monitoring Plan, for individuals that would be impacted by Project Development, shall be prepared and provided as an addendum to the approved Fairy Shrimp Translocation and Five Year Mitigation and Monitoring Plan. The plan shall be implemented prior to Project development. This plan will be reviewed by the County and Wildlife Agencies; additional measures may be required by the Wildlife Agencies during Minor Amendment re-evaluation and will be incorporated into Project Design. If a focused survey in a year of adequate rainfall and vernal pool ponding should demonstrate that this group of button-celery is no longer extant, this mitigation measure for direct impacts would not be required.	3.1.A, 3.1.B, 3.3, 4.1.B, 7.1.J, 7.3	Less than significant, with MM-9
MM-11	Approximately 50% of the existing onsite coast barrel cacti plants shall be preserved within onsite BOS.	3.1.B, 3.3	Less than significant, COMPLETE: BOS easement has been established.
MM-12	At least 47 barrel cacti shall be transplanted from the Project impact area to the same habitat within BOS, as described in the December 2003 Barrel Cactus Transplantation Plan. The transplanted barrel cacti shall be maintained and monitored as described in the Cactus Plan. If the final success criterion of 80% survivorship (38 healthy individuals) is not achieved by the end of the fifth year, the responsible party's maintenance and monitoring obligations shall continue until the County of San Diego gives final project confirmation.	3.1.B, 3.3	Less than significant COMPLETE: Cactus Plan has been implemented and received County sign-off.
MM-13	Of the 0.22 acres of wetland to be created/enhanced in BOS, at least 0.11 acre shall be creation of vernal pools that will support fairy shrimp.	3.1.A, B; 3.3; 7.1.I, J; 7.3	Less than significant
MM-14	Fairy shrimp (cysts) shall be translocated from the agricultural pond	3.1.A, B; 3.3;	Less than

	Proposed Mitigation	Applicable Guidelines	Level of Significance after Mitigation
	basin via collection of inoculum and distribution in newly created basins as described in December 2003 Fairy Shrimp Translocation and Five Year Mitigation and Monitoring Plan (Fairy Shrimp Plan). The pools shall be maintained and monitored for a five-year period or until success criteria are achieved, as described in the Fairy Shrimp Plan. If the success criteria provided in the Fairy Shrimp Plan are not achieved, the permittee's maintenance and monitoring obligations shall continue until the County give final mitigation success clearance. If, prior to translocation, a protocol survey (2 wet, or 1 dry and 1 wet survey) for Riverside fairy shrimp is conducted, and this survey demonstrates that this species is not present in the agricultural pond, then the success criteria for Riverside fairy shrimp will be dismissed.	7.1.I, J; 7.3	significant
MM-15	A pre-construction burrowing owl survey shall be conducted in the Project development area prior to clearing of the development area, and a pre-construction burrowing owl survey shall be conducted in the BOS prior to disturbance within the BOS (such as excavation of new vernal pools). If any active burrows are found, clearing shall not proceed until after consultation with County and Wildlife Agency staff and implementation of any protective measures required.	3.1.B, 3.3	Less than significant
MM-16	Initial clearing of vegetation shall occur outside the avian breeding season. If that is not possible, a nesting bird survey shall be conducted prior to clearing. If an active nest is found during the nesting bird survey or during clearing/grading activities, the monitoring biologist shall notify and coordinate with County staff (and Wildlife Agencies if appropriate) to established an acceptable buffer between the nest location and clearing/grading activities. Once the nest becomes inactive, clearing/grading restrictions shall no longer apply.	3.1.B, 3.3	Less than significant
MM-17	A copy of a survey for Quino checkerspot butterfly conducted within the most recent survey season shall be provide to the Director of PDS.	3.1.A	Less than significant
MM-18	Limits of vernal pool habitat shall be surveyed, staked, protected with temporary fencing prior to construction, and clearly shown on all construction drawings as "no impact" zones, in order to prevent vehicular or pedestrian access, equipment storage, storage of spoils materials, and refuse disposal from impacting vernal pool plants and animals.	3.1.A, 3.1.B; 3.3; 4.1.D; 4.3; 7.1.C, 7.1.I, 7.1.J	Less than significant
MM-19	Non-native invasive plant species shall be prohibited in the proposed landscaping palettes (including container stock and hydroseed material) for the streetscapes and commercial/industrial.	3.1.H, 4.1.D	Less than significant
MM-20	A qualified biologist or native plant horticulturalist shall review and sign all landscaping plants to determine the appropriate species to be used in landscaping, prior to Project approval.	3.1.H, 4.1.D	Less than significant
MM-21	Prior to Project approval, a construction erosion control plan shall be reviewed and approved by the County.	3.1.H, 4.1.D	Less than significant

	Proposed Mitigation	Applicable Guidelines	Level of Significance after Mitigation
MM-22	The Project shall require an approved Storm Water Pollution Prevention Plan (SWPPP).	3.1.H, 4.1.D	Less than significant
MM-23	The Project shall obtain a National Pollutant Discharge Elimination System (NPDES) permit from the Regional Water Quality Control Board (RWQCB).	3.1.H, 4.1.D	Less than significant
MM-24	The Project shall require a 401 certification, and provide mitigation to satisfy the conditions of the 401 certification if required (see MM-5 for mitigation to be provided).	4.1.A	Less than significant
MM-25	A “no fueling” zone shall be designated within 25 feet of all drainages during the construction period.	3.1.H, 4.1.D	Less than significant
MM-26	All equipment used near drainages during construction shall be routinely maintained and inspected for leaks. Major leaks shall be repaired immediately. Drip pans and tarps shall be placed under minor leaks. Used drip pans and tarps shall be properly disposed of at the end of each work day. (To be included in SWPPP.)	3.1.H, 4.1.D	Less than significant
MM-27	Emergency provisions (e.g. straw bales) shall be placed at all drainage crossings, prior to the onset of construction to deal with unintentional spills. (To be included in SWPPP.)	3.1.H, 4.1.D	Less than significant
MM-28	All commercial/industrial uses that plan to store materials within the proposed commercial/industrial complex shall be required to obtain a NPDES permit, including SWPPP, for operations activities.	3.1.H, 4.1.D	Less than significant
MM-29	A County approved project biologist shall perform biological monitoring pursuant to the most current version of the “County of San Diego Biological Report Format and Requirements” guidelines during all grading, clearing, grubbing, and trenching located within 100 feet of the Open Space [BOS] Easements... The project biologist shall also attend the preconstruction meeting to educate the grading contractor and personnel as to the site’s biological sensitivities.	3.1.H, 4.1.D	Less than significant
MM-30	<p><i>Applicable original EOMSP EIR mitigation measures:</i></p> <ul style="list-style-type: none"> • Provision should be made to inform the construction contractor(s) (prior to the construction process) about the biological constraints of this project. The contractor(s) will be responsible for impacts to biological sensitivities beyond those identified in this report and that occur as a direct result of construction activities. All sensitive habitat areas or occurrences of sensitive species to be avoided shall be clearly marked on project maps provided to the contractor. These areas shall be designated as "no construction" or "limited construction" zones. These areas will be flagged by the project biologist prior to the onset of construction activities. In some cases, resources may need to be fenced or otherwise protected from direct or indirect impacts. • A contractor education meeting shall be conducted to ensure that contractors and all construction personnel are fully informed of the 	3.1.H, 4.1.D	Less than significant

	Proposed Mitigation	Applicable Guidelines	Level of Significance after Mitigation
	<p>biological sensitivities associated with this project. This meeting should focus on 1) the purpose for resource protection, 2) contractor identification of sensitive resource areas in the field (e.g., areas delineated on maps and by flags or fencing), 3) sensitive construction practices (see nos. 4-9, ...on Pages 4.3-106 and 4.3-107 of the Specific Plan EIR), and protocol to resolve conflicts that may arise during the construction process. This meeting shall be conducted by a qualified biologist, and shall be a requirement for all construction personnel.</p> <ul style="list-style-type: none"> • Heavy equipment and construction activities shall be restricted to the development area. Prohibited activities within drainages or other wetland areas (including vernal pools) include staging areas, equipment access, and disposal or temporary placement of excess fill. • Staging areas are prohibited within sensitive habitat areas or any habitat included in open space. Staging areas shall be delineated on the grading plans and reviewed by a qualified biologist. Likewise, vehicle access shall be prohibited in all open space areas. • Fueling zones should be designated on construction maps and shall be situated a minimum distance of 7.6 m (25 ft) from storm drains that may drain into Johnson Canyon. • Construction in or adjacent to sensitive areas should be appropriately scheduled to minimize potential impacts to biological resources. All work in or near wetlands or other "waters of the U.S." shall take place during periods of minimum flow (i.e., summer through the first significant rain of fall) to avoid excessive sedimentation and erosion. • The [open space] fence location must be approved by County staff or monitoring biologist prior to receipt of grading permit and will be a permanent protection measure. • A Resource Conservation Plan detailing wetland enhancement, preservation, and maintenance, coastal sage scrub habitat preservation, sensitive species salvaging, and transplanting as well as success standards and report requirements must be completed prior to the initiation of construction [See Appendix B of this EIR]. 		

The required Minor Amendment process was completed in 2003, when a Conditional Concurrence for the Sunroad Centrum Minor Amendment was issued by the Wildlife Agencies (USFWS and CDFG 2003). Those conditions have been incorporated into the Project mitigation measures in Table 8-1.

End of Section 8.0

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End of Section 9.0

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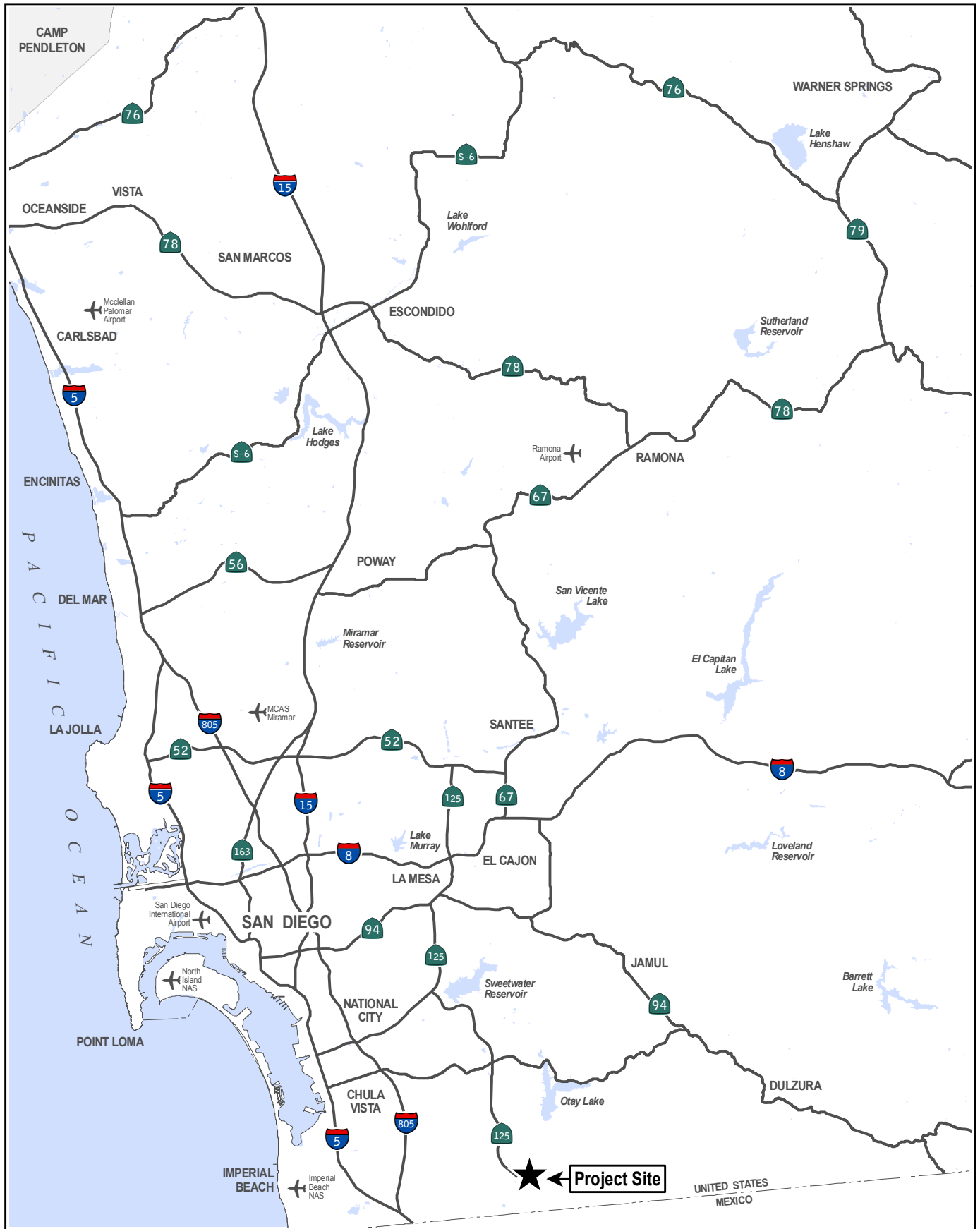
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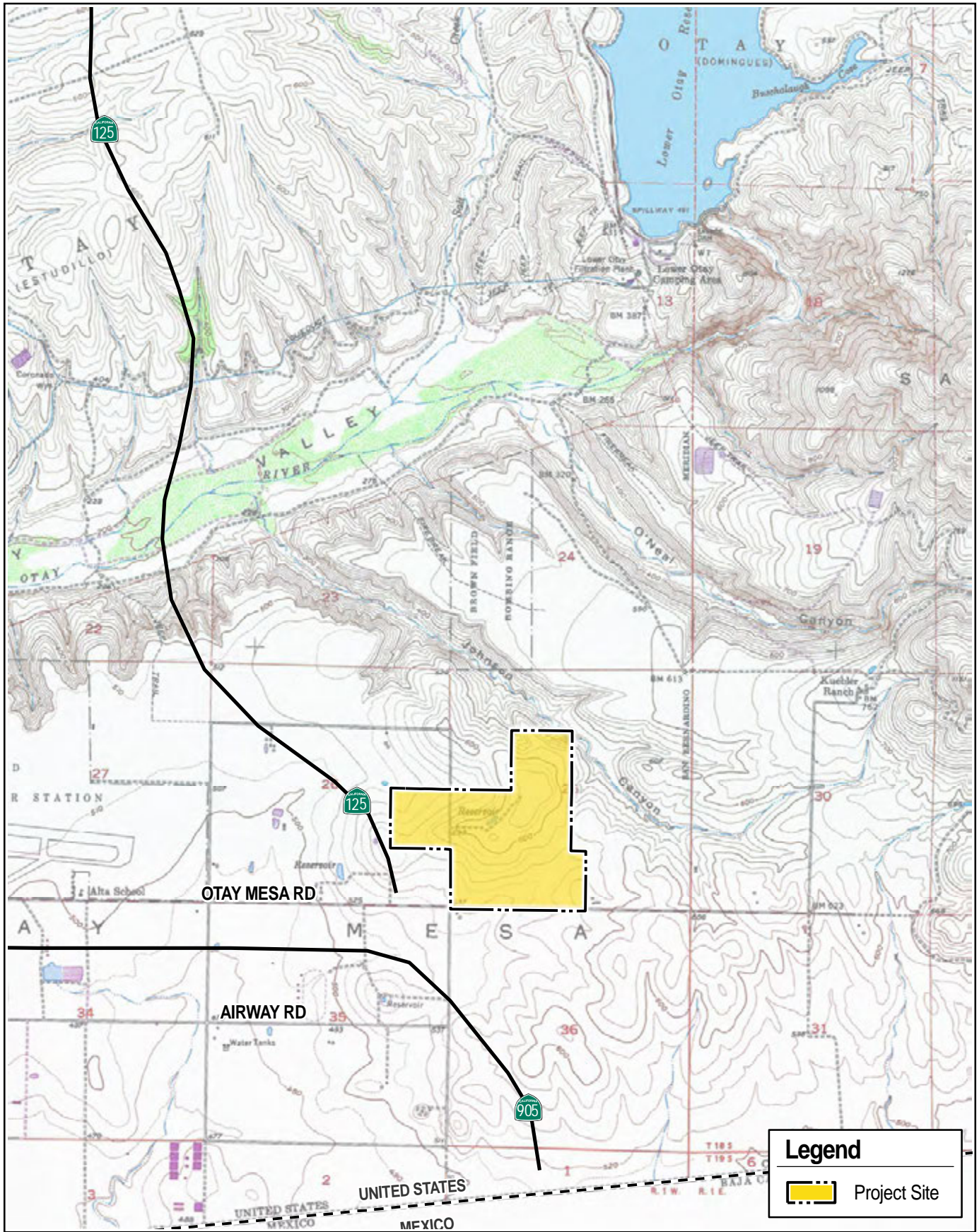
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End of Section 10.0

FIGURES



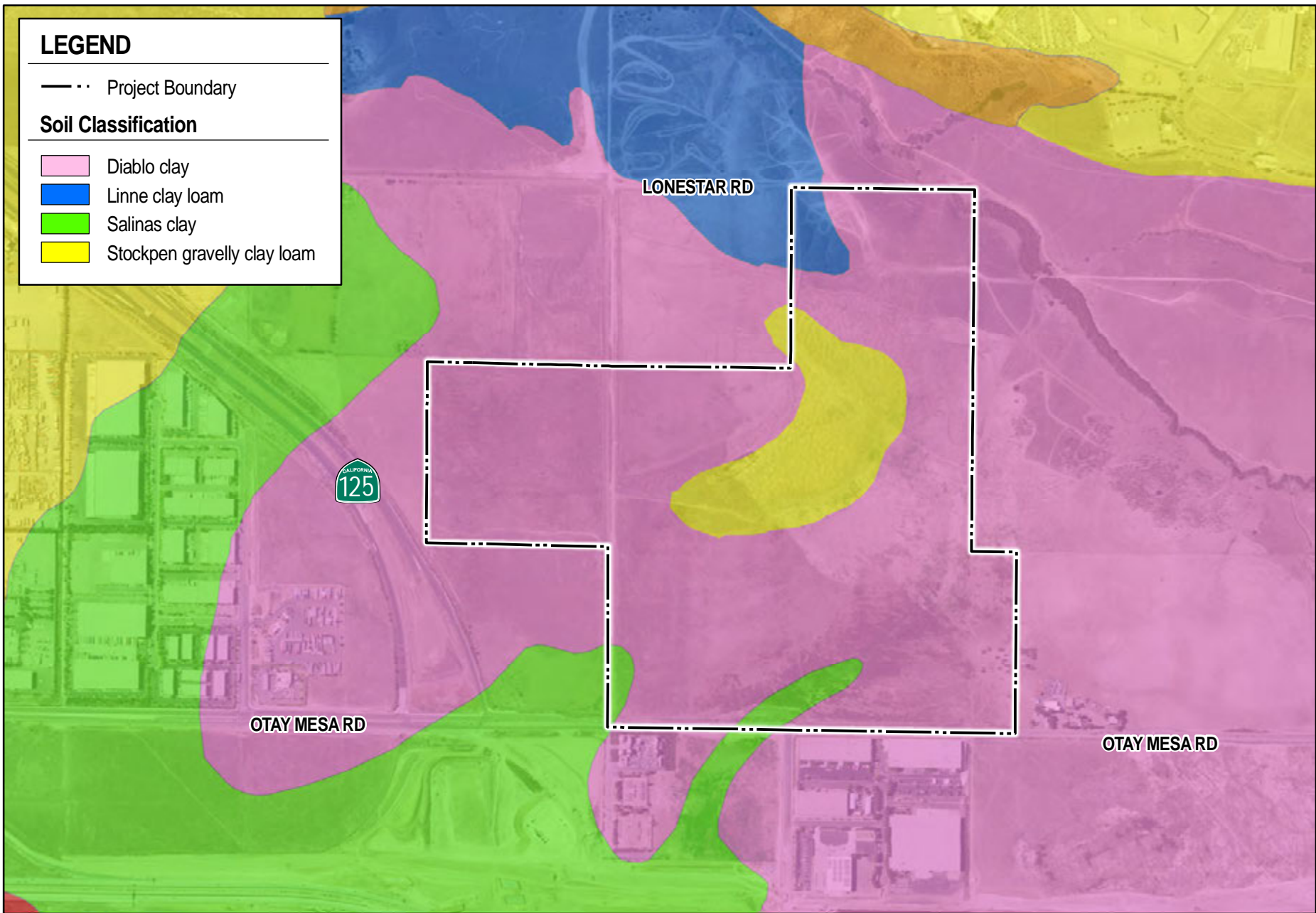


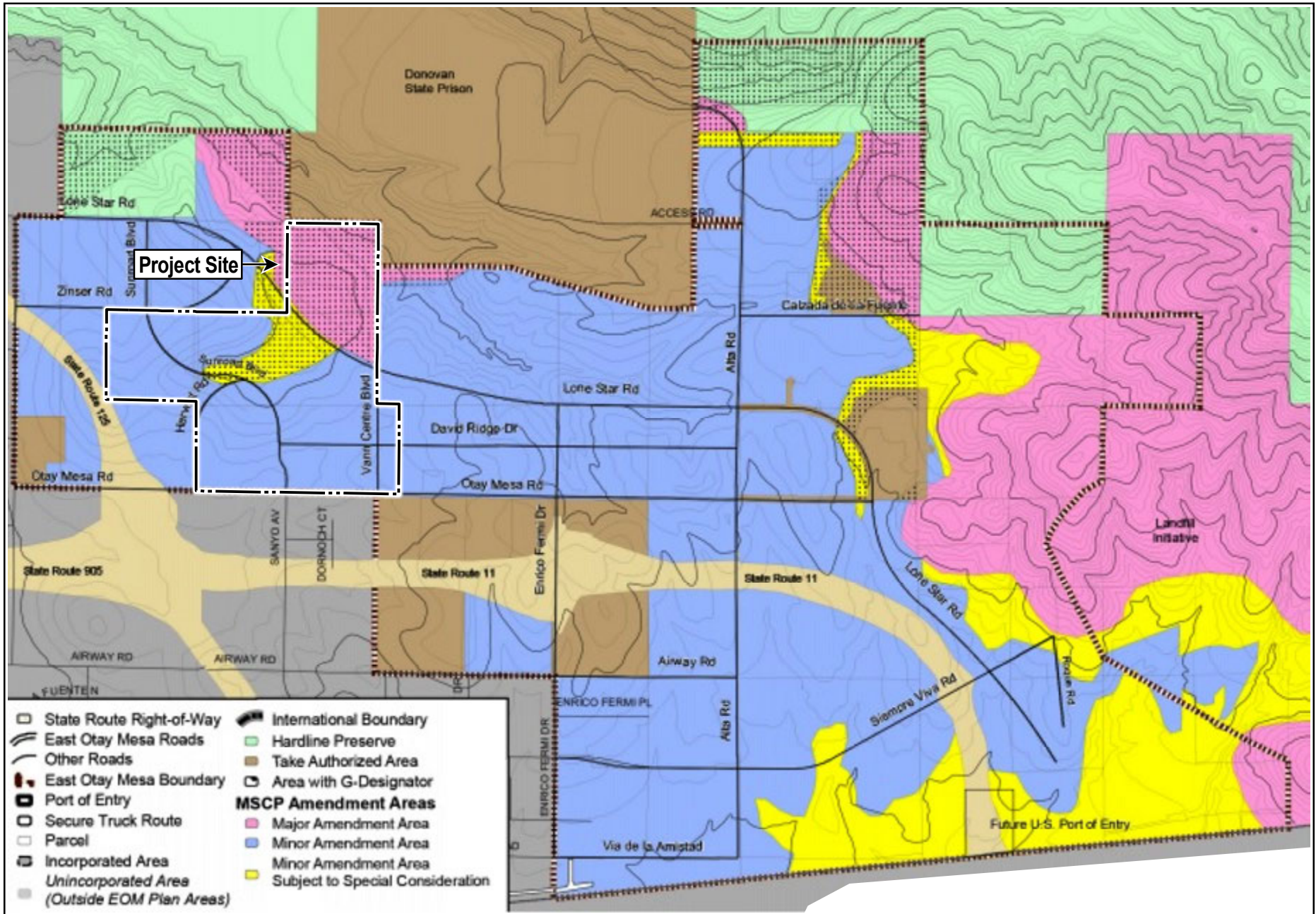
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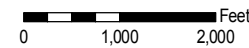


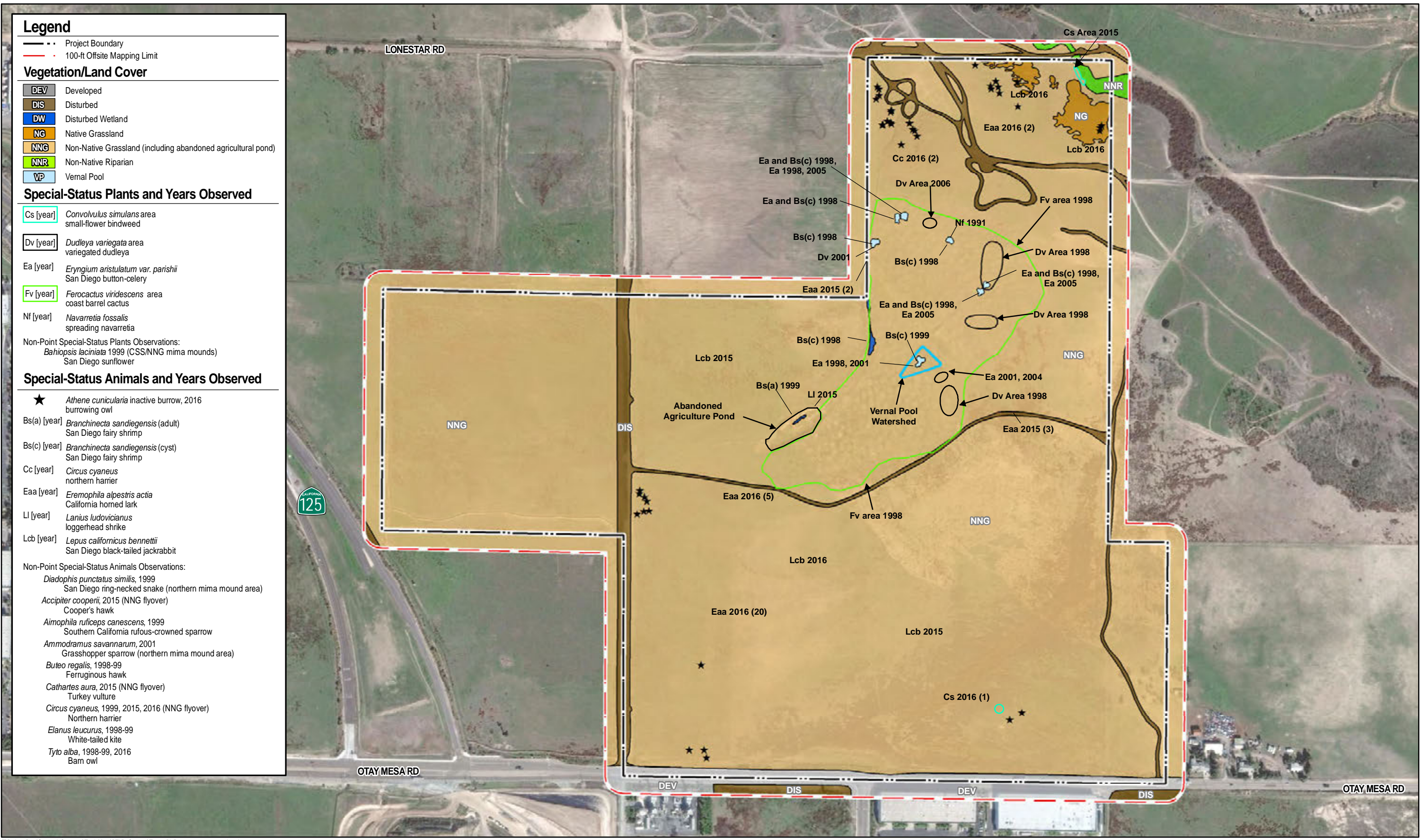
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Project Boundary and Surrounding MSCP Amendment Areas





Legend

- Project Boundary
- - - 100-ft Offsite Mapping Limit

Vegetation/Land Cover

- DEV Developed
- DIS Disturbed
- DW Disturbed Wetland
- NG Native Grassland
- NNG Non-Native Grassland (including abandoned agricultural pond)
- NNR Non-Native Riparian
- VP Vernal Pool

Special-Status Plants and Years Observed

- Cs [year] *Convulvulus simulans* area small-flower bindweed
- Dv [year] *Dudleya variegata* area variegated dudleya
- Ea [year] *Eryngium aristulatum* var. *parishii* San Diego button-celery
- Fv [year] *Ferocactus viridescens* area coast barrel cactus
- Nf [year] *Navarretia fossalis* spreading navarretia

Non-Point Special-Status Plants Observations:
Bahiopsis laciniata 1999 (CSS/NNG mima mounds)
 San Diego sunflower

Special-Status Animals and Years Observed

- ★ *Athene cucularia* inactive burrow, 2016 burrowing owl
- Bs(a) [year] *Branchinecta sandiegensis* (adult) San Diego fairy shrimp
- Bs(c) [year] *Branchinecta sandiegensis* (cyst) San Diego fairy shrimp
- Cc [year] *Circus cyaneus* northern harrier
- Eaa [year] *Eremophila alpestris actia* California homed lark
- Ll [year] *Lanius ludovicianus* loggerhead shrike
- Lcb [year] *Lepus californicus bennettii* San Diego black-tailed jackrabbit

Non-Point Special-Status Animals Observations:
Diadophis punctatus similis, 1999 San Diego ring-necked snake (northern mima mound area)
Accipiter cooperii, 2015 (NNG flyover) Cooper's hawk
Aimophila ruficeps canescens, 1999 Southern California rufous-crowned sparrow
Ammodramus savannarum, 2001 Grasshopper sparrow (northern mima mound area)
Buteo regalis, 1998-99 Ferruginous hawk
Cathartes aura, 2015 (NNG flyover) Turkey vulture
Circus cyaneus, 1999, 2015, 2016 (NNG flyover) Northern harrier
Elanus leucurus, 1998-99 White-tailed kite
Tyto alba, 1998-99, 2016 Barn owl

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Legend

- Project Boundary
- Offsite Impacts
- 100-ft Offsite Mapping Limit
- Biological Open Space Boundary

Vegetation/Land Cover

- DEV Developed
- DIS Disturbed
- DW Disturbed Wetland
- NG Native Grassland
- NNG Non-Native Grassland (including abandoned agricultural pond)
- NNR Non-Native Riparian
- VP Vernal Pool

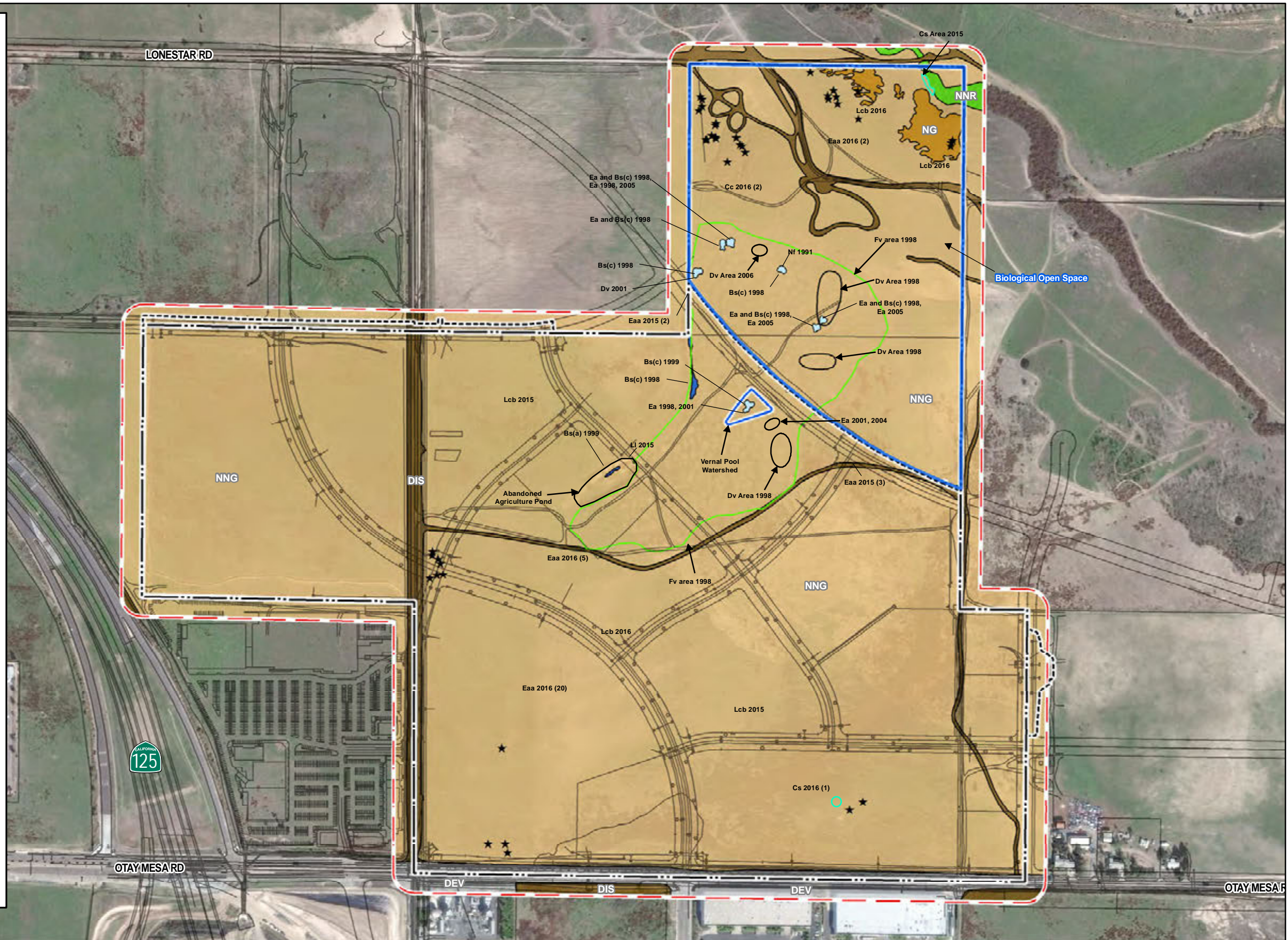
Special-Status Plants and Years Observed

- Cs [year] *Convolvulus similans* area small-flower bindweed
- Dv [year] *Dudleya variegata* area variegated dudleya
- Ea [year] *Eryngium aristulatum* var. *parishii* San Diego button-celery
- Fv [year] *Ferocactus viridescens* area coast barrel cactus
- Nf [year] *Navarretia fossalis* spreading navarretia

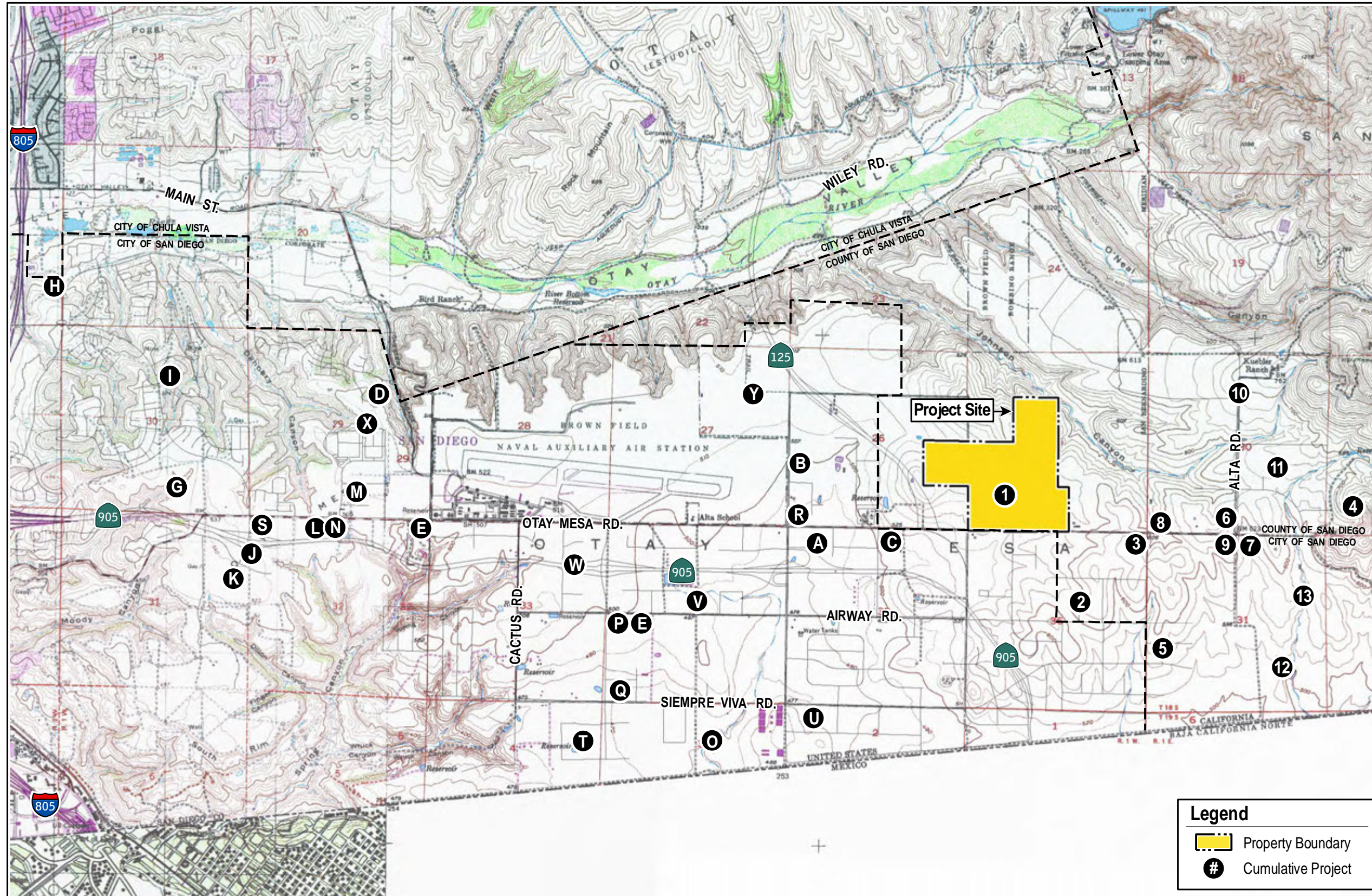
Non-Point Special-Status Plants Observations:
Bahiopsis laciniata 1999 (CSS/NNG mima mounds)
 San Diego sunflower

Special-Status Animals and Years Observed

- ★ *Athene cunicularia* inactive burrow, 2016 burrowing owl
 - Bs(a) [year] *Branchinecta sandiegensis* (adult) San Diego fairy shrimp
 - Bs(c) [year] *Branchinecta sandiegensis* (cyst) San Diego fairy shrimp
 - Cc [year] *Circus cyaneus* northern harrier
 - Eaa [year] *Eremophila alpestris actia* California horned lark
 - Ll [year] *Lanius ludovicianus* loggerhead shrike
 - Lcb [year] *Lepus californicus bennettii* San Diego black-tailed jackrabbit
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- Diadophis punctatus similis*, 1999 San Diego ring-necked snake (northern mima mound area)
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 - Buteo regalis*, 1998-99 Ferruginous hawk
 - Cathartes aura*, 2015 (NNG flyover) Turkey vulture
 - Circus cyaneus*, 1999, 2015, 2016 (NNG flyover) Northern harrier
 - Elanus leucurus*, 1998-99 White-tailed kite
 - Tyto alba*, 1998-99, 2016 Barn owl



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- County of San Diego**
- 1 Otay 250 (Sunroad Centrum)
 - 2 Saeed TM / Sirway Business Center
 - 3 Enrico Fermi Industrial Park
 - 4 Otay Hills Extraction Operation
 - 5 Burke Minor Subdivision
 - 6 Aaron Construction Auto Auction Park
 - 7 Family Motorcross Park
 - 8 Otay Mesa Auto Transfer
 - 9 Bradley / Robertson Copart Salvage Auto Auctions
 - 10 National Enterprises Storage and Recycling Center
 - 11 PG&E Otay Mesa Generating Project (Calpine)
 - 12 Otay Business Park (Paragon)
 - 13 Otay Crossings Commerce Park

- City of San Diego**
- A Sunroad / Interstate Industrial Center
 - B Sunroad Otay Park
 - C Street / La Media Truck Park II
 - D Robinhood Ridge
 - E Semi-Trailer Storage Facility
 - F Airway 18 Truck Terminal
 - G California Terraces
 - H Dennery Ranch Village 2/3
 - I Hidden Trails
 - J Southview
 - K Candlelight
 - L Handler Otay Mesa Phase I
 - M Otay Corporate Center North
 - N Otay Corporate Center South
 - O Las Californias Center
 - P Opus
 - Q Just Rite
 - R World Petrol
 - S Pardee Commercial
 - T Martinez Ranch
 - U Siempre Viva Business Park
 - V Southwestern Community College
 - W Brown Field Tech Park
 - X Ingalls Property
 - Y Lonestar Ridge

Legend

- Property Boundary
- Cumulative Project

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APPENDIX A

Plants Observed on the Otay 250 SPA Project Site

APPENDIX A
PLANTS OBSERVED ON THE OTAY 250 SPA PROJECT SITE

Species Name	Common Name	Family	Habitat
<i>Acacia cyclops</i> *	Cyclops acacia	Fabaceae	NNG
<i>Allium haematochiton</i>	red-skin onion	Alliaceae	NG, NNG
<i>Artemisia californica</i>	coastal sagebrush	Asteraceae	NNG
<i>Arundo donax</i> *	giant reed	Poaceae	NNG
<i>Atriplex semibaccata</i> *	Australian saltbush	Chenopodiaceae	NNG
<i>Avena barbata</i> *	slender wild oat	Poaceae	NNG, VP
<i>Avena fatua</i> *	wild oat	Poaceae	NNG, VP
<i>Avena sp.</i> *	oats	Poaceae	NNG, NG, VP
<i>Baccharis salicifolia subsp. salicifolia</i>	mule-fat, seep-willow	Asteraceae	DW, NNG
<i>Baccharis sarothroides</i>	broom baccharis	Asteraceae	NNG
<i>Bahiopsis laciniata!</i>	San Diego sunflower	Asteraceae	CSS/NNG (1999)
<i>Bloomeria crocea var. crocea</i>	common goldenstar	Themidaceae	NNG
<i>Brassica nigra</i> *	black mustard	Brassicaceae	NNG, NG, CSS/NNG
<i>Brodiaea jolonensis</i>	mesa brodiaea	Themidaceae	CSS/NNG
<i>Bromus diandrus</i> *	ripgut grass	Poaceae	NNG
<i>Bromus madritensis subsp. rubens</i> *	red brome, foxtail chess	Poaceae	NNG
<i>Calochortus splendens</i>	splendid mariposa lily	Liliaceae	NNG
<i>Calystegia macrostegia</i>	morning-glory	Convolvulaceae	NNG, NG
<i>Castilleja exserta subsp. exserta</i>	purple owl's-clover	Orobanchaceae	CSS/NNG
<i>Centaurea diluta</i> *	pale-flower centaurea	Asteraceae	NNG
<i>Centaurea melitensis</i> *	tocalote	Asteraceae	NNG
<i>Chenopodium murale</i> *	nettle-leaf goosefoot	Chenopodiaceae	NNG
<i>Chlorogalum parviflorum</i>	small flower soap plant/amole	Agavaceae	VP, NNG
<i>Convolvulus arvensis</i> *	field bindweed	Convolvulaceae	NNG
<i>Convolvulus simulans!</i>	small-flower bindweed	Convolvulaceae	NNG
<i>Corethrogyne filaginifolia</i>	sand-aster	Asteraceae	NNG
<i>Croton setiger</i>	doveweed	Euphorbiaceae	NNG
<i>Cyperus sp.</i>	sedge	Cyperaceae	NNG
<i>Deinandra fasciculata</i>	fascicled tarweed	Asteraceae	VP, NNG, DIS
<i>Dichelostemma capitatum</i>	blue dicks	Themidaceae	NNG, VP
<i>Distichlis spicata</i>	saltgrass	Poaceae	NNR
<i>Dittrichia graveolens</i> *	stinkwort	Asteraceae	NNR
<i>Dodecatheon clevelandii ssp. clevelandii</i>	Padre's shooting star	Primulaceae	CSS/NNG
<i>Dudleya variegata!</i>	variegated dudleya	Crassulaceae	NNG
<i>Eleocharis sp.</i>	spike-rush	Cyperaceae	VP
<i>Erigeron canadensis</i>	horseweed	Asteraceae	NNG
<i>Erigeron sumatrensis</i> *	asthmaweed	Asteraceae	NNG
<i>Eriogonum fasciculatum</i>	California buckwheat	Polygonaceae	VP, NNG
<i>Erodium botrys</i> *	long-beak filaree/storksbill	Geraniaceae	NNG, VP
<i>Erodium brachycarpum</i> *	short-beak filaree/storksbill	Geraniaceae	NNG, VP
<i>Erodium cicutarium</i> *	red-stem filaree/storksbill	Geraniaceae	DIS, NNG
<i>Eryngium aristulatum var. parishii!</i>	San Diego button-celery	Apiaceae	VP
<i>Ferocactus viridescens!</i>	coast barrel cactus	Cactaceae	VP, NNG
<i>Festuca perennis</i> *	perennial rye grass	Poaceae	DW
<i>Foeniculum vulgare</i> *	sweet fennel	Apiaceae	NG, NNG, CSS/NNG
<i>Fritillaria biflora var. biflora</i>	chocolate lily	Liliaceae	CSS/NNG (2001)
<i>Glebionis coronaria</i> *	garland daisy, crown daisy	Asteraceae	DW, NNG
<i>Grindelia camporum</i>	rayless gumplant	Asteraceae	NNG, DIS
<i>Hedypnois rhagadioloides</i> *	Crete hedypnois	Asteraceae	NNG
<i>Helianthus annuus</i>	western sunflower	Asteraceae	NNG

Species Name	Common Name	Family	Habitat
<i>Heliotropium curassavicum</i> var. <i>oculatum</i>	salt heliotrope	Boraginaceae	NNR
<i>Helminthotheca echioides</i> *	bristly ox-tongue	Asteraceae	NNG
<i>Heteromeles arbutifolia</i>	toyon, Christmas berry	Rosaceae	NNG
<i>Heterotheca grandiflora</i>	telegraph weed	Asteraceae	NNG
<i>Hirschfeldia incana</i> *	short-pod mustard	Brassicaceae	NNG
<i>Hordeum murinum</i> subsp. <i>glaucum</i> *	glaucous barley	Poaceae	NNG
<i>Hordeum murinum</i> subsp. <i>leporinum</i> *	hare barley	Poaceae	CSS/NNG
<i>Isocoma menziesii</i> var. <i>vernonioides</i>	coastal goldenbush	Asteraceae	NNG
<i>Jepsonia parryi</i>	coast jepsonia	Saxifragaceae	NNG
<i>Lactuca serriola</i> *	prickly lettuce	Asteraceae	NNG
<i>Laennecia coulteri</i>	Coulter's fleabane	Asteraceae	NNG, NNR
<i>Lamarckia aurea</i> *	golden-top	Poaceae	NNG
<i>Lasthenia gracilis</i>	common goldfields	Asteraceae	NNG
<i>Lepidium nitidum</i>	shining peppergrass	Brassicaceae	VP
<i>Logfia arizonica</i>	Arizona Filago	Asteraceae	VP, NNG
<i>Lysimachia arvensis</i> *	scarlet pimpernel	Primulaceae	NNR, NNG, NG
<i>Malva neglecta</i> *	common mallow	Malvaceae	NNG
<i>Malva parviflora</i> *	cheeseweed	Malvaceae	NNG
<i>Malvella leprosa</i>	alkali mallow	Malvaceae	NNG
<i>Marrubium vulgare</i> *	horehound	Lamiaceae	NNG
<i>Medicago polymorpha</i> *	California burclover	Fabaceae	NNG
<i>Melilotus indicus</i> *	Indian sweetclover	Fabaceae	NNG
<i>Melilotus</i> sp.*	sweetclover/sourclover	Fabaceae	NNG
<i>Mesembryanthemum crystallinum</i> *	crystalline iceplant	Aizoaceae	NNG
<i>Mirabilis laevis</i> var. <i>crassifolia</i>	coastal wishbone plant	Nyctaginaceae	NNG
<i>Nicotiana glauca</i> *	tree tobacco	Solanaceae	NNG
<i>Olea europaea</i> *	olive	Oleaceae	NNG
<i>Opuntia</i> sp.	prickly-pear cactus (native)	Cactaceae	NNG, VP
<i>Osmadenia tenella</i>	osmadenia	Asteraceae	NNG
<i>Peritoma arborea</i> var. <i>arborea</i>	bladderpod	Cleomaceae	NNG
<i>Phalaris minor</i> *	little-seed canary grass	Poaceae	DW, NNG
<i>Plantago erecta</i>	dot-seed plantain	Plantaginaceae	DIS, NNG, CSS/NNG
Poaceae	unidentified non-native grass	Poaceae	DW, NNG
<i>Pseudognaphalium biolettii</i>	bicolor cudweed	Asteraceae	NNG
<i>Pseudognaphalium californicum</i>	California everlasting	Asteraceae	NNG
<i>Rhus integrifolia</i>	lemonadeberry	Anacardiaceae	NNG
<i>Rumex crispus</i> *	curly dock	Polygonaceae	NNR
<i>Salix gooddingii</i>	Goodding's black willow	Salicaceae	NNG
<i>Salix laevigata</i>	red willow	Salicaceae	DW
<i>Salsola</i> sp.*	Russian-thistle	Chenopodiaceae	NNG, VP
<i>Salsola tragus</i> *	prickly Russian-thistle, tumbleweed	Chenopodiaceae	NNG, VP, DIS
<i>Sidalcea sparsifolia</i>	checker-bloom	Malvaceae	NNG
<i>Silybum marianum</i> *	milk thistle	Asteraceae	NNR, NNG
<i>Simmondsia chinensis</i>	jojoba, goatnut	Simmondsiaceae	CSS/NNG
<i>Sinapis arvensis</i> *	charlock	Brassicaceae	NNG
<i>Sisymbrium irio</i> *	London rocket	Brassicaceae	NNG
<i>Sisyrinchium bellum</i>	blue-eyed-grass	Iridaceae	VP, NNG
<i>Sonchus asper</i> subsp. <i>asper</i> *	prickly sow-thistle	Asteraceae	NNG
<i>Sonchus oleraceus</i> *	common sow-thistle	Asteraceae	NNG, NG
<i>Stipa cernua</i>	nodding needle grass	Poaceae	NG, NNG, VP
<i>Stipa pulchra</i>	purple needle grass	Poaceae	NG, NNG, VP

Species Name	Common Name	Family	Habitat
<i>Tamarix ramosissima</i> *	tamarisk/salt-cedar	Tamaricaceae	NNG, DW, NNR
<i>Toxicoscordion fremontii</i>	Fremont's camas	Melanthiaceae	CSS/NNG
<i>Tragopogon porrifolius</i> *	salsify, oyster plant	Asteraceae	NNG
<i>Uropappus lindleyi</i>	silver puffs	Asteraceae	NNG
<i>Urtica urens</i> *	dwarf nettle	Urticaceae	NNR, NNG
<i>Vicia sp. (*)</i>	vetch	Fabaceae	NNG
<i>Washingtonia robusta</i> *	Mexican fan palm	Areaceae	DIS

*Non-native

! State or Federal special-status (State endangered, threatened, or rare, CRPR 1-4; Federal endangered, threatened, or candidate for listing)

CSS/NNG = Coastal Sage Scrub/Non-Native Grassland Mix (pre-burn)

DIS = Disturbed Land

DW = Disturbed Wetland

NG = Native Grassland

NNG = Non-Native Grassland

NNR = Non-Native Riparian

VP = Vernal Pool

APPENDIX B

Animals Observed on the Otay 250 SPA Project Site

APPENDIX B
ANIMALS OBSERVED ON THE OTAY 250 SPA PROJECT SITE

Scientific Name	Common Name	Habitats Observed, Years Observed	No. Observed (estimate)**
Invertebrates			
<i>Anthocharis sara</i>	Sara orangetip	NNG 2016	1
<i>Aphonopelma</i> sp.	tarantula	NNG 2001	1
<i>Apis mellifera</i> *	honey bee	NNG 2015-16	many (colony)
<i>Apodemia mormo</i>	Mormon metalmark	CSS/NNG 1999	2
<i>Argiope argentata</i>	silver argiope spider	NNG 2016	1
<i>Autographa californica</i>	alfalfa looper	2001	-
<i>Bombus</i> sp.	bumble bee	NNG 2016	1
<i>Branchinecta sandiegonensis!</i>	San Diego fairy shrimp	VP 1998, 1999	-
<i>Brephidium exilis</i>	western pygmy-blue	CSS/NNG 1999, NNG 2016	22
Class Gastropoda	snail	NG 2016, NNG 2015-16	many (shells)
<i>Coccinella septempunctata</i> *	seven-spotted lady beetle	NNG 2015	1
<i>Coenonympha tullia</i>	common ringlet	CSS/NNG 1999	166
<i>Colias eurytheme</i>	orange sulphur	NNG 2016	5+
<i>Colias</i> sp.	clouded sulphur	NNG 2016	2
<i>Dasymutilla sackenii</i>	thistledown velvet ant	NNG 2015, NG 2016	1
<i>Eleodes</i> sp.	desert stink beetle	NNG 2016	2
<i>Erynnis funeralis</i>	funereal duskywing	NNG 2015-16, 1999	2
Family Agelenidae	funnel weaver spider	NNG 2015-16	many
Family Gryllidae	cricket	NNG 2015	many
Family Meloidae	blister beetle	CSS/NNG 2001	-
Family Salticidae	jumping spider	DW 2015	3
Family Syrphidae	hover fly	DIS 2015	1
Family Trombidiidae	true velvet mite	DIS 2015	1
<i>Gnathamitermes perplexus</i>	long-jawed desert termite	NNG 2016	tubes
<i>Hemileuca electra electra</i>	Electra buckmoth	CSS/NNG 2001	-
<i>Lactrodectus hesperus</i>	western black widow	NG 2016	1
<i>Leprus intermedius</i>	Saussure's blue-winged grasshopper	NNG 2016	4+
<i>Linepithema humile</i> *	Argentine ant	DIS 2015	many
Order Lepidoptera	unidentified moths & caterpillars	DW, NNG 2015	many
<i>Papilio zelicaon</i>	anise swallowtail	NNG 2015-16, 1999	20
<i>Pepsis</i> spp.	tarantula hawk wasps	NNG 2001, 2015-16	4
<i>Pieris rapae</i> *	cabbage white	CSS/NNG 1999, NNG 2016	16
<i>Pontia protodice</i>	checkered white	NNG 2015-16, 1999	28
<i>Pyrgus albescens</i>	white checkered-skipper	NNG 2015-16	11
<i>Rumina decollata</i> *	decollate snail	NG, NNG 2015	many
<i>Scantius aegyptius</i> *	red bug	NNG 2016	many
<i>Strymon melinus</i>	gray hairstreak	CSS/NNG 1999, NNG 2016	3
Subfamily Coliadinae	sulphur or yellow butterfly (unidentified)	NNG 2016	1
Subfamily Pierinae	white butterfly (unidentified)	NNG 2015-16	10
Suborder Anisoptera	dragonfly	NNG 2015-16	2
Suborder Caelifera	grasshopper	DW, NNG 2015	many
<i>Thyanta custator</i>	red-shouldered stink bug	NNG 2016	1
<i>Xysticus</i> sp.	ground crab spider	DW 2015	1

Scientific Name	Common Name	Habitats Observed, Years Observed	No. Observed (estimate)**
<i>Vanessa annabella</i>	west coast lady	NNG 2015-16, 1999	9
<i>Vanessa atalanta</i>	red admiral	NNG 1999	2
<i>Vanessa cardui</i>	painted lady	NNG 2016, 1999	1
<i>Vanessa</i> sp.	lady butterfly (unidentified)	NNG 2015, 1999	6
<i>Vanessa virginiensis</i>	American lady	NNG 2016	5
Amphibians			
<i>Hyla regilla</i>	chorus frog	1998	-
Reptiles			
<i>Crotalus oreganus</i>	western rattlesnake	1998, CSS/NNG 2001, 2015-16 NNG	2+5
<i>Diadophis punctatus similis!</i>	San Diego ring-necked snake	1998 northern CSS/NNG 1999	1
<i>Elgaria multicarinata</i>	alligator lizard	1998	-
<i>Lampropeltis californiae</i>	California kingsnake	1998, CSS/NNG 1999 and 2001	-, 1, 1
<i>Sceloporus occidentalis</i>	western fence lizard	DW 2015, NNG 2016	1
Suborder Serpentes	unidentified snake	NNG 2015-16	(skin)
Birds			
<i>Accipiter cooperii!</i>	Cooper's hawk	NNG FO 2015	1
<i>Agelaius phoeniceus</i>	red-winged blackbird	NNR, NNG 2015-2016; 1998	6
<i>Aeronautes saxatalis</i>	white-throated swift	NNG 2016	~30
<i>Aimophila ruficeps canescens!</i>	Southern California rufous-crowned sparrow	CSS/NNG 1999	-
<i>Ammodramus savannarum (perpallidus)!</i>	grasshopper sparrow	CSS/NNG 2001	>1
<i>Anas platyrhynchos</i>	mallard	1998	-
<i>Athene cunicularia (hypugaea)!</i>	burrowing owl	NNG 2016	burrow(s)
<i>Buteo jamaicensis</i>	red-tailed hawk	NNG 2015-16	2
<i>Buteo regalis!</i>	ferruginous hawk	FO 1998	1
<i>Calypte anna</i>	Anna's hummingbird	DW, NNG 2015-16; 1998	1
<i>Cathartes aura</i>	turkey vulture	NNG FO 2015	1
<i>Circus cyaneus!</i>	northern harrier	Pair, single male, and single female or immature in/over NNG 2015-2016; CSS/NNG (nesting) 1999	3, 1, 2
<i>Corvus brachyrhynchos hesperis</i>	American crow	NNG FO 2016	1
<i>Corvus corax</i>	common raven	NNG 2015-16, 1998	2
<i>Elanus leucurus!</i>	white-tailed kite	Foraging in NNG 1998	pair
<i>Empidonax difficilis</i>	Pacific-slope flycatcher	1998	-
<i>Eremophila alpestris actia!</i>	California horned lark	NNG 2015-16	up to 20
<i>Falco sparverius</i>	American kestrel	NNG 2016, 2015, 1998	1, -
Family Emberizidae	sparrow (unidentified)	NNG 2016	several
Family Hirundinidae	swallow (unidentified)	NNG 2015	3
<i>Geothlypis trichas</i>	common yellowthroat	1998	-
<i>Haemorhous mexicanus</i>	house finch	DW, NNG 2015-2016	up to 30
<i>Icterus cucullatus nelsoni</i>	hooded oriole	NNG 2016	pair
<i>Lanius ludovicianus!</i>	loggerhead shrike	NNG/DW 2015	1
<i>Larus delawarensis</i>	ring-billed gull	NNG FO 2015	1
<i>Larus</i> sp.	larus gull (unidentified)	NNG FO 2016	1

Scientific Name	Common Name	Habitats Observed, Years Observed	No. Observed (estimate)**
<i>Melospiza melodia</i>	song sparrow	DW, NNG 2015, 1998	~10
<i>Mimus polyglottos polyglottos</i>	northern mockingbird	NNG 2016	1
<i>Passer domesticus domesticus</i> *	house sparrow	NNG 2016	several
<i>Passerculus sandwichensis</i>	savannah sparrow	NNG 2015-16	5
<i>Petrochelidon pyrrhonota</i>	cliff swallow	NNG FO 2015-2016, 1998	25-30
<i>Regulus calendula</i>	ruby-crowned kinglet	1998	-
<i>Sayornis nigricans</i>	black phoebe	1998, 2016	1
<i>Sayornis saya</i>	Say's phoebe	DW, NNG 2015-16; 1998	1
<i>Setophaga coronata</i>	yellow-rumped warbler	NNG 2016	several
<i>Spinus psaltria</i>	lesser goldfinch	1998	-
<i>Streptopelia decaocto</i> *	Eurasian collared-dove	NNG 2016	2
<i>Sturnella neglecta</i>	western meadowlark	NNG 2015-16, 1998	≥10
<i>Sturnus vulgaris vulgaris</i> *	European starling	NNG 2016	2
<i>Tyrannus verticalis</i>	western kingbird	NNG 2015-2016	3
<i>Tyto alba</i>	barn owl	1998, NNG 2016	pellet, feathers in BOS in 2016
<i>Zenaida macroura</i>	mourning dove	NNR, NNG 2015-2016; 1998	8
<i>Zonotrichia leucophrys</i>	white-crowned sparrow	NNG 2015-2016, 1998	several to small flock
Mammals			
<i>Canis latrans</i>	coyote	NNG 2015-16, 1998	2 live and scat in 2015, 1 live 2016
Family Leporidae	rabbit or hare (unidentified)	NNG 2015	scat
Family Mephitidae	striped or spotted skunk	NNG 2016	skull
<i>Lepus californicus bennettii</i> !	San Diego black-tailed jackrabbit	CSS/NNG 2001, NNG 2015-16	-, 3
<i>Microtus californicus</i>	California vole	CSS/NNG 1998, 1999	-holes
Order Rodentia	rodent, unidentified	NNG 2015-16	holes
<i>Peromyscus eremicus</i>	cactus mouse	1999	-
<i>Sylvilagus audubonii</i>	desert cottontail	1998, NNG 2016	2
<i>Spermophilus beecheyi</i>	California ground squirrel	NNG 2015-16, 1998	1 live, holes, most common in eastern field
<i>Thomomys bottae</i>	Botta's pocket gopher	NNG 2015-16, 1998	mounds, most dense in mima mound area

* Non-native species

! State or Federal special-status species (State endangered, threatened, endangered candidate, fully protected, watchlist, or CDF or federal endangered, threatened, candidate for listing, USFWS Bird of Conservation Concern, BLM sensitive, or USFWS sensitive)

** Approximate total per survey, not a cumulative total

CSS/NNG = former mosaic of Coastal Sage Scrub and Non-Native Grassland in mima-mound area (prior to fire)

DIS = Disturbed Habitat

NG = Native Grassland

DW = Disturbed Wetland

NNG = Non-Native Grassland

FO = Fly-Over

NNR = Non-Native Riparian

APPENDIX C

Special-Status Plants with Potential to Occur on the Otay 250 SPA Project Site, CNDDDB Forms

APPENDIX C
SPECIAL-STATUS PLANTS WITH POTENTIAL TO OCCUR ON THE OTAY 250 SPA PROJECT SITE
(USGS OTAY MESA QUAD, 136 - 191 METERS [445 - 625 FT])

Species Name	Common Name	Family	CRPR	State/ Federal	Cnty NE	MSC P	Cnty List	Growth form, bloom time	Habitat	Potential to Occur Onsite
<i>Acanthomintha ilicifolia</i>	thormmint, San Diego thorn-mint	Lamiaceae	1B.1	SE/FT	X	X	A	Annual herb, Apr-Jun	Clay soil, openings in chaparral, coastal scrub, valley & foothill grassland, vernal pools; 10-960 m	Low; not detected on site during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Adolphia californica</i>	spineshrub, California adolphia	Rhamnaceae	2B.1	-/-			B	Shrub (deciduous), Dec-May	Clay soil in chaparral, coastal scrub, valley & foothill grassland; 45-740 m	Low; known to occur in Project quad but would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Agave shawii</i> var. <i>shawii</i>	Shaw's agave	Agavaceae	2B.1	-/-	X	X	B	Perennial (leaf succulent), Sep-May	Coastal bluff scrub, coastal scrub; 10-120 m	Low; not known to occur in Project quad and suitable habitat does not occur on-site; would have been detectable and was not observed during 1978, 1991, 1998, 1999 or any 2000s surveys.
<i>Ambrosia chenopodiifolia</i>	San Diego bur-sage	Asteraceae	2B.1	-/-			B	Shrub, Apr-Jun	Coastal scrub; 55-155 m	Low; known to occur in Project quad but would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Ambrosia monogyra</i> (<i>Hymenoclea m.</i>)	desert fragrance	Asteraceae	2B.2	-/-			-	Shrub, Aug-Nov	Sandy or rocky soils in sage scrub, chaparral and Sonoran desert scrub; 10-500 m	Low; known to occur in Project quad but would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Ambrosia pumila</i>	San Diego ambrosia	Asteraceae	1B.1	-/FE	X	X	A	Perennial herb (rhizomatous), Apr-Oct	Sandy loam or clay, often disturbed areas, sometimes alkaline areas, in chaparral, coastal scrub, valley & foothill grassland, near vernal pools; 20-415 m	Low; potentially suitable habitat and soils occur on-site, but not known to occur in Project quad and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Aphanisma blitoides</i>	aphanisma	Chenopodiaceae	1B.2	-/-		X	A	Annual herb, Mar-Jun	Sandy soils in coastal bluff scrub, coastal dunes, coastal scrub; 1-305 m	Low; unsuitable habitat and soils occur on-site, not known to occur in Project quad, and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Arctostaphylos otayensis</i>	Otay manzanita	Ericaceae	1B.2	-/-		X	A	Shrub (evergreen), Jan-Apr	Metavolcanic soils in chaparral, cismontane woodland; 275-1700 m	Low; not known to occur in Project quad and suitable soils and habitat do not occur on-site; would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Artemisia palmeri</i>	Palmer's sagewort, San Diego sagewort	Asteraceae	4.2	-/-			D	Biennial to perennial herb to subshrub, Feb-Sep	Sandy, mesic soils in chaparral, coastal scrub, riparian forest, riparian scrub, riparian woodland; 15-915 m	Low; not known to occur in Project quad, would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys

Species Name	Common Name	Family	CRPR	State/ Federal	Cnty NE	MSC P	Cnty List	Growth form, bloom time	Habitat	Potential to Occur Onsite
<i>Asplenium vespertinum</i>	western spleenwort	Aspleniaceae	4.2	-/-			D	Perennial herb (rhizomatous), Feb-Jun	Under overhanging rocks in rocky chaparral, cismontane woodland, coastal scrub; 180-1000 m	Low; known to occur in Project quad, but suitable habitat does not occur on-site and not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Astragalus deanei</i>	Deane's locoweed/milkvetch	Fabaceae	1B.1	-/-			A	Perennial herb, Feb-May	Chaparral, cismontane woodland, coastal scrub, riparian forest; 75-695 m	Low; not known to occur in Project quad, suitable habitat does not occur on-site, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Atriplex coulteri</i>	Coulter's saltbush	Chenopodiaceae	1B.2	-/-			A	Perennial herb, Mar-Oct	Alkaline or clay soils in coastal bluff scrub, coastal dunes, coastal scrub, valley & foothill grassland; 3-460 m	Low; potentially suitable habitat and soils occur on-site but not known to occur in Project quad, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Atriplex pacifica</i>	south coast saltbush, south coast saltscale	Chenopodiaceae	1B.2	-/-			A	Annual herb, Mar-Oct	Coastal bluff scrub, coastal dunes, coastal scrub, playas; 0-140 m	Low; known to occur in Project quad, but onsite habitat likely unsuitable, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Bahiopsis laciniata</i> (<i>Viguiera l.</i>)	San Diego sunflower, San Diego County viguiera	Asteraceae	4.2	-/-			D	Shrub, Feb-Aug	Chaparral, coastal scrub; 60-750 m	DOCUMENTED ONSITE; observed onsite among coastal sage scrub plants in 1999 and 2001 QCB surveys, not observed since that vegetation burned (burn date unknown) but could regenerate under decent rainfall
<i>Bergerocactus emoryi</i>	velvet cactus, golden-club cactus, golden-spined cereus	Cactaceae	2B.2	-/-			B	Shrub (stem succulent), May-Jun	Sandy soils in closed-cone coniferous forest, chaparral, coastal scrub; 3-395 m	Low; documented in O'Neal Canyon but suitable habitat does not occur on-site, would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Bloomeria clevelandii</i> (<i>Muilla c.</i>)	San Diego goldenstar	Themidaceae	1B.1	-/-		X	A	Perennial herb (bulbiferous), Apr-May	Clay soil in chaparral, coastal scrub, valley & foothill grassland, near vernal pools; 50-465 m	Moderate; not observed onsite during surveys conducted to date, but documented north side of Johnson Canyon on same soil map unit in onsite mima mound area, and on similar soils to east of site.
<i>Brodiaea orcuttii</i>	Orcutt's brodiaea	Themidaceae	1B.1	-/-		X	A	Perennial herb (deciduous, bulbiferous), May-Jul	Mesic, clay, serpentinite soils in closed-cone coniferous forest, chaparral, cismontane woodland, meadows & seeps, valley & foothill grassland, and near vernal pools; 30-1692 m	Low; although historically documented in Johnson Canyon and nearby vernal pools, was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Calandrinia breweri</i>	Brewer's calandrinia	Montiaceae	4.2	-/-			D	Annual herb, Mar-Jun	Sandy or loamy disturbed or burned areas in chaparral, coastal scrub; 10-1220 m	Low; not known to occur in Project quad, onsite soils unsuitable, was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.

Species Name	Common Name	Family	CRPR	State/ Federal	Cnty NE	MSC P	Cnty List	Growth form, bloom time	Habitat	Potential to Occur Onsite
<i>Cistanthe maritima</i>	sea kisses, seaside cistanthe/calandrinia	Montiaceae	4.2	-/-			D	Annual herb, Feb-Aug	Sandy soils in coastal bluff scrub, coastal scrub, valley & foothill grassland; 5-300 m	Low; known to occur in Project quad but onsite soils unsuitable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>California macrophylla</i> (<i>Erodium macrophyllum</i>)	California large-leaf filaree/storksbill, round-leaved filaree	Geraniaceae	1B.1	-/-			B	Annual herb, Mar-May	Clay soil, cismontane woodland, valley & foothill grassland; 15-1200 m	Low; known to occur in Project quad but onsite soils potentially suitable but was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Calochortus dunnii</i>	Dunn's mariposa lily	Liliaceae	1B.2	SR/-	X	X	A	Perennial herb (bulbiferous), Feb-Jun	Gabbroic or metavolcanic soil, rocky, in closed-cone coniferous forest, chaparral, valley & foothill grassland; 185-1830 m	Low; suitable soil does not occur on-site, was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Camissonia lewisii</i>	Lewis's evening-primrose	Onagraceae	3	-			C	Annual herb, Mar-Jun	Coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, valley & foothill grassland/sandy or clay; 0-300 m	Low; not documented in Project quad, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Caulanthus simulans</i>	Payson's caulanthus, Payson's jewel-flower	Brassicaceae	4.2	-/-			D	Annual herb, Feb-Jun	Sandy, granitic chaparral, coastal scrub; 90-2200 m	Low; not known to occur in Project quad, suitable habitat and soils do not occur on-site, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Ceanothus cyaneus</i>	Lakeside-lilac, Lakeside ceanothus	Rhamnaceae	1B.2	-/-	X	X	A	Shrub (evergreen), Apr-Jun	Closed-cone coniferous forest, chaparral; 235-755 m	Low; known to occur in Project quad but suitable habitat does not occur on-site, would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Ceanothus otayensis</i>	Otay-lilac, Otay Mountain ceanothus	Rhamnaceae	1B.2	-/-			-	Shrub (evergreen), Jan-Apr	Metavolcanic or gabbroic soils in chaparral; 600-1100 m	Low; not known to occur in Project quad but suitable habitat does not occur on-site, would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Chamaebatia australis</i>	southern mountain misery	Rosaceae	4.2	-/-			D	Shrub (evergreen), Nov-May	Gabbroic or metavolcanic chaparral; 300-1020 m	Low; known to occur in Project quad but suitable habitat and soils do not occur on-site, would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Chorizanthe polygonoides</i> var. <i>longispina</i>	knotweed spineflower, long-spined spineflower	Polygonaceae	1B.2	-/-			A	Annual herb, Apr-Jul	Often clay soils in chaparral, coastal scrub, meadows & seeps, valley & foothill grassland, near vernal pools; 30-1530 m	Low; documented in Project quad and potentially suitable habitat occurs onsite, but not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.

Species Name	Common Name	Family	CRPR	State/ Federal	Cnty NE	MSC P	Cnty List	Growth form, bloom time	Habitat	Potential to Occur Onsite
<i>Clarkia delicata</i>	delicate clarkia, Campo clarkia	Onagraceae	1B.2	-/-			A	Annual herb, Apr-Jun	Often gabbroic soil in chaparral, cismontane woodland; 235-1000 m	Low; 5 documented on north-facing slopes of O'Neal Canyon but suitable habitat and soils do not occur on-site, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Clinopodium chandleri</i> (<i>Satureja c.</i>)	San Miguel savory	Lamiaceae	1B.2	-/-		X	A	Shrub, Mar-Jul	Rocky, gabbroic or metavolcanic soils in chaparral, cismontane woodland, coastal scrub, riparian woodland, valley & foothill grassland; 120-1075 m	Low; not known to occur in Project quad, unsuitable soils onsite, would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Comarostaphylis diversifolia</i> subsp. <i>diversifolia</i>	summer-holly	Ericaceae	1B.2	-/-			A	Shrub (evergreen), Apr-Jun	Chaparral, cismontane woodland; 30-790 m	Low; documented in Project quad but suitable habitat does not occur onsite, would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Convolvulus simulans</i>	small-flower bindweed, small-flowered morning-glory	Convolvulaceae	4.2	-/-			D	Annual herb, Mar-Jul	Clay soils and serpentinite seeps in chaparral openings, coastal scrub, valley & foothill grassland; 30-700 m	OCCURS ONSITE; observed growing in non-native grassland near patch of native grassland just upslope of creek in Johnson Canyon in 2015. 1 individual growing on abandoned BUOW burrow in SE NNG in 2016.
<i>Corethrogyne filaginifolia</i> var. <i>incana</i> (no varieties recognized in TJM2)	San Diego sand-aster	Asteraceae	1B.1	-/-			A	Perennial herb, Jun-Sep	Chaparral, coastal bluff scrub, coastal scrub; 3-115 m	Low; not known to occur in Project quad, suitable habitat does not occur onsite, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Cylindropuntia californica</i> var. <i>californica</i> (<i>Opuntia parryi</i> var. <i>serpentina</i>)	snake cholla	Cactaceae	1B.1	-/-	X	X	A	Shrub (stem succulent), Apr-May	Chaparral, coastal scrub; 30-150 m	Low; documented in Project quad, but unsuitable habitat onsite, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Deinandra conjugens</i> (<i>Hemizonia c.</i>)	Otay tarplant	Asteraceae	1B.1	SE/FT	X	X	A	Annual herb, May-Jun	Clay soils in coastal scrub, valley & foothill grassland; 25-300 m	Low; documented to southeast of site in the SPA but not detected onsite during 1978, 1991, or any 2000s surveys.
<i>Deinandra floribunda</i> (<i>Hemizonia f.</i>)	Tecate tarplant	Asteraceae	1B.2	-/-			A	Annual herb, Aug-Oct	Chaparral, coastal scrub; 70-1220 m	Low; not known to occur in Project quad, suitable habitat does not occur onsite, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Deinandra paniculata</i> (<i>Hemizonia p.</i>)	San Diego tarplant, paniculate tarplant	Asteraceae	4.2	-/-			D	Annual herb, Apr-Nov	Vernal pools and vernal mesic areas in coastal scrub, valley & foothill grassland; 25-940 m	Low; suitable habitat onsite but not known to occur in Project quad, not observed during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Dichondra occidentalis</i>	western dichondra, western ponyfoot	Convolvulaceae	4.2	-/-			D	Perennial herb (rhizomatous), Jan-Jul	Chaparral, cismontane woodland, coastal scrub, valley & foothill grassland; 50-500 m	Low to moderate; not documented onsite, but occurs near eastern edge of SPA, could grow around rocks in former CSS area, and can be difficult to detect.

Species Name	Common Name	Family	CRPR	State/ Federal	Cnty NE	MSC P	Cnty List	Growth form, bloom time	Habitat	Potential to Occur Onsite
<i>Dicranostegia orcuttiana</i> (<i>Cordylanthus orcuttianus</i>)	Orcutt's bird's beak	Orobanchaceae	2B.1	-		X	B	Annual herb (hemiparasitic), Mar-Sep	Coastal scrub, 10-350 m	Low; known to occur in Project quad but suitable habitat does not occur onsite and not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Dudleya attenuata</i> subsp. <i>attenuata</i> (<i>D. a. subsp. orcuttii</i>)	Orcutt's dudleya	Crassulaceae	2B.1	-/-			B	Perennial herb, May-Jul	Rocky or gravelly coastal bluff scrub, chaparral, coastal scrub; 3-50 m	Low; only known in CA from Border Field State Park, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Dudleya blochmaniae</i> subsp. <i>blochmaniae</i>	Blochman's dudleya	Crassulaceae	1B.1	-/-			A	Perennial herb, Apr-Jun	Rocky, often clay/serpentinite in coastal bluff scrub, chaparral, coastal scrub, valley & foothill grassland; 5-450 m	Low; not known to occur in Project quad, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Dudleya variegata</i>	variegated dudleya	Crassulaceae	1B.2	-/-	X	X	A	Perennial herb, Apr-Jun	Clay soils in chaparral, cismontane woodland, coastal scrub, valley & foothill grassland, near vernal pools; 3-580 m	DOCUMENTED ONSITE; observed onsite in mima mound area over several decades, see report text.
<i>Ericameria palmeri</i> var. <i>palmeri</i>	Palmer's goldenbush	Asteraceae	1B.1	-/-	X	X	B	Shrub (evergreen), Jul-Nov	Mesic chaparral, coastal scrub; 30-600 m	Low; not known to occur in Project quad, unsuitable habitat onsite, would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Eryngium aristulatum</i> var. <i>parishii</i>	San Diego button-celery	Apiaceae	1B.1	SE/FE		X	A	Biennial to perennial herb, Apr-Jun	Mesic coastal scrub, valley & foothill grassland, vernal pools; 20-620 m	DOCUMENTED ONSITE; observed onsite in vernal pools/ depressions since at least 1978, see report text. Observed in 2001 and 2004 and in 1999 QCB survey.
<i>Euphorbia misera</i>	cliff spurge	Euphorbiaceae	2B.2	-/-			B	Shrub, Dec-Aug	Coastal bluff scrub, coastal scrub/ rocky; 10-500 m	Low; known to occur in Project quad but unsuitable habitat onsite, would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Ferocactus viridescens</i>	coast barrel cactus, San Diego barrel cactus	Cactaceae	2B.1	-/-		X	B	Perennial (stem succulent), May-Jun	Chaparral, coastal scrub, valley & foothill grassland, near vernal pools; 3-450 m	OCCURS ONSITE; observed growing in non-native grassland and former CSS vegetation in mima mound area; 110 counted onsite in 2001, observed in 2015-2016.
<i>Fremontodendron mexicanum</i>	southern fremontia, Mexican flannelbush	Malvaceae	1B.1	SR/FE			A	Shrub (evergreen), Mar-Jun	Gabbroic, metavolcanic, or serpentinite soils in closed-cone coniferous forest, chaparral, cismontane woodland; 10-716 m	Low; known to occur in Project quad but unsuitable habitat and soil onsite, would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Grindelia hallii</i> (<i>G. hirsutula</i> var. <i>hallii</i>)	San Diego gumplant	Asteraceae	1B.2	-/-			A	Perennial herb, Jul-Oct	Chaparral, lower montane coniferous forest, meadows & seeps, valley & foothill grassland; 185-1745 m	Low; known to occur in Project quad but would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.

Species Name	Common Name	Family	CRPR	State/ Federal	Cnty NE	MSC P	Cnty List	Growth form, bloom time	Habitat	Potential to Occur Onsite
<i>Harpagonella palmeri</i>	Palmer's grappling-hook	Boraginaceae	4.2	-/-			D	Annual herb, Mar-May	Clay soils in chaparral, coastal scrub, valley & foothill grassland; 20-955 m	Moderate; not observed onsite during surveys conducted to date, but documented in northeastern portion of SPA, suitable habitat occurs onsite, and can be difficult to detect.
<i>Hesperocyparis forbesii</i> (<i>Cupressus f.</i>)	Tecate cypress	Cupressaceae	1B.1	-/-		X	A	Tree (evergreen)	Clay, gabbroic, or metavolcanic soils in closed-cone coniferous forest, chaparral; 80-1500 m	Low; occurs in Project quad but would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Holocarpha virgata</i> subsp. <i>elongata</i>	graceful tarplant	Asteraceae	4.2	-/-			D	Annual herb, May-Nov	Chaparral, cismontane woodland, coastal scrub, valley & foothill grassland; 60-1100 m	Low; would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Hordeum intercedens</i>	little barley, vernal barley	Poaceae	3.2	-			C	Annual herb, Mar-Jun	Coastal dunes, coastal scrub, valley and foothill grassland (saline flats and depressions), vernal pools; 5-1000 m	Low; not documented onsite during 1991, 1998, 1999, or any 2000s surveys.
<i>Hosackia crassifolia</i> var. <i>otayensis</i> (<i>Lotus crassifolius</i> var. <i>o.</i>)	Otay Mountain lotus	Fabaceae	1B.1	-/-			A	Perennial herb, May-Aug	Metavolcanic soils, often disturbed, in chaparral; 380-1005 m	Low; not known to occur in Project quad, unsuitable habitat and soils onsite, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Isocoma menziesii</i> var. <i>decumbens</i>	decumbent goldenbush	Asteraceae	1B.2	-/-			A	Shrub, Apr-Nov	Sandy, often disturbed areas in chaparral, coastal scrub; 10-135 m	Low; known to occur in Project quad but unsuitable habitat and soil onsite, no observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys (onsite <i>Isocoma</i> identified as <i>I. m. var. vernonioides</i>).
<i>Iva hayesiana</i>	San Diego marsh-elder	Asteraceae	2B.2	-/-			B	Perennial herb to subshrub, Apr- Oct	Marshes & swamps, playas; 10-500 m	Low to moderate; occurs along drainage in Johnson Canyon, apparently just outside northern parcel boundary.
<i>Juncus acutus</i> subsp. <i>leopoldii</i>	southwestern spiny rush	Juncaceae	4.2	-/-			D	Perennial herb, Mar-Jun	Coastal dunes (mesic), meadows & seeps (alkaline seeps), marshes and swamps (coastal salt); 3-900 m	Low; occurs in Johnson Canyon but easily detectable and not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Lasthenia glabrata</i> subsp. <i>coulteri</i>	Coulter's salt-marsh daisy, Coulter's goldfields	Asteraceae	1B.1	-/-			A	Annual herb, Feb-Jun	Coastal salt marshes & swamps, playas, vernal pools; 1-1220 m	Low; not known to occur in Project quad, only marginally suitable habitat onsite, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Lepechinia ganderi</i>	Gander's pitcher sage	Lamiaceae	1B.3	-/-	X	X	A	Shrub, Jun-Jul	Gabbroic or metavolcanic soils in closed-cone coniferous forest, chaparral, coastal scrub, valley and foothill grassland; 305-1005 m	Low; known to occur in Project quad but unsuitable soils onsite, would have been detectable and not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.

Species Name	Common Name	Family	CRPR	State/ Federal	Cnty NE	MSC P	Cnty List	Growth form, bloom time	Habitat	Potential to Occur Onsite
<i>Lepidium virginicum</i> var. <i>robinsonii</i> (not recognized in TJM2)	Robinson's peppergrass	Brassicaceae	4.3	-/-			A	Annual herb, Jan-Jul	Chaparral, coastal scrub; 1-885 m	Low; known to occur in Project quad and former CSS vegetation onsite could have been marginally suitable, but no observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Lilium humboldtii</i> subsp. <i>ocellatum</i>	ocellated lily, ocellated Humboldt lily	Liliaceae	4.2	-/-			D	Perennial herb (bulbiferous), Mar-Aug	Openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland; 30-1800 m	Low; known to occur in Project quad but unsuitable habitat onsite, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Lycium californicum</i>	California desert thorn	Solanaceae	4.2	-			D	Shrub, Mar-Aug	Coastal bluff scrub, coastal scrub; 5-150 m	Low; known to occur in Project quad but would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Microseris douglasii</i> subsp. <i>platycarpa</i>	small-flower microseris	Asteraceae	4.2	-/-			D	Annual herb, Mar-May	Clay soils in cismontane woodland, coastal scrub, valley & foothill grassland, vernal pools; 15-1070 m	Low; potentially suitable habitat and soils onsite but not known to occur in Project quad, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Monardella stoneana</i>	Jennifer's monardella	Lamiaceae	1B.2	-/-			A	Perennial herb to subshrub, Jun-Sep	Usually in rocky intermittent streambeds, closed-cone coniferous forest, chaparral, coastal scrub, riparian scrub; 10-790 m	Low; documented in Project quad, but vouchered specimens are from further east, and not observed in onsite drainage during any 2000s surveys.
<i>Monardella viminea</i> (<i>M. linoides</i> subsp. v.)	willowy monardella	Lamiaceae	1B.1	SE/FE	X	X	A	Perennial herb to subshrub, Jun-Aug	Alluvial ephemeral washes, chaparral, coastal scrub, riparian forest, riparian scrub, riparian woodland; 50-225 m	Low; not known to occur in Project quad, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Mucronea californica</i>	California spineflower	Polygonaceae	4.2	-/-			D	Annual herb, Mar-Aug	Sandy soil in chaparral, cismontane woodland, coastal dunes, coastal scrub, valley & foothill grassland; 0-1400 m	Low; onsite soils unsuitable, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Myosurus minimus</i> (includes <i>M. m.</i> subsp. <i>apus</i>)	little mousetail	Ranunculaceae	3.1	-/-			C	Annual herb, Mar-Jun	Valley & foothill grassland, vernal pools (alkaline); 20-640 m	Low; never documented in J22 complex, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Nama stenocarpum</i>	mud nama	Boraginaceae	2B.2	-/-			B	Annual to perennial herb, Jan-Jul	Marshes & swamps (lake margins, riverbanks); 5-500 m	Low; known to occur in Project quad but unsuitable habitat onsite, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Navarretia fossalis</i>	spreading navarretia	Polemoniaceae	1B.1	-/FT		X	A	Annual herb, Apr-Jun	Chenopod scrub, marshes & swamps (shallow freshwater), playas, vernal pools; 30-655 m	DOCUMENTED ONSITE; documented as present in J22 complex in 1978, and approx. 12 individuals in one J22 vernal pool documented in 1991.

Species Name	Common Name	Family	CRPR	State/ Federal	Cnty NE	MSC P	Cnty List	Growth form, bloom time	Habitat	Potential to Occur Onsite
<i>Navarretia prostrata</i>	flat navarretia	Polemoniaceae	1B.1	-/-			A	Annual herb, Apr-Jul	Alkaline floodplains and vernal pools; <700 m (TJM2)	Low; not known to occur in Project area, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Ophioglossum californicum</i>	California adder's tongue	Ophioglossaceae	4.2	-			D	Perennial herb (rhizomatous), Dec-Jun	Mesic chaparral and valley & foothill grassland, vernal pools margins); 60-525 m	Low; although potentially suitable habitat occurs onsite, not vouchered in Project area and not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Orcuttia californica</i>	California Orcutt's grass	Poaceae	1B.1	SE/FE		X	A	Annual herb, Apr-Aug	Vernal pools; 15-660 m	Low; although potentially suitable habitat occurs onsite, not vouchered in Project area and not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Ornithostaphylos oppositifolia</i>	Baja California birdbush	Ericaceae	2B.1	SE/-			B	Shrub (evergreen), Jan-Apr	Chaparral; 55-800 m	Low; not known to occur in Project quad, unsuitable habitat onsite; would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys..
<i>Orobanche parishii</i> subsp. <i>brachyloba</i>	beach orobanche, short- lobe orobanche	Orobanchaceae	4.2	-/-			D	Perennial herb (parasitic), Apr-Oct	Sandy coastal bluff scrub, coastal dunes, coastal scrub; parasitic on shrubs, generally <i>Isocoma menziesii</i> ; 3-305 m	Low; not known to occur in Project quad, unsuitable habitat onsite, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Pentachaeta aurea</i> subsp. <i>aurea</i>	golden-ray pentachaeta	Asteraceae	4.2	-			D	Annual herb, Mar-Jul	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland, valley & foothill grassland; 80-1850 m	Moderate; not documented onsite, but widespread and easily overlooked.
<i>Pickeringia montana</i> var. <i>tomentosa</i>	woolly chaparral-pea	Fabaceae	4.3					Shrub (evergreen), May- Aug	Gabbroic, granitic or clay soils in chaparral; 0-1700 m	Low; documented in Project quad but unsuitable habitat onsite, would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Piperia cooperi</i>	Cooper's rein orchid, chaparral rein orchid	Orchidaceae	4.2	-/-			D	Perennial herb, Mar-Jun	Chaparral, cismontane woodland, valley & foothill grassland; 15- 1585 m	Low; onsite habitat only marginally suitable, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Pogogyne nudiuscula</i>	Otay mesa mint	Lamiaceae	1B.1	SE/FE		X	A	Annual herb, May-Jul	Vernal pools; 90-250 m	Low; was not reported in Project J22 complex in 1978 or any subsequent surveys; during 1991 surveys within SPA, was found only in J26.
<i>Polygala cornuta</i> var. <i>fishiae</i>	Fish's milkwort	Polygalaceae	4.3	-/-			D	Shrub (deciduous), May-Aug	Chaparral, cismontane woodland, riparian woodland; 100-1100 m	Low; not known to occur in Project quad, unsuitable habitat onsite; would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.

Species Name	Common Name	Family	CRPR	State/ Federal	Cnty NE	MSC P	Cnty List	Growth form, bloom time	Habitat	Potential to Occur Onsite
<i>Quercus dumosa</i>	Nuttall's scrub oak	Fagaceae	1B.1	-/-			A	Shrub (evergreen), Feb-Aug	Sandy, clay loam soils in closed- cone coniferous forest, chaparral, coastal scrub; 15-400 m	Low; known to occur in Project quad but unsuitable habitat and soils onsite; would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys..
<i>Quercus engelmannii</i>	Engelmann/mesa blue oak	Fagaceae	4.2	-			D	Tree (deciduous), Mar-May	Chaparral, cismontane woodland, riparian woodland, valley & foothill grassland; 120-1300 m	Low; known to occur in Project quad but would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Ribes viburnifolium</i>	Santa Catalina Island currant, evergreen currant	Grossulariaceae	1B.2	-/-			A	Shrub (evergreen), Feb-Apr	Chaparral, cismontane woodland; 30-305 m	Low; not known to occur in Project quad and suitable habitat does not occur on-site; would have been detectable and was not observed.
<i>Romneya coulteri</i>	Coulter's Matilija poppy	Papaveraceae	4.2	-/-			D	Perennial herb (rhizomatous), Mar-Jul	Chaparral, coastal scrub, often in burns; 20-1200 m	Low; documented in O'Neal Canyon and to east within SPA, but would have been detectable and not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys..
<i>Rosa minutifolia</i>	small-leaf rose, desert rose	Rosaceae	2B.1	SE/-		X	B	Shrub (deciduous), Jan-Jun	Chaparral, coastal scrub; 150-160 m	Low; not known to occur in Project quad, unsuitable habitat onsite; would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Salvia munzii</i>	Munz's sage	Lamiaceae	2B.2	-/-			B	Shrub (evergreen), Feb-Apr	Chaparral, coastal scrub; 120- 1065 m	Low; occurs in eastern part of SPA but unsuitable habitat onsite, would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Selaginella cinerascens</i>	mesa spike-moss, ashy spike-moss	Selaginellaceae	4.1	-/-			D	Perennial rhizomatous herb	Chaparral and coastal scrub on undisturbed soil.	Low; known to occur in Project quad but not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Senecio aphanactis</i>	California groundsel, chaparral ragwort	Asteraceae	2B.2	-/-			B	Annual herb, Jan-Apr	Chaparral, cismontane woodland, coastal scrub, sometimes alkaline; 15-800 m	Low; known to occur in Project quad but unsuitable habitat onsite, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Stemodia durantifolia</i>	blue streamwort, purple stemodia	Plantaginaceae	2B.1	-/-			B	Perennial herb, Jan-Dec	Riparian habitats, on wet sand or rocks, drying streambeds; <400 m (TJM2)	Low; documented in Project quad but not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Stipa diegoensis</i> (<i>Achnatherum diegoense</i>)	San Diego needlegrass, San Diego County needle grass	Poaceae	4.2	-/-			D	Perennial herb, Feb-Jun	Rocky, often mesic areas in chaparral, coastal scrub; 10-800 m	Low; documented in eastern side of SPA, but unsuitable habitat onsite, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Streptanthus bernardinus</i>	Laguna Mountain jewelflower	Brassicaceae	4.3	-/-			D	Perennial herb, May-Aug	Chaparral, lower montane coniferous forest; 670-2500 m	Low; known to occur in Project quad but unsuitable habitat onsite, not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.

Species Name	Common Name	Family	CRPR	State/ Federal	Cnty NE	MSC P	Cnty List	Growth form, bloom time	Habitat	Potential to Occur Onsite
<i>Tetracoccus dioicus</i>	Parry's tetracoccus	Picrodendraceae	1B.2	-/-		X	A	Shrub, Apr-May	Chaparral, coastal scrub; 165-1000 m	Low; known to occur in Project quad but unsuitable habitat onsite, would have been detectable and was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.
<i>Tortula californica</i>	California screw moss	Pottiaceae	1B.2	-/-				Moss	Sandy soils in chenopod scrub, valley and foothill grassland; only known from one location in Border Field State Park 10-1460 m	Non-vascular plants were not evaluated for potential to occur, but not known to occur in Project quad and suitable habitat does not occur on-site.
<i>Xanthisma junceum</i> (<i>Machaeranthera juncea</i>)	rush chaparral-star, rush-like bristleweed	Asteraceae	4.3	-/-			D	Perennial herb, Jun-Jan	Chaparral, coastal scrub; 240-1000 m	Low; not known to occur in Project quad, unsuitable habitat onsite, was not observed onsite during 1978, 1991, 1998, 1999, or any 2000s surveys.

Listing Designations

CRPR - California Rare Plant Rank (from Rare Plant Status Review Group, jointly managed by California Department of Fish and Wildlife [CDFW] and California Native Plant Society [CNPS])

- | | |
|---|--|
| 1A - Plants presumed extirpated in California and either rare or extinct elsewhere | .1 - Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat) |
| 1B - Plants rare, threatened or endangered in California AND elsewhere | .2 - Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat) |
| 2A - Presumed extirpated or extinct in California, but more common elsewhere | .3 - Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known) |
| 2B - Plants rare, threatened or endangered in California, but more common elsewhere | |
| 3 - Plants about which more information is needed - a review list | |
| 4 - Plants of limited distribution - a watch list | |

State of California species designations (CDFW April 2013)

- SE - State-listed Endangered
ST - State-listed Threatened
SR - State-listed Rare

Federal species designations (CDFW April 2013, USFWS 2013)

- FE - Federally-listed Endangered
FT - Federally-listed Threatened
FC - Federal candidate for listing

Cnty NE - an X in this column indicates the species is considered a Narrow Endemic by the County of San Diego (MSCP County of San Diego Subarea Plan 1997)

Cnty List - County Sensitive Plant List (County of San Diego 2010)

- A - County List A: plants rare, threatened or endangered in California and elsewhere
B - County List B: plants rare, threatened or endangered in California but more common elsewhere
C - County List C: plants which may be rare, but need more information to determine their true rarity status
D - County List D: plants of limited distribution and are uncommon, but not presently rare or endangered

MSCP - an X in this column indicates the species is included in the Multiple Species Conservation Program (MSCP Plan 1998)

Other abbreviations:

EOMSPA BTR - Biological Technical Report for the East Otay Mesa Specific Plan Area; Ogden Environmental and Energy Services Co., Inc. October 1993

TJM2 - The Jepson Manual, 2nd edition (2012) (taxonomic authority for this report except where it conflicts with special-status plant recognition)

(Common names are primarily from *The Checklist of Vascular Plants of San Diego County* [Rebman and Simpson 2006], and secondarily from CNPS's Inventory of Rare and Endangered Plants [CNPS 2010, 2013])

APPENDIX D

Special-Status Animals with Potential to Occur on the Otay 250 SPA Project Site, CNDDDB Forms

APPENDIX D
SPECIAL-STATUS ANIMALS WITH POTENTIAL TO OCCUR ON THE OTAY 250 SPA PROJECT SITE
(USGS OTAY MESA QUAD, 136 - 191 METERS [445 - 625 FT])

Species Name	Common Name	State/Federal Status	Cnty NE	MSCP	Cnty Group	Habitat	Potential to Occur Onsite
INVERTEBRATES							
<i>Branchinecta sandiegonensis</i>	San Diego fairy shrimp	-/FE	X	X	1	Vernal pools and other unvegetated ephemeral basins in Orange and San Diego Counties and Baja California.	Observed onsite during 1998-1999 surveys; cysts observed in all vernal pools and disturbed wetland NE of ag pond; adults observed in disturbed wetland within ag pond. 72.5 acres of critical habitat mapped onsite. 2016 wet season survey attempted but not completed due to lack of ponding.
<i>Callophrys thornei</i> , <i>C. gryneus t.</i>	Thorne's hairstreak	-/BLM-S	X	X	1	Otay Mountain; host plant is <i>Hesperocyparis forbesii</i> .	Low; known to occur in Project quad but host plant does not occur onsite.
<i>Cicindela gabbii</i>	western tidal-flat tiger beetle	-/-			2	Mud flats, salt marshes, and sea beaches	Low; not known to occur in Project quad and suitable habitat does not occur onsite.
<i>Cicindela hirticollis gravida</i>	sandy beach tiger beetle	-/-			2	Moist swales behind dunes or on upper beaches above normal high tide	Low; not known to occur in Project quad and suitable habitat does not occur onsite.
<i>Cicindela latesignata latesignata</i>	western beach tiger beetle	-/-			2	Coastal sea beaches, bays, estuaries, salt marshes, and alkali sloughs.	Low; not known to occur in Project quad and suitable habitat does not occur onsite.
<i>Cicindela senilis frosti</i>	senile tiger beetle	-/-			2	Coastal salt marshes, tidal mud flats, interior alkali mud flats; an inland site near Jacumba.	Low; not known to occur in Project quad and suitable habitat does not occur onsite.
<i>Coelus globosus</i>	globose dune beetle	-/-			1	Sea beach dunes	Low; not known to occur in Project quad and suitable habitat does not occur onsite.
<i>Danaus plexippus</i>	monarch butterfly	-/-			2	Land with host plant milkweeds (<i>Asclepias</i> spp.) or nectar plants.	Low; <i>Asclepias</i> spp. not observed onsite and site supports limited nectar plants.
<i>Euphydryas editha quino</i>	Quino checkerspot butterfly	-/FE	X		1	Open grassy areas, interior foothills, host-plant is <i>Plantago erecta</i> , <i>Plantago ovata</i> , <i>Castilleja exserta</i> ; 0-1000ft.	Low; neither butterfly nor host plants detected onsite in 1999 focused surveys but documented in/near mima mound area less than 1 mile to northeast, <i>Plantago erecta</i> observed onsite in 2015-2016. No adults or larvae found during 2016 protocol survey.
<i>Euphyes vestris harbisoni</i>	Harbison dun skipper	-/-	X		1	Drainages containing host plant San Diego sedge (<i>Carex spissa</i>) in San Diego and Orange Counties.	Low; not known to occur in Project quad and <i>Carex spissa</i> was not observed onsite.
<i>Lycaena hermes</i>	Hermes copper	-/-			1	Coastal sage scrub, mixed chaparral and chamise chaparral; 0-3000ft. Host plant is <i>Rhamnus crocea</i> .	Low; not known to occur in Project quad, host plant not observed onsite.
<i>Panoquina errans</i>	wandering skipper (saltmarsh skipper)	-/-		X	1	Salt or alkali marsh; 0-500 ft	Low; not known to occur in Project quad and suitable habitat does not occur onsite.

Species Name	Common Name	State/Federal Status	Cnty NE	MSCP	Cnty Group	Habitat	Potential to Occur Onsite
<i>Streptocephalus woottoni</i>	Riverside fairy shrimp	-/FE	X	X	1	Vernal pools and other unvegetated ephemeral basins in inland Riverside, Orange and San Diego (Ramona area) Counties, and coastal SD County and Baja California.	Moderate; not detected in 1999 surveys but known to occur in Project quad and results were inconclusive due to insufficient ponding duration. 2016 wet season survey attempted but not completed due to lack of ponding.
<i>Tryonia imitator</i>	mimic tryonia	-/-			2	Coastal lagoons, estuaries and salt marshes in permanently submerged areas, in a variety of sediment types, withstands wide range of salinity.	Low; not known to occur in Project quad and suitable habitat does not occur onsite.
AMPHIBIANS							
<i>Spea hammondi</i>	western spadefoot	SSC/BLM-S			2	Open areas with sandy or gravelly soils, in mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains; rainpools free of bullfrogs, fish, or crayfish needed for breeding. Activity limited to wet season, summer storms or during evenings with elevated substrate moisture levels. Nocturnal. 0-4,500 ft	Low; per EOMSPA BTR, a single population found in cattle pond of southern-central SPA, but would not have been detectable in surveys and not observed onsite during 1991, 1998, 1999, or 2000s surveys.
REPTILES							
<i>Acinemys marmorata</i> (<i>Emys m.</i> , <i>Clemmys m. pallida</i>)	western pond turtle (southwestern pond turtle)	SSC/BLM-S, USFS-S	X	X	1	Major rivers and streams, especially in headwater areas.	Low; suitable habitat does not occur onsite.
<i>Anniella stebbinsi</i> (formerly <i>A. pulchra pulchra</i>)	Southern California legless lizard (formerly silvery legless lizard)	SSC/-			2	Loose soil and leaf litter with plant cover in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks; often under surface objects such as rocks, boards, driftwood, and logs; sometimes found in suburban gardens in southern California; lives mostly	Low; not known to occur in Project quad and suitable habitat does not occur onsite.
<i>Aspidoscelis hyperythra</i> (<i>Cnemidophorus hyperythrus</i>)	orange-throated whiptail	SSC/-		X	2	Coastal sage scrub, mixed chaparral, grassland, riparian, and chamise chaparral habitats. Open hillsides with brush and rock, well drained soils; 1-	Low; although suitable habitat occurs onsite, per EOMSPA BTR not detected in SPA.
<i>Aspidoscelis tigris stejnegeri</i> (<i>Cnemidophorus t. s.</i>)	coastal whiptail	-/-			2	Found in hot, dry open areas with sparse foliage such as chaparral, woodland, and riparian areas mostly west of the Peninsular Ranges.	Low; per EOMSPA BTR, three areas of high concentration within SPA, but none observed onsite, only marginally suitable habitat occurs onsite.
<i>Coleonyx variegatus abbotti</i>	San Diego banded gecko	-/-			1	Interior coastal region, west of Peninsular ranges, prefers rocky areas in coastal sage and chaparral, nocturnal, hibernates in winter	Low; per EOMSPA BTR, occurs in Otay Mesa area, but suitable habitat with large rock outcrops does not occur onsite.

Species Name	Common Name	State/Federal Status	Cnty NE	MSCP	Cnty Group	Habitat	Potential to Occur Onsite
<i>Crotalus ruber</i>	red diamond rattlesnake	SSC/-			2	Coastal sage scrub, mixed chaparral, open grassy areas and agricultural areas, chamise chaparral, pinon juniper and desert scrub; 0-3000ft.	Low; per EOMSPA BTR, observed in O'Neal Canyon, likely occupy naturally vegetated habitats in SPA, but suitable habitat with rocky outcrops does not occur onsite.
<i>Diadophis punctatus similis</i>	San Diego ringneck snake	-/USFS-S			2	Moist habitats including wet meadows, rocky hillsides, gardens, farmland, grassland, chaparral, mixed coniferous forests, and woodlands, along coast into Peninsular Ranges; may not be distinct from San Bernardino subspecies (<i>D. p. modestus</i>), which is	Observed onsite during 1999 QCB surveys in northern CSS/NNG habitat.
<i>Lampropeltis zonata (pulchra)</i>	California mountain kingsnake (San Diego population)	SSC/USFS-S		X	2	Laguna, Palomar, Volcan, and Hot Springs Mountains in SD County.	Low; range does not overlap site, suitable habitat does not occur onsite.
<i>Lichanura trivirgata (Charina t.)</i>	rosy boa (coastal rosy boa)	-/USFS-S			2	Coastal sage scrub, mixed chaparral, oak woodlands and chamise chaparral. Often found in association with rock outcrops; 0-3000ft.	Low; per EOMSPA BTR, detected in SPA to east and southeast of site, but suitable habitat with rocky outcrops does not occur onsite.
<i>Phrynosoma blainvillii (Anota coronatum, P. c.)</i>	Blainville's horned lizard, coast horned lizard	SSC/BLM-S, USFS-S		X	2	Coastal sage scrub with harvester ants (<i>Pogonomyrmex</i> spp.).	Low; per EOMSPA BTR, occurs in eastern SPA but not detected onsite and habitat is only marginally suitable.
<i>Plestiodon skiltonianus interparietalis (Eumeces s. i.)</i>	Coronado skink	SSC/BLM-S			2	Coastal sage scrub, grassland, riparian, near vernal pools, oak woodlands, chamise chaparral, mixed conifer, closed cone forests, and freshwater marshes.	Moderate; not detected in site surveys, but per EOMSPA BTR likely to occur in grasslands throughout SPA.
<i>Salvadora hexalepis virgulata</i>	coast patch-nosed snake	SSC/-			2	Chaparral, coastal sage scrub, and other brushy vegetation west of desert, found near rock outcrops with adjacent seasonal drainages.	Moderate; not observed onsite, but per EOMSPA BTR likely to occur in SPA and northeastern corner of site in Johnson Canyon likely contains suitable habitat with friable soils.
<i>Thamnophis hammondi</i>	two-striped garter snake	SSC/BLM-S, USFS-S			1	In or near permanent fresh water, often along streams with rocky beds bordered by willows or other streamside growth. Sometimes near vernal pools; 0-1000ft.	Low; per EOMSPA BTR, significant breeding population in creek of O'Neal Canyon, but not detected onsite and preferred permanent fresh water does not occur onsite.
BIRDS							
<i>Accipiter cooperii</i>	Cooper's hawk	WL/-		X	1	Riparian and oak woodlands, eucalyptus groves and other forested areas; 500-3000ft.	Observed onsite, one flying over onsite NNG in 2015; appeared to be attracted to recorded Cooper's hawk call from power plant to south.
<i>Accipiter striatus</i>	sharp-shinned hawk	WL/-			1	Widespread but uncommon winter visitor in SD County, especially coastal slope; variety of habitats, preferably with trees or tall shrubs; attracted to any place that concentrates small prey birds.	Low; uncommon winter visitor and not observed on or over site.
<i>Agelaius tricolor</i>	tricolored blackbird	SSC/BCC, BLM-S		X	1	Fresh water, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, tall herbs (Breeds). Feeds in grassland and cropland habitats; 0-500ft and 1000-	Low; not known to occur in Project quad and suitable habitat does not occur onsite.

Species Name	Common Name	State/Federal Status	Cnty NE	MSCP	Cnty Group	Habitat	Potential to Occur Onsite
<i>Aimophila ruficeps canescens</i>	Southern California rufous-crowned sparrow	WL/-		X	1	Sparse, mixed chaparral and coastal scrub habitats (especially coastal sage). Frequents relatively steep, often rocky hillsides with grass and forb patches; 0-	Observed onsite in former CSS/NNG vegetation in mima mound area during 1999 QCB surveys.
<i>Ammodramus savannarum</i>	grasshopper sparrow	SSC/-	X	X	1	Short- to middle-height, moderately open grasslands with scattered shrubs, native bunchgrasses preferred; hard to identify except when singing (Mar-Jul).	Observed onsite during 2001 Quino survey in mima mound area.
<i>Aquila chrysaetos</i>	golden eagle	FP, WL, CDF-S/BLM-S, BCC	X	X	1	Mountains, foothills, and adjacent grassland, open areas and canyons; 0-3000ft. (nesting/wintering)	Moderate; not observed on over site during any survey (1998-2016), but one pair nests in O'Neal Canyon, suitable foraging habitat occurs onsite and per EOMSPA BTR a portion of the territory occurs within the SPA.
<i>Ardea herodias</i>	great blue heron	CDF-S/-			2	Year-round in wetlands of all kinds, also forages in uplands for gophers and rats, nests in tall trees.	Low; not observed on or over site, drainage in Johnson Canyon and adjacent uplands are only marginally suitable.
<i>Artemisospiza belli belli</i> (<i>Amphispiza b. b.</i>)	Bell's sage sparrow	WL/BCC			1	Year-round resident in open chaparral and sage scrub, especially recently where burned areas or on gabbro substrate; most common in central southern SD County; very sensitive to habitat fragmentation.	Low; per EOMSPA BTR, occurs within SPA, but site is too close to development and suitable habitat lacking.
<i>Athene cunicularia</i>	burrowing owl	SSC/BCC, BLM-S	X	X	1	Open, dry grasslands, agricultural and range lands, shrub and desert habitats of low-growing open vegetation (associated with burrowing animals).	Evidence of prior site use found in 2015-2016; 15 inactive burrows found within the project footprint, and 24 inactive found in proposed Biological Open Space. Based on Google Earth aerials, most appeared to have been created between 2012 and 2014. No owl activity was observed in 2015 or 2015, and burrows did not appear to have been used in 2015 or 2016.
<i>Buteo regalis</i>	ferruginous hawk	WL/BCC	X	X	1	Uncommon winter visitor to SD County, forages over larger tracts of grassland, especially those >12 miles inland.	Observed soaring high over site in December 1998.
<i>Buteo swainsoni</i>	Swainson's hawk	ST/BCC, USFS-S		X	1	Winters in desert scrub; 0-500ft.	Low; not known to occur in Project quad and suitable habitat does not occur onsite.
<i>Campylorhynchus brunneicapillus sandiegensis</i>	coastal cactus wren, San Diego cactus wren	SSC/BCC, USFS-S	X	X	1	Open coastal sage scrub with thickets of chollas (<i>Cylindropuntia</i> sp.), south- and west-facing slopes below 1,500 ft, usually within quarter mile of river	Low; documented in Project quad but suitable habitat does not occur onsite.
<i>Cathartes aura</i>	turkey vulture	-/-		X	1	Dry open country or along roadsides; coastal sage scrub, mixed and chamise chaparral, grassland, riparian, mixed conifer and closed cone forest; 0 to	Observed onsite; 1 individual observed flying over site in 2015.
<i>Charadrius nivosus</i> (<i>Charadrius alexandrinus n.</i>)	snowy plover (western snowy plover)	-/-		X	1	Immediate coast at scattered beach, bay and lagoon locations; nests on beaches, dunes and salt flats.	Low; not known to occur in Project quad and suitable habitat does not occur onsite.

Species Name	Common Name	State/Federal Status	Cnty NE	MSCP	Cnty Group	Habitat	Potential to Occur Onsite
<i>Circus cyaneus</i>	northern harrier	SSC/-		X	1	Year-round resident but more common in winter; nests on ground in marsh or other dense vegetation, forages over grasslands.	Observed onsite; breeding pairs observed onsite repeatedly beginning 1999; 1 individual observed flying over NNG Feb. 2015; pair and single male observed on and over site Feb. 2016; EOMSPA BTR: fields south of Johnson Canyon particularly significant due to suspected nesting activity.
<i>Coccyzus americanus occidentalis</i>	western yellow-billed cuckoo	SE/FC, BCC, BLM-S, USFS-S	X		1	Extensive stands of mature riparian woodland.	Low; known to occur in Project quad but suitable habitat does not occur onsite.
<i>Elanus leucurus (E. caeruleus)</i>	white-tailed kite black-shouldered kite	FP/BLM-S		X	1	Widespread over coastal slope, prefers riparian woodlands, oak groves, or sycamore groves adjacent to grassland; feeds almost exclusively on California	Observed foraging in N part of site during 1998-1999 surveys.
<i>Empidonax traillii extimus</i>	southwestern willow flycatcher	SE/FE	X	X	1	Riparian wooded/shrubby habitat that is dense in all strata.	Low; not known to occur in Project quad and suitable habitat does not occur onsite.
<i>Eremophila alpestris actia</i>	California horned lark	WL/-			2	Open patches of bare land alternating with low vegetation in grasslands, montane meadows, and sagebrush plains.	Observed onsite; group of 3 on main east-west unpaved road plus one pair at W end of Lone Star Road in 2015. Common onsite, flock of approx. 20 individuals observed in S NNG.
<i>Falco mexicanus</i>	prairie falcon	WL/BCC			1	Mountainous grasslands, open hills, open plains; 0 to over 3000ft.	Moderate; suitable habitat occurs onsite, documented in the Otay Mesa area.
<i>Icteria virens</i>	yellow-breasted chat	SSC/-			1	Summer visitor in dense riparian woodland, most common in coastal lowland, strongly concentrated in NW corner of County; usually return to SD second week in April and start to leave by early August.	Low; documented in Project quad but suitable habitat does not occur onsite.
<i>Lanius ludovicianus</i>	loggerhead shrike	SSC/BCC		X	1	Open fields with scattered trees, open woodland, scrub, agricultural land, desert wash, desert-edge scrub, beach areas, broken chapparal.	Observed onsite; 1 individual observed in snag at edge of abandoned agricultural pond in 2015.
<i>Larus californicus</i>	California gull	WL/-			2	In winter at beaches, bays, estuaries, and lakes/reservoirs through coastal lowland, and occasionally at higher elevation lakes; uncommon to	Low; not known to occur in Project quad or surrounding quads and suitable habitat does not occur onsite.
<i>Passerculus sandwichensis beldingi</i>	Belding's savannah sparrow	SE/-	X	X	1	Narrowly restricted to coastal marshes dominated by pickleweed, southern California and northern Baja California	Low; not known to occur in Project quad and suitable habitat does not occur onsite.
<i>Poliptila californica californica</i>	coastal California gnatcatcher	SSC/FT		X	1	Coastal sagebrush scrub especially where California sage (<i>Artemisia californica</i>) is dominant plant; up to 3000 ft but 90% at 1000 ft or lower.	Low; occurs in coastal sage scrub to northeast and east of site, but never detected onsite and former CSS onsite is gone.
<i>Setophaga petechia (Dendroica p.)</i>	yellow warbler	SSC/BCC			2	Mature riparian woodland.	Low; not known to occur in Project quad and suitable habitat does not occur onsite.

Species Name	Common Name	State/Federal Status	Cnty NE	MSCP	Cnty Group	Habitat	Potential to Occur Onsite
<i>Sternula antillarum browni</i> (<i>Sterna a. b.</i>)	California least tern	SE, FP/FE	X	X	1	Nests on dunes and flats along sea, bay and estuary shores; forages in bays and estuaries, ocean, and inland lakes in coastal lowland; has nested up to four miles inland in the past	Low; not known to occur in Project quad and suitable habitat does not occur onsite.
<i>Tyto alba</i>	barn owl	-/-			2	Nests in buildings, among bases of palm leaves, cavities in native trees or cliff ledges, and nest boxes; SD owl most adapted to suburban and urban	Observed on/over site during 1998-1999 surveys. Pellet and feathers found in Biological Open Space in 2016.
<i>Vireo bellii pusillus</i>	least Bell's vireo	SE/FE	X	X	1	Riparian vegetation along rivers and larger creeks, with both riparian canopy and somewhat a dense or shrubby understory for nesting.	Low; known to occur in Project quad but suitable habitat does not occur onsite.
MAMMALS							
<i>Antrozous pallidus</i>	pallid bat	SSC/BLM-S, USFS-S			2	Coastal sage scrub, mixed chaparral, oak woodlands, chamise chaparral, desert wash and desert scrub. Prefers rocky outcrops, cliffs and crevices with access to open habitats for foraging.	Low; suitable habitat does not occur onsite.
<i>Chaetodipus californicus femoralis</i>	Dulzura California pocket mouse	SSC/-			2	Coastal sage scrub, mixed chaparral, oak woodland, chamise chaparral, and mixed conifer habitats; 0 to over 3000ft.	Low; not known to occur in Project quad but per EOMSPA BTR, most habitat in the SPA has been rendered unsuitable by agricultural use.
<i>Chaetodipus fallax fallax</i>	northwestern San Diego pocket mouse	SSC/-			2	Sandy, herbaceous areas, usually associated with rocks or coarse gravel, in coastal scrub, chaparral, grasslands, sagebrush in western San Diego County;	Low; documented in Project quad but suitable habitat does not occur onsite.
<i>Choeronycteris mexicana</i>	Mexican long-tongued bat	SSC/-			2	In CA, found in residential areas, roosts in garages, sheds, porches, and under houses on stilts; feeds on pollen and nectar, especially of agaves and columnar cacti, and will visit hummingbird feeders and possibly avocado flowers; seen in fall and winter,	Low; suitable roosts and food plants not observed on or adjacent to site.
<i>Corynorhinus townsendii</i> (<i>Plecotus t. pallascens</i>)	Townsend's big-eared bat	SSC/BLM-S, USFS-S			2	Variety of habitats, most common at mesic sites. Roosts in the open, extremely sensitive to human	Low; no suitable roosts and Project site has been subject to too much disturbance for this species.
<i>Eumops perotis californicus</i>	western mastiff bat	SSC/BLM-S			2	Open semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban. Crevices in cliff faces, high buildings, trees, and tunnels are required for roosting;	Low; documented in Project quad but suitable roosts do not occur onsite.
<i>Lasiurus blossevillii</i>	western red bat	SSC/-			2	Prefers riparian areas, where they roost in broad-leaf trees; migratory, most likely to be in western SD in	Low; known to occur in Project quad but no suitable roosts onsite.
<i>Lasiurus xanthinus</i>	western yellow bat	SSC/-				Desert areas with palms and, increasingly, year-round in urban areas in planted palms; roosts in hanging palm fronds; eats insects.	Low; no suitable roosts observed onsite.

Species Name	Common Name	State/Federal Status	Cnty NE	MSCP	Cnty Group	Habitat	Potential to Occur Onsite
<i>Lepus californicus bennettii</i>	San Diego black-tailed jackrabbit	SSC/-			2	Coastal sage scrub, mixed chaparral, oak woodlands, chamise chaparral, mixed conifer, and closed cone forest and open areas. Common in irrigated pastures and row crops; 0 to over 3000ft.	Observed onsite; 2 individuals observed in NNG in 2015 and 5 individuals observed in NNG in 2016.
<i>Macrotus californicus</i>	California leaf-nosed bat	SSC/BLM-S, USFS-S			2	Coastal sage scrub, mixed chaparral, riparian, desert scrub and wash, needs rugged terrain with mines or caves for roosting.	Low; no suitable roosts onsite.
<i>Myotis ciliolabrum</i>	western small-footed myotis	-/BLM-S			2	Primarily found in relatively arid wooded and brushy uplands near water; roosts in caves, buildings, mines, crevices, and occasionally under bridges and under	Low; documented in Project quad but no suitable habitat or roosts onsite.
<i>Myotis evotis</i>	long-eared myotis	-/BLM-S			2	Brush, woodland and forest habitats from sea level to around 900 ft, but prefers coniferous woodlands and forests; roosts in tree cavities, under tree bark, or in rock crevices, caves, mines, abandoned buildings; feeds on insects over open water.	Low; suitable roosts and feeding areas absent from site.
<i>Myotis yumanensis</i>	Yuma myotis	-/BLM-S			2	Open forests and woodlands with water bodies over which to forage, roosts in caves, mines, buildings, bridges, and tree cavities.	Low; suitable roosts and feeding areas absent from site.
<i>Neotoma lepida intermedia</i>	San Diego desert woodrat	SSC/-			2	Coastal sage scrub, oak woodlands and chamise chaparral and rocky outcrops. Nocturnal. Typically associated with cacti; 500-3000ft.	Low; known to occur in Project quad but suitable habitat with rock outcrops or cactus patches not observed onsite, no woodrat middens observed onsite.
<i>Nyctinomops femorosaccus</i>	pocketed free-tailed bat	SSC/-			2	Variety of arid areas in southern California; pine-juniper woodlands, desert scrub, palm oases, desert wash, desert riparian; rocky areas with high cliffs.	Low; EOSMPA BTR: no roosting habitat for bats in SPA; known to occur in Project quad but suitable habitat does not occur onsite.
<i>Nyctinomops macrotis</i>	big free-tailed bat	SSC/-			2	Dry high elevation forests.	Low; suitable habitat does not occur onsite.
<i>Odocoileus hemionus (fuliginata)</i>	mule deer, southern mule deer	-/-	X		2	Woodlands, riparian areas, margins of meadows and grasslands, and open shrublands.	Low; no tracks or sign observed onsite; per EOMSPA BTR only detected in O'Neal Canyon, constrained by minimal water sources.
<i>Onychomys torridus ramona</i>	southern grasshopper mouse	SSC/-		X	2	Semi-arid to arid scrub with friable soils and low to moderate shrub cover. Carnivorous, preferred food is grasshoppers but will consume seeds, other insects and lizards.	Low; per EOMSPA BTR, suitable habitat occurs in SPA, but clay soils onsite unlikely suitable.
<i>Perognathus longimembris pacificus</i>	Pacific little pocket mouse	SSC/FE	X		1	Coastal sage scrub and grasslands with fine-grain, sandy substrates; historically inhabited coastal dunes, river alluvium, and sage scrub habitats growing on marine terraces within approximately 2.4 miles of the ocean; 0-500 ft.	Low; per EOMSPA BTR, has "some potential" to occur in SPA, but suitable soil and habitat do not occur onsite.
<i>Puma concolor (Felis c.)</i>	mountain lion	-/-	X		2	Needs large areas of habitat in forested or brushy regions, or rugged terrain with woods or rocks; avoids open areas.	Low; detected in O'Neal Canyon, but Project site unlikely to be used due to lack of mule deer and drinking water.

Species Name	Common Name	State/Federal Status	Cnty NE	MSCP	Cnty Group	Habitat	Potential to Occur Onsite
<i>Taxidea taxus</i>	American badger	SSC/-		X	2	Most common in drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	Low; known to occur in Project quad but suitable habitat and soil do not occur onsite.

Listing Designations

Federal Listing (USFWS 2013, CDFW 2011)

FE - Federal-listed Endangered

FT - Federal-listed Threatened

FC - Federal candidate for listing

BCC - US Fish and Wildlife Service Bird of Conservation Concern

BLM-S - Bureau of Land Management Sensitive

USFS-S - US Forest Service Sensitive

State Listing (CDFW 2011, 2013)

SE - State-listed Endangered

ST - State-listed Threatened

SEC - State Endangered Candidate

FP - CA Dept. of Fish and Wildlife Fully Protected

SSC - State Species of Special Concern

WL - CA Dept. of Fish and Wildlife Watch List

CDF-S - CA Dept. of Forestry Sensitive

Cnty NE - an X in this column indicates the species is considered a Narrow Endemic by the County of San Diego (MSCP County of San Diego Subarea Plan 1997)

Cnty Group - County of San Diego Sensitive Animal Group (County of San Diego 2010)

1 - County of SD Sensitive Animal List Group 1

2 - County of SD Sensitive Animal List Group 2

MSCP - an X in this column indicates the species is included in the Multiple Species Conservation Program (MSCP Plan 1998)

EOMSPA BTR - Biological Technical Report for the East Otay Mesa Specific Plan Area; Ogden Environmental and Energy Services Co., Inc., October 1993

APPENDIX E

**Fairy Shrimp Survey Reports and
Documentation, 1998-1999, 2016**

Fairy Shrimp Survey Report, 1998-1999

Dry Season Season Sampling of the REC Otay Mesa Vernal Pools for Fairy Shrimp Cysts

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Methods

Soil samples were collected with a 4 cm inside diameter pipe core sampler. This pipe with sharpened edges was driven 3 to 4 cm into the soil by blows with a small mallet, resulting in sampling area of approximately 12.6 cm²/sample. The plug of soil in the pipe, and any loosened soil which fell from the pipe when it was extracted, was placed in a polyethylene zip-lock bag labeled with the pool and sample numbers. Five samples were taken at approximately equidistant points along a transect bisecting the length of each pool, and five samples were taken along a transect perpendicular to the first transect, resulting in a total of 10 samples per pool. The central sample in each transect (samples 3 and 8) were taken in the deepest area of each pool. Samples on the ends of transects were taken near pool margins, indicated by the highest extent of pool vegetation or of soil appearance indicating probable inundation during the preceding rainfall season. Samples were taken on the morning of August 20, 1998. REC employees Holly Breslow and Robin Church participated in the sampling by indicating pools to be sampled.

Soil samples were stored at room temperature until they were processed on August 27 and 28, 1998. Gravel and large pieces of organic matter were removed from samples by sieving them through a 2 mm (number 10) brass U.S.A. Standard Testing Sieve. This soil was then weighed, placed in labeled 16 oz. plastic deli containers, and wet with 2-3 oz of deionized water. After standing for 10-30 minutes, each sample was washed with deionized water through a set of two brass sieves: a 355 micrometer (number 45) brass U.S.A. Standard Testing Sieve and a 125 micrometer (number 120) brass U.S.A. Standard Testing Sieve. The fraction passing through the 355 micrometer sieve and caught on the 125 micrometer sieve was spooned and washed into a clean 16 oz. plastic deli container. The resulting samples were examined under an Olympus 7.5-64 power

zoom stereo dissecting microscope illuminated by a Introlux 5000 focused halogen bulb. For each sample, 20 random views of the container were examined at near 64 power, and the numbers of whole or partial cysts recorded for each view. The entire sample was then examined at lower magnification before and after being slightly stirred to release any cysts which might have been present. After all 10 samples from a single pool were examined, they were combined in a single plastic deli container, and the resulting deli container was topped off with deionized water and maintained at room temperature.

At the same time that the samples collected from the Otay Mesa REC pools were processed, a soil sample collected from a Marine Corps Air Station Miramar vernal pool known to support a large population of *Branchinecta sandiegonensis* was processed and wet up. The cysts that were extracted from the soils were compared with electron micrographs of *Branchinecta sandiegonensis*, *Branchinecta lindahli*, and *Streptocephalus woottoni* cysts prepared by John Pitcairn of the San Diego State University Department of Biology Electron Microscopy facility (Figure 1a-c).

Results

The weights of the < 2 mm soil samples ranged from 10 to 93 grams, and averaged 42 grams (Table 1). The volume of this soil fraction averaged 1.4 ml/gram, so the volumes of soil samples examined ranged from 14 to 130 ml. The variation in weights and volumes was based on the different depths of soils sampled and the different amounts of gravel and large organic matter that were collected as part of the sample.

Numbers of cysts on a per volume basis ranged from 2 cysts in pool 1 (in which only a single partial cysts was found), to 87 cysts in pool 6 (Table 1). All of these were *Branchinecta* cysts (Figure 1a &b)- no *Streptocephalus* cysts were encountered. Identification of *Branchinecta* cysts to the species level is problematic, but based on the distributions of *Branchinecta sandiegonensis* and *Branchinecta lindahli* in San Diego County, and the low likelihood that pools on this site have received *B. lindahli* inoculum, the *Branchinecta* cysts found here are almost certainly those of the endangered San Diego Fairy Shrimp. Cysts were found at all sample locations within pools, and did not appear to be concentrated in the deepest central areas, as might have been predicted (Figure 2).

Cysts recovered from the Miramar pool soil samples were similar in appearance to those recovered from the Otay samples, but were found in much greater concentrations (> 150/100 ml of soil) than in the Otay samples. San Diego Fairy Shrimp hatched from these Miramar soil samples after these were inundated for approximately one week at room temperature. No fairy shrimp hatched from the Otay samples which were inundated and held under the same conditions. Since a large number of fairy shrimp cysts appear to exhibit some type of dormancy, and since hatching conditions were probably less than optimal during the period of this study, it is possible that a greater number of cysts wet up under more ideal hatching conditions would yield specimens suitable for identification. Wet season sampling of the Otay pools early in the rainfall season, after approximately 10 days of inundation, would likely yield identifiable specimens of fairy shrimp.

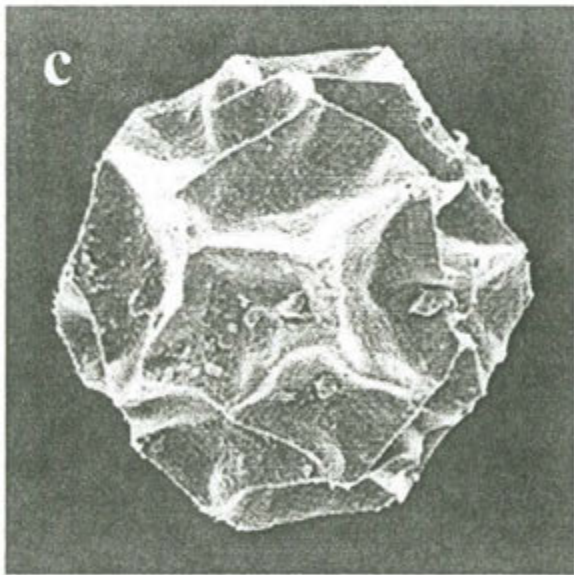
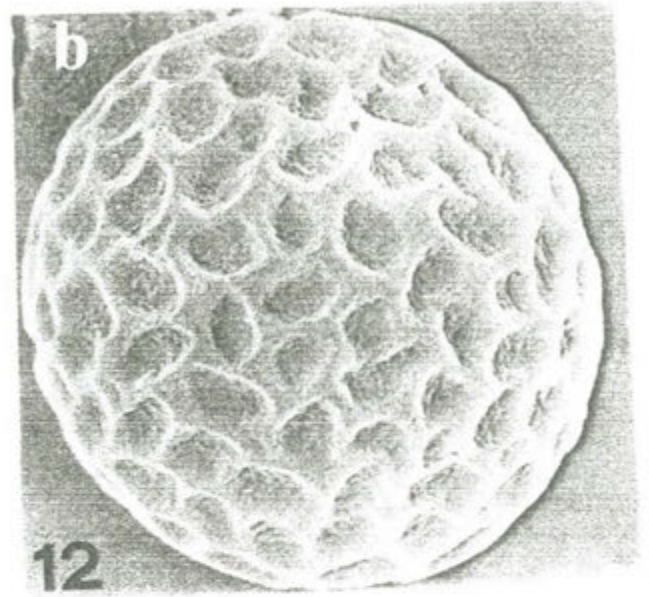
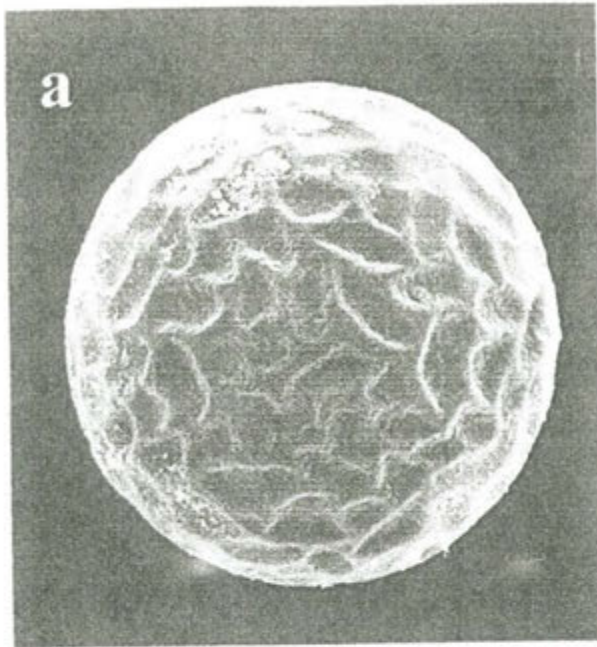


Figure 1a-c. Cysts of *Branchinecta sandiegonensis* (a), *B. lindahli* (b) and *Streptocephalus woottoni* (c).

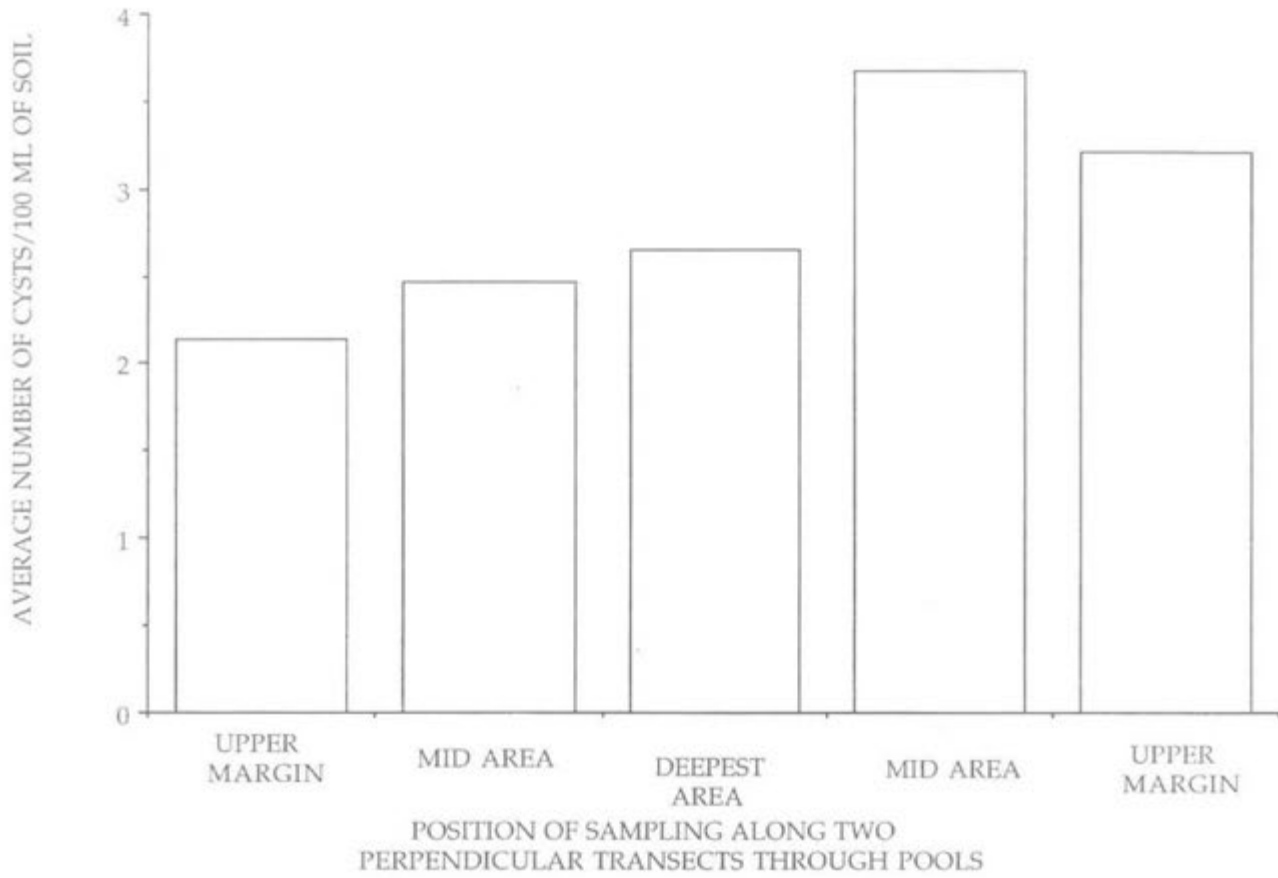


Figure 2 - Average numbers of cysts on a per volume basis found in different positions along 2 perpendicular transects in eight Otay Mesa vernal pools.

Table 1 - Weights of soil samples collected and numbers of fairy shrimp cysts observed in samples.

Pool	weight of < 2 mm soil (g)	Numbers of cysts observed in 20 64-power views	Number of cysts observed in lower power scans	Cysts/100 ml of soil
Pool 1				
1	24			0
2	22			0
3	22			0
4	25			0
5	52			0
6	39	1 flattened partial cyst		2
7	44			0
8	36			0
9	26			0
10	34			0
				<hr/>
				Total 2
Pool 2				
1	26			0
2	32	2 partial cysts	1 whole cyst	7
3	28			0
4	29			0
5	12			0
6	42		1 whole cyst	2
7	37			0
8	10		1 partial cyst	7
9	25			0
10	32			0
				<hr/>
				Total 16
Pool 3				
1	38	5, 2 partial		23
2	27		3 whole, 2 partial cysts	0
3	53	2 whole cysts		4
4	85	4 partial cysts	1 whole cyst	5
5	79		2 partial cysts	0
6	28	2 whole cysts		5
7	19	1 whole, 1 partial cysts		8
8	31	2 whole cysts		5
9	56	3 whole, 2 partial cysts		6
10	29	5 whole cysts		12
				<hr/>
				Total 68
Pool 4				
1	70			0
2	15			0
3	27	1 whole cyst		5
4	43		1 whole cyst	0
5	39	1 broken cyst	1 whole cyst	4
6	44			0
7	34		2 whole cysts	4
8	35			0
9	54	3 whole cysts, 2 partial cysts		7
10	55		1 partial cyst	1
				<hr/>
				Total 21

Table 1 - (continued)

Pool 5	weight of < 2 mm soil (g)	Numbers of cysts observed in 20 64-power views	Number of cysts observed in lower power scans	Cysts/100 ml of soil
1	20			0
2	25		2 cysts	0
3	16			0
4	35		1 whole cyst, 2 partial cysts	0
5	11			0
6	37			0
7	16			0
8	17			0
9	47	1 whole cyst		2
10	47			0
				Total
				2
Pool 6				
1	64			0
2	67	2 whole cysts, 5 partial cysts		7
3	50	8 whole cysts, 4 partial cysts		17
4	43	7 whole cysts, 3 partial cysts		17
5	47	11 whole cysts, 2 partial cysts		20
6	71	1 partial cyst		1
7	49	1 partial cyst	6 whole cysts	10
8	60	1 partial cyst		1
9	50	4 whole cysts, 3 partial cysts		10
10	58	2 whole cysts, 1 partial cyst		4
				Total
				87
Pool 7				
1	34	1 partial cyst		2
2	56	1 partial cyst		1
3	79			0
4	40	2 Branchinecta cysts,		4
5	48			0
6	93			0
7	64	2 cysts		2
8	51			0
9	45			0
10	54	1 whole cyst, 1 partial cyst		1
				Total
				11
Pool 8				
1	70			0
2	81			0
3	47	2 partial cysts, 1 whole cyst		3
4	39	3 whole cysts, 1 partial cyst		7
5	30	1 whole cyst	1 whole cyst, 2 partial cysts	10
6	59			0
7	44			0
8	67			0
9	39	1 whole cyst		2
10	71			0
				Total
				22

7 July, 1999

Ms. Robin Church
R.E.C.
2650 Jamacha Road
Suite 147/202
El Cajon, CA 92019

Dear Robin,

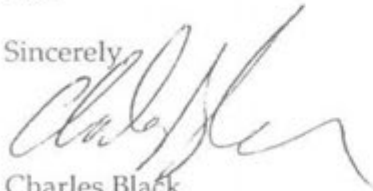
I submitted a dry season fairy shrimp cyst report to you on November 9, 1998. As you may recall, I found whole or partial cysts in all eight of the pools I sampled on the property. The agricultural pond was not sampled during the 1997-98 wet season, nor in the 1998 dry season sampling.

After submitting the dry season sampling report, I wet up the soils left from this sampling, and placed them in a growth chamber at 15^o/20^o C night/day temperatures. On November 17 I observed 2 mature fairy shrimp swimming in water with pool 7 soil, and keyed these 2 females out to *Branchinecta sandiegonensis*.

In early February, 1999, I was informed that fairy shrimp had been observed in the agricultural pond on the site. I visited this pond on February 8, 1999. At that time I estimated the surface area of the water to be approximately 200 m², with a maximum depth of approximately 25 cm. Due to the unusually low rainfall of the 1998-99 season and lack of any other water input, this pond was much smaller and shallower than it had been in the 1997-98 winter. I observed fairy shrimp swimming in the water at estimated concentrations of 2 to 10 per decimeter, (200 to 10000 per square meter). Several adult males were collected at identified as *Branchinecta sandiegonensis*, San Diego Fairy Shrimp.

In conclusion, fairy shrimp were not observed in pools on the site in 1997-98 wet season sampling, although this was at the very end of the season when fairy shrimp populations are minimal if they exist at all. Cysts found in pools in dry season sampling and observations of shrimp in the agricultural pond, which was the only basin that held water for long durations this season, suggest that San Diego Fairy Shrimp have moderate to sizable populations in all the basins on the site.

Sincerely,



Charles Black
Adjunct Professor of Biology
SDSU
(619) 594-7173

Fairy Shrimp Notification and Results, 2016

May 11, 2016

Ms. Stacey Love
U.S. Fish and Wildlife Service
2177 Salk Ave., Ste. 250
Carlsbad, CA 92008

Subject: Results of Wet Season Fairy Shrimp Surveys on the Sunroad Project Site

Dear Ms. Love:

This letter is in regards to the wet season sampling effort for the Sunroad Project in Otay Mesa. We submitted a request to conduct a survey on February 1, 2016. While it was late in the season, the intent was to obtain possible additional fairy shrimp information for the site. Site visits were conducted following rain events to survey for fairy shrimp. Unfortunately, there was no ponding and therefore I was unable to conduct a survey. Given the lack of ponding, no wet sampling was possible and the survey was aborted.

If you have any questions, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Greg Mason", with several horizontal strokes extending to the right.

Greg Mason
Principal/Senior Biologist

Attachment: USFWS Survey Notification

February 1, 2016

Ms. Stacey Love
U.S. Fish and Wildlife Service
2177 Salk Ave., Ste. 250
Carlsbad, CA 92008

Subject: Request to Conduct a Wet Season Fairy Shrimp Survey on the Sunroad Project Site

Dear Ms. Love:

I hereby request authorization from USFWS to conduct wet season fairy shrimp surveys for the San Diego fairy shrimp (*Branchinecta sandiegonensis*) and the Riverside fairy shrimp (*Streptocephalus woottoni*) under my Threatened/Endangered Permit No. TE-58862A on the Sunroad project site located in the County of San Diego. The proposed project site is located on Otay Mesa Road, just east of State Route 125 within the U.S. Geological Survey (USGS) Otay Mesa quadrangle (see attached map).

We have just been asked to conduct a wet season survey of this site. As the rainy season has begun we are requesting to be allowed to initiate surveys immediately in order to maximize the potential for a complete season survey.

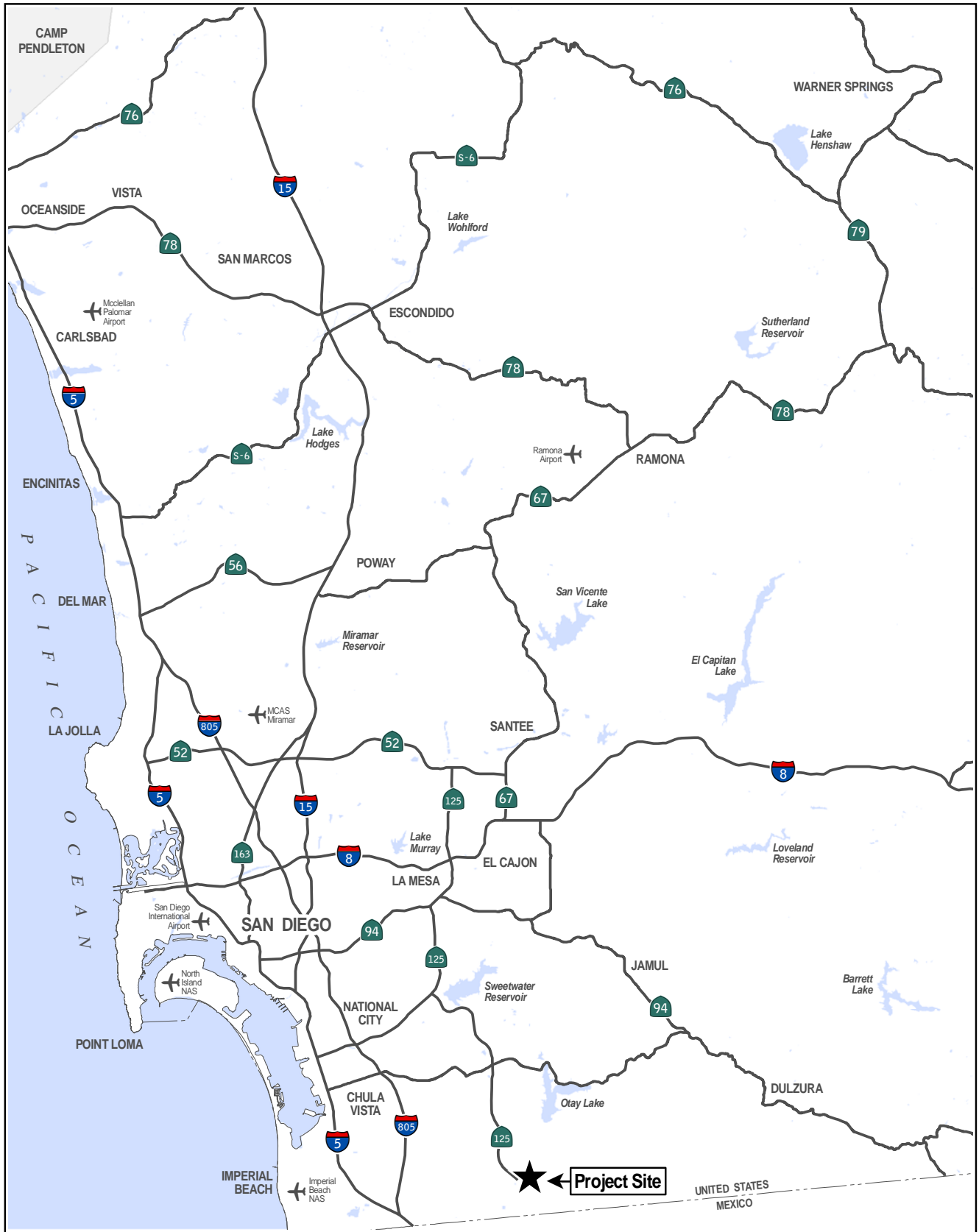
If you have any questions, please contact me.

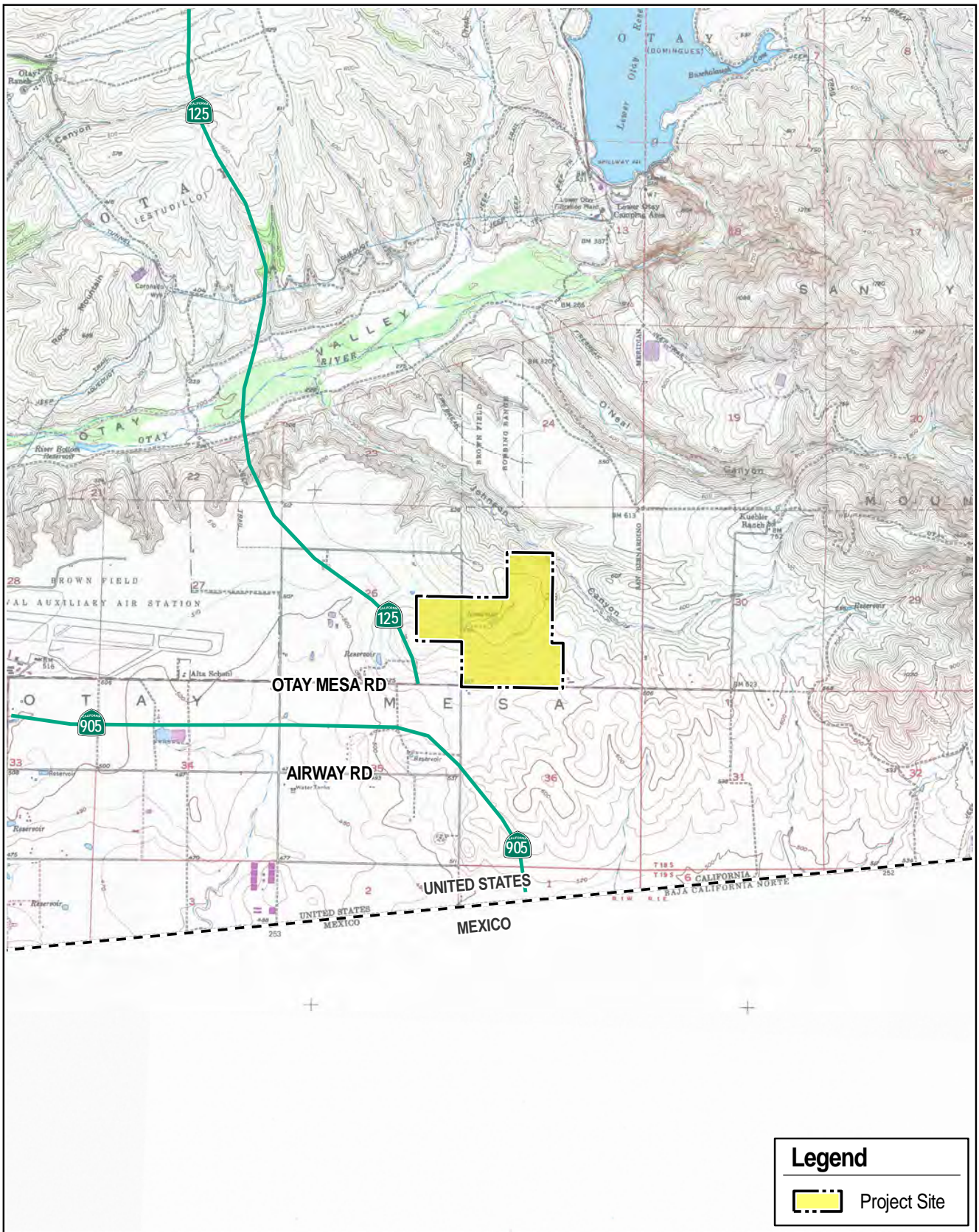
Sincerely,

A handwritten signature in black ink, appearing to read "Greg Mason", written over a light blue horizontal line.

Greg Mason
Principal/Senior Biologist

Sent via email 2/1/16
Attachments: Site Maps



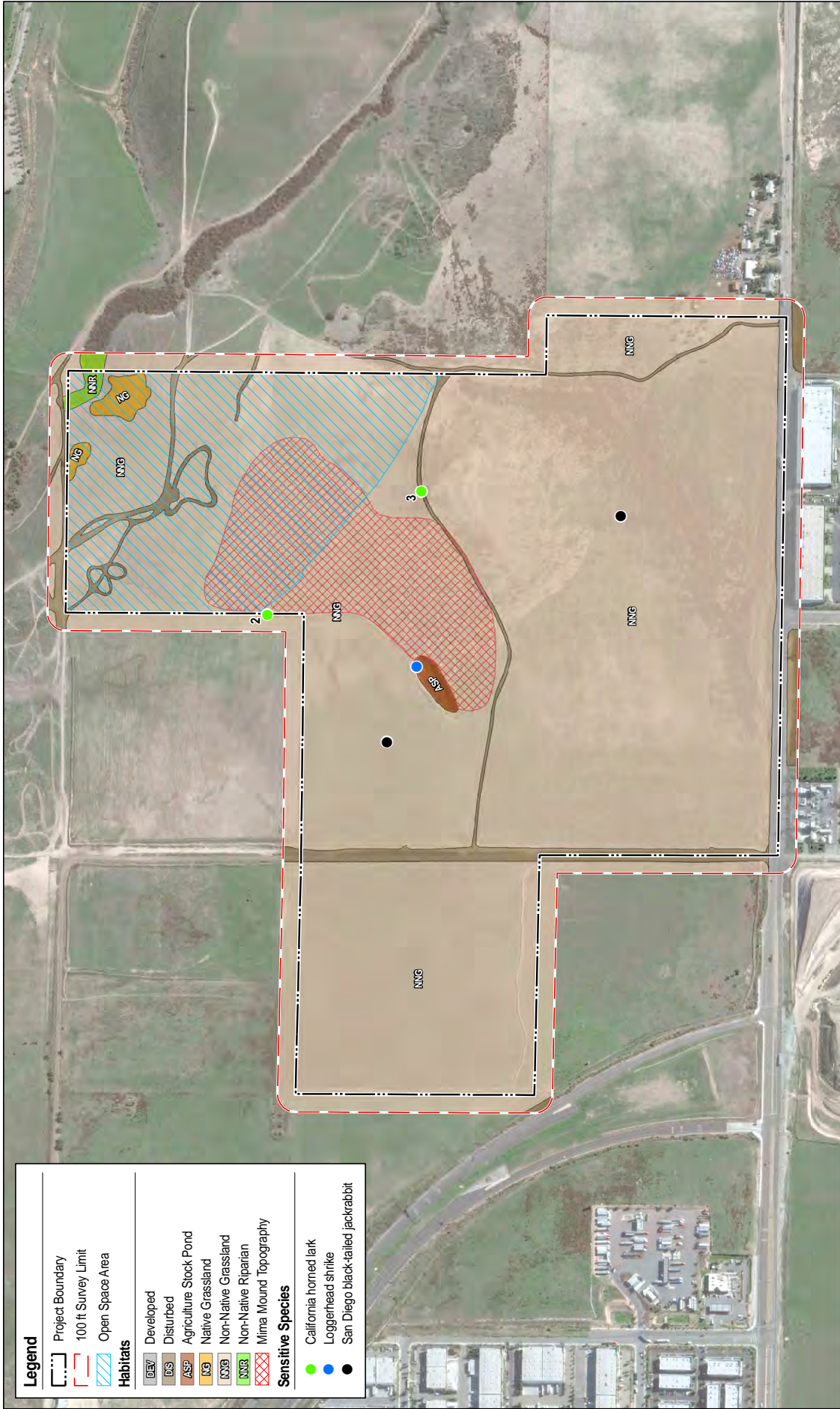


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Legend

- Project Boundary
- 100 ft Survey Limit
- Open Space Area

Habitats

- Developed (DEV)
- Disturbed (DIS)
- Agriculture Stock Pond (ASP)
- Native Grassland (NG)
- Non-Native Grassland (NNG)
- Non-Native Riparian (NNR)
- Mima Mound Topography (MMT)

Sensitive Species

- California horned lark
- Loggerhead shrike
- San Diego black-tailed jackrabbit

APPENDIX F
Burrowing Owl Survey Report, 2016

BURROWING OWL PROTOCOL SURVEY REPORT
for the
Sunroad Centrum 250 Project, TM 5538

Prepared by:



Consultants, Inc.

2442 Second Avenue
San Diego, California 92101
(619) 232-9200

Prepared for:

California Department of Fish and Wildlife
South Coast Regional Office
3883 Ruffin Road
San Diego, CA 92123

and

Andrea Rosati
Sunroad Enterprises
4445 Eastgate Mall, Suite 400
San Diego, CA 92121

Catherine MacGregor

Catherine MacGregor
Senior Biologist

July 2016

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4. Biological Resources
5. Project Impacts

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- A. Plants Observed on the Sunroad Centrum 250 Project Site
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1.0 INTRODUCTION

REC Consultants, Inc. conducted focused protocol surveys for burrowing owl (*Athene cunicularia*) on the Sunroad Centrum 250 project site (“Project”), located in unincorporated Otay Mesa, County of San Diego, California. The purpose of these surveys was to determine if the site is currently or has been recently been used by burrowing owls. Surveys were conducted according to the standards and protocols set forth by the California Department of Fish and Wildlife in their March 2012 “Staff Report on Burrowing Owl Mitigation” (CDFG 2012), and this report provides the results of the surveys.

1.1 Project Location

The 253.14-acre Sunroad Centrum 250 Project site is located on eight parcels (APNs 646-080-26, -27, -28, -29, -32, -33m 646-240-30, and 646-310-17) in eastern Otay Mesa, on the east and west sides of Harvest Road (**Figures 1 and 2**). Associated offsite improvements would impact 2.69 acres on portions of an additional seven parcels (646-070-07, -23, -24, 646-080-11, and -21). Harvest Road (unpaved) bisects the site north-south. The planned Lone Star Road alignment crosses the northeastern section of the site. An aerial photograph of the site and vicinity is provided in **Figure 3**.

1.2 Site Characteristics

1.2.1 Geography, Geology, and Topography

The Project is located on eastern Otay Mesa in southern San Diego County. The Otay Mesa area consists of a relatively level mesa top that meets the foothills of the San Ysidro Mountains at the eastern end of the mesa, and drops down abruptly to the coastal terrace on the western end. The northern limit is formed by the Otay River valley, and tributary canyons cut through the mesa down to the river valley below. The southern limit of the area within the United States is the US-Mexican border. Historically, the flat land in eastern Otay Mesa was used for agriculture. In the 1960s, land use began to shift from agriculture, with its relatively high water and labor costs, to industrial and commercial development. In the 1980s, the Mexican maquiladora program further increased the demand for industrial distribution and warehousing just north of the border.

The parcel to the west of Harvest Road, and the southern section of the area to the east of Harvest Road, have been altered by historical agricultural activity, but are not currently farmed.

Four soil series are mapped onsite (USDA 1973, 2015): Diablo clay, Stockpen gravelly clay loam, Linne clay loam, and Salinas clay. The Diablo series consists of well-drained, moderately deep to deep clays derived from soft, calcareous sandstone and shale; it is the most common soil series onsite and is present in all areas of the site except for small areas in the center, extreme south and extreme north of the site. The Stockpen series

consists of moderately well drained, moderately deep gravelly clay loams; it is the second most common soil series onsite and occurs in the central region of the site corresponding to mima mound topography. The Linne series consists of well-drained, moderately deep clay loams derived from soft calcareous sandstone and shale. It is only present in the northeastern portion of the site. The Salinas series consists of well drained and moderately well drained clay loams that formed in sediments washed from Diablo, Linne, Las Flores, Huerhuero, and Olivenhain soils. It is only present onsite in a small pocket running southwest to northeast at the southern central edge of the site.

The land on the Project site has the greatest elevation in the central region and slopes downward in all directions from there. The northwestern area slopes steeply down into Johnson Canyon, along the northern property boundary. Site elevation ranges from approximately 445 feet above mean sea level (AMSL) in Johnson Canyon at the northeastern corner of the site, to approximately 600 feet AMSL in the central portion of the property.

1.2.2 Vegetation

Eight vegetation categories or land cover types, classified according to Oberbauer et al. (2008), were observed within the Project area and are described below. Vegetation categories on the Project site and within a 150-m buffer around the site are shown in **Figure 4**.

1.2.2.1 Wetland Vegetation Categories

Disturbed Wetland (County Habitat Code 11200), 0.11 Acre

Disturbed wetlands are areas permanently or periodically inundated by water, which have been significantly modified by human activity. These wetlands are often unvegetated, but may contain scattered native or non-native vegetation. This habitat type includes portions of wetlands with obvious artificial structures and lined channels, Arizona crossings, detention basins, culverts, and ditches. (Oberbauer et al. 2008)

One of the areas of disturbed wetland onsite is a shallow swale along the western edge of the site, in which water intermittently ponds after rain. The swale does not appear to drain to another location, and may have formed when an agriculture-related berm was created along the western side. During the 2015 surveys, the only hydrophytic vegetation observed was a very small patch of pale spike-rush (*Eleocharis macrostachya*). The 1998 and 1991 surveys reported spike-rush (*Eleocharis* sp.). Although this swale was classified as a vernal pool in the 1993 EOMSP BTR, no true vernal pool indicator plants have been observed in the swale, and it was reclassified as disturbed wetland in 1998. The size of “wetland” within the swale varies depending on rainfall, but based on review of historical aerial photographs and 1998 habitat mapping it appears to occupy approximately 0.09 acre.

The second area of disturbed wetland is within an abandoned excavated agriculture-

related pond in the central area of the site. The upper banks of the former pond consist of minimally vegetated soil and upland vegetation. Much of the bottom also supports only upland vegetation, such as filarees (*Erodium* spp.), red brome (*Bromus madritensis* subsp. *rubens*), telegraph weed (*Heterotheca grandiflora*) and oats (*Avena* spp.) The basin has relatively low cover that includes many of the non-native grasses that occur in the surrounding non-native grassland described below. Along the lower banks are dead and dying hydrophytic shrubs and trees (a red willow [*Salix laevigata*], a black willow [*S. gooddingii*], small amounts of mule-fat [*Baccharis salicifolia* subsp. *salicifolia*]) and tamarisk (*Tamarix ramosissima*) among upland plants. Within the lowest part of the basin bottom is a small area where water ponds after rain events, and patches of herbaceous hydrophytes such as spike-rush grow. This small disturbed wetland covers approximately 0.02 acre.

Non-Native Riparian (County Habitat Code 65000), 0.39 Acre

Non-native riparian habitat consists of densely vegetated riparian thickets dominated by non-native, invasive species. This habitat is common along major river channels, often where disturbance has occurred. This designation is used only where non-native, invasive species account for greater than 50% of the total vegetative cover within a mapping unit. As described in “Draft Vegetation Communities of San Diego County” (Oberbauer et al. 2008) characteristic plants include non-native species such as giant reed (*Arundo donax*), pampas grass (*Cortaderia* spp.), Bermuda grass (*Cynodon dactylon*), eucalyptus (*Eucalyptus* spp.), non-native palms (*Phoenix* spp. and *Washingtonia* spp.) and tamarisk (*Tamarix* spp.) as well as native species such as arrow weed (*Pluchea sericea*), western cottonwood (*Populus fremontii* subsp. *fremontii*) and willows (*Salix* spp.).

Onsite non-native riparian habitat is a monotypic stand of tamarisk with a sparse understory composed almost entirely of non-natives such as dwarf nettle (*Urtica urens*) and scarlet pimpernel (*Anagallis arvensis*). Other invasives along the disturbed edges included stinkwort (*Dittrichia graveolens*) and milk thistle (*Silybum marianum*). Scattered natives species saltgrass (*Distichlis spicata*), salt heliotrope (*Heliotropium curassavicum* var. *oculatum*), and Coulter’s fleabane (*Laennecia coulteri*) were also observed along the edges of the riparian vegetation. In 1998 this area was mapped as 0.35 acre of disturbed southern willow scrub, but no willows were observed during the February 2015 survey. The non-native riparian habitat covers approximately 0.39 acre.

San Diego Mesa Claypan Vernal Pool (County Habitat Code 44322), 0.21 Acre

Seven vernal pools have been documented onsite. Vernal pools are seasonally flooded depressions that support a distinctive living community adapted to extreme variability in hydrologic conditions (seasonally very dry and very wet conditions). In San Diego, vernal pools often retain pooled water for about two weeks after significant rain events. Vernal pools are differentiated from other temporary wetlands by the following criteria: (1) the basin is at least partially vegetated during the normal growing season or is unvegetated due to the heavy clay (or hardpan) soils that do not support plant growth; and (2) the basin contains at least one vernal pool indicator species (e.g. *Psilocarphus* spp.,

Downingia cuspidata, *Eryngium aristulatum* var. *parishii*, or crustaceans such as *Branchinecta* spp., *Streptocephalus* spp., and others). Two types of vernal pools are found in San Diego County: San Diego mesa hardpan vernal pools and San Diego mesa claypan vernal pools. The pools on Otay Mesa are of the claypan type, occurring on fine-textured soils where water ponds due to a clay impermeable layer rather than a hardpan layer. These claypan pools are almost entirely restricted to marine terraces between San Diego and Ensenada, Mexico, and have been much reduced by agriculture and development. (Oberbauer et al. 2008)

The claypan vernal pools are typically associated with a small-scale topography of low hummocks, called mima mounds, clustered on the mesa top. The vernal pools form in the depressions between the mima mounds. In drier years, the pools are typically isolated with very small watersheds of surrounding mima mound slopes. During wet years, pools between mima mounds may join if water levels are high enough. The area of mima mound topography onsite is clearly visible in aerial photographs, and occurs over the Stockpen soil unit. This soil type has a surface layer of gravelly clay loam to 3 inches over a subsoil of calcareous gravelly clay and clay from 3 to 31 inches, and is often associated with mima mounds.

Seven vernal pools were mapped onsite by REC in 1998. The group of pools onsite is known as the J22 complex and has been documented since at least 1978, when it was mapped in the “San Diego Vernal Pool Study, 1978” prepared for CDFW (Beauchamp 1979). Although only three J22 pools were documented in the 1979 publication and in Bauder’s 1986 “San Diego Vernal Pools” report for CDFW (Bauder 1986), the 1991 “Biological Technical Report for the East Otay Mesa Specific Plan Area” (EOMSP BTR) indicated seven pools were present (Ogden 1993). However, one of the seven vernal pools in the 1993 EOMSP BTR was a swale parallel to a man-made berm, which has since been reclassified as a disturbed wetland (see above).

Vernal pools plants documented in the J22 pools in the 1991 EOMSP BTR include dwarf woolly-marbles (*Psilocarphus brevissimus*), pale spike-rush (*Eleocharis macrostachya*), annual hairgrass (*Deschampsia danthonioides*), water pygmyweed (*Crassula aquatica*), American pillwort (*Pilularia americana*), flowering quill wort (*Triglochin [Lilaea] scilloides*), waterwort (*Elatine* sp.), San Diego button-celery (*Eryngium aristulatum* var. *parishii*), and prostrate navarretia (*Navarretia fossalis*). One pool (presumably the manmade swale) contained only pale spike-sedge. The 1979 report, which mentioned only special-status vernal pool plants, reported San Diego button-celery and prostrate navarretia.

Due to the severe drought beginning in 2011, neither evidence of vernal pool ponding nor vernal pool indicator species were observed in 2015. The vernal pool locations provided in REC’s 2000 “Sunroad Centrum Biological Technical Report” were refined through use of Google Earth aerial photographs between 1994 and present.

1.2.2.2 Upland Vegetation Categories

Native Grassland (Habitat Code 42100) 1.65 Acres

Native grassland, and more specifically valley needlegrass grassland, is described as “A midheight (to 2 ft) grassland dominated by perennial, tussock-forming *Stipa* (*Nasella*) *pulchra*. Native and introduced annuals occur between the perennials, often actually exceeding the bunchgrasses in cover. In San Diego County, native perennial herbs such as *Sanicula*, *Sidalcea*, *Sisyrinchium*, *Eschscholzia* or *Lasthenia* are present. The percentage cover of native species at any one time may be quite low, but is considered native grassland if 20% aerial cover of native species is present.” Native grassland usually occurs on fine-texture (often clay) soils, moist or even waterlogged during winter, but very dry in summer. (Oberbauer et al. 2006)

Although patches with greater concentrations of needlegrass occur within the non-native grassland in the mima mound area, more substantial patches occur on the southern north-facing slope of Johnson Canyon. These larger patches, apparently limited to the Diablo clay soil with 15 to 30 percent slope, are overwhelmingly dominated by native needlegrass (*Stipa* sp. [*cernua* or *pulchra*]). Individual bunchgrasses are well spaced, to the degree that the pattern of the large individual bunches is visible in aerial photographic imagery. Native herbs such as red-skin onion (*Allium haematochiton*) and morning-glory (*Calystegia macrostegia*) were observed in the rich, cracking clay soil between the bunchgrasses. The native grassland patches had visibly lower cover of invasive species than any other habitat onsite. The areas of native grassland did not have distinct boundaries, but were mapped over approximately 1.65 acres based on site observations and aerial photography.

Non-Native Grassland (County Habitat Code 42200), 240.55 Acres

According to the County of San Diego, non-native grassland is described as “A dense to sparse cover of annual grasses with flowering culms 0.2-0.5 (1.0) m high. Often associated with numerous species of showy-flowered, native annual forbs (“wildflowers”), especially in years of favorable rainfall. In San Diego County the presence of *Avena*, *Bromus*, *Erodium*, and *Brassica* are common indicators. In some areas, depending on past disturbance and annual rainfall, annual forbs may be the dominant species; however, it is presumed that grasses will soon dominate. Germination occurs with the onset of the late fall rains; growth, flowering, and seed-set occur from winter through spring. With a few exceptions, the plants are dead through the summer-fall dry, persisting as seeds. Remnant native species are variable. This can include grazed and even dry-farmed (i.e., disked) areas where irrigation is not present.” (Oberbauer et al. 2008) Additional habitat identification information provided in the County’s “Report Format and Content Requirements” (County of San Diego 2010a) specifies that “Non-native grasses typically comprise at least 30 percent of the vegetation [...]. Usually, the annual grasses are less than 1 m (3 ft) in height, and form a continuous or open cover. Emergent shrubs and trees may be present, but do not comprise more than 15 percent of the total vegetative cover. Characteristic non-native grassland species include foxtail

chess (*Bromus madritensis* ssp. *rubens*), ripgut grass (*Bromus diandrus*), wild oats (*Avena* spp.), fescues (*Vulpia* spp.), red-stem filaree (*Erodium cicutarium*), mustards (*Brassica* spp.), lupines (*Lupinus* spp.) and goldfields (*Lasthenia* spp.), among others. (Oberbauer et al. 2006)

The onsite non-native grassland community is characterized by annual non-native grasses such as oats, brome grasses (*Bromus* spp.), and glaucous barley (*Hordeum murinum* subsp. *glaucum*); and forbs such as black mustard (*Brassica nigra*), short-pod mustard (*Hirschfeldia incana*), filarees, and Russian-thistle (*Salsola* sp.). Plant density and dominance vary throughout the site. Some areas are strongly dominated by Russian-thistle, other areas have been characterized by thick, tall stands of mustards, and within the mima mound area the vegetation is characterized by shorter and more open grasses, both native and non-native, with spring-blooming annuals and deciduous perennials. The Lone Star Road alignment, formerly a dirt road, supports greater numbers of native herbs and wildflowers such as small-flower soap plant (*Chlorogalum parviflorum*), fascicled tarweed (*Deinandra fasciculata*), rayless gumplant (*Grindelia camporum*), and common goldfields (*Lasthenia gracilis*). Non-native grassland occupies approximately 240.55 acre onsite.

1.2.2.3 Other Land Cover Categories

Developed Land (County Habitat Code 12000), 2.97 Acres

Urban and/or developed land consists of “Areas that have been constructed upon or otherwise physically altered to an extent that native vegetation is no longer supported. Developed land is characterized by permanent or semi-permanent structures, pavement or hardscape, and landscaped areas that require irrigation. Areas where no natural lands is evident due to a large amount of debris or other materials being placed upon it may also be considered urban/developed (e.g. car recycling plan, quarry).” (Oberbauer et al. 2008) Additional habitat identification information provided in the County’s “Report Format and Content Requirements” (County of San Diego 2010a) includes “Land that has been constructed upon or otherwise covered with a permanent unnatural surface shall be considered Developed...”

The portion of the parcel overlapping Otay Mesa Road is developed land lacking native vegetation. Developed areas cover 2.97 acres along the southern edge of the site.

Disturbed Land (County Habitat Code 11300), 7.26 Acres

The County of San Diego describes disturbed land as “Areas that have been physically disturbed (by previous legal human activity) and are no longer recognizable as a native or naturalized vegetation association, but continues to retain a soil substrate. Typically vegetation, if present, is nearly exclusively composed of non-native plant species such as ornamentals or ruderal exotic species that take advantage of disturbance, or shows signs of past or present animal usage that removes any capability of providing viable natural habitat for uses other than dispersal. Examples of disturbed land include areas that have

been graded, repeatedly cleared for fuel management purposes and/or experienced repeated use that prevents natural revegetation (i.e. dirt parking lots, trails that have been present for several decades), recently graded firebreaks, graded construction pads, construction staging areas, off-road vehicle trails, and old homesites.” (Oberbauer et al. 2008) Additional habitat identification information provided in the County’s “Report Format and Content Requirements” (County of San Diego 2010a) specifies that “Disturbed land includes areas in which the vegetative cover comprises less than 10 percent of the surface area (disregarding natural rock outcrops) and where there is evidence of soil surface disturbance and compaction from previously legal human activity; or where the vegetative cover is greater than 10 percent, there is soil surface disturbance and compaction, and the presence of building foundations and debris...resulting from legal activities (as opposed to illegal dumping). Examples include recently graded firebreaks, graded construction pads, construction staging areas, off-road vehicle trails, and old homesites.” (Oberbauer et al. 2008)

Harvest Road and the larger unpaved roads and trails throughout the site are considered disturbed land. These roads and trails have small amounts of herbaceous vegetation at the edges, but are almost entirely bare highly compacted soil. Most trails in the northern and central areas are likely associated with historical agricultural activity. Disturbed land in the more sloping northern section of the site includes off-road recreational vehicle trails used by trespassers, and a trail to cross the creek in the canyon bottom.

1.3 Surrounding Land Use

Johnson Canyon and undeveloped land border the site to the north, residential and undeveloped parcels are located to the east, undeveloped land and State Route (SR) 125 abut the site to the west, and Otay Mesa Road forms the southern boundary. South of Otay Mesa Road, development is dense and predominantly light-industrial and commercial.

The Project site falls within the South County segment of the Multiple Species Conservation Program (MSCP). The site lies within the northwestern area of the EOMSP, which provides comprehensive development guidelines for the area. Most of the southern and western section of the site, south of the Lone Star Road alignment, is classified in the East Otay Mesa Specific Plan Amendment (2015) as a Minor Amendment Area, the entire property to the north of Lone Star Road is classified as a Major Amendment Area with G-Designator, and a small area in the center of the site is classified as a Minor Amendment Area Subject to Special Consideration and with G-Designator.

1.4 Project Description

Project Background

The Project site was approved for development in 2012 to subdivide the site into 55 lots. Tentative Map 5538 (TM 5538) consisted of 52 technology business park lots ranging in size from 1.8 acres to 5.3 acres, one lot for a sewer pump station, one storm water

detention lot, and a 51.3-acre dedicated open space lot. A 0.41-acre lot within the subdivision is identified as an open space easement established for the protection of biological resources (vernal pools).

Project Description

The Project proposes a Specific Plan Amendment (SPA) to the EOMSP to establish a new Mixed-Use Village Core area, which would allow for the establishment of a mix of employment, retail, and residential uses. Approval of the project would allow for the entitlement of a maximum of 3,158 dwelling units, 84,942 square feet of general commercial uses, and 1.4 million square feet of employment uses, and approximately 51.3 acres of permanent biological open space.

The proposed Project would include construction of public streets within the Project boundary, and would construct off-site half-width improvements to Vann Center Boulevard from Otay Mesa Road to just south of Lone Star Road, and to Zinser Road from west of Sunroad Boulevard to Alejandro Drive. The Project would require the extension of utility lines including sewer, water, electric, and gas lines. Sewer lines would be provided within all Project roadways, as well as the portions of off-site roadways within the Project footprint. The Project would not require off-site improvements for stormwater conveyance. The Project includes a trail segment that would occur in the north-central portion of the Project site, providing pedestrian connectivity along the off-site portion of Zinser Road between the Project's proposed mixed-use neighborhood in the central portion of the site and open space element in the northeastern portion of the site.

Project grading and construction schedules and timing have not been set.

2.0 METHODOLOGY

REC Senior Biologist Catherine MacGregor and Field Biologist Lee BenVau followed the standard protocol developed by the Burrowing Owl Consortium and updated by CDFW in their March 2012 Staff Report on Burrowing Owls Mitigation, Appendix D "Breeding and Non-breeding Season Surveys and Reports."

The habitat assessment and breeding season methodology consists of 1) background research for any historical burrowing owl records, 2) an initial habitat assessment site visit to evaluate the presence and/or quality of burrowing owl potential habitat on the site and within a 150-m (500-ft) buffer zone around it, and 3) a minimum of four survey visits at least three weeks apart. The four survey visits should be conducted between February 15 and July 15. One of the four should be between February 15 and April 15, and three survey visits should be during the peak breeding season of April 15 and July 15, with at least one of those three after June 15. The survey technique consists of walking transects through suitable habitat spaced adequately to provide complete coverage for the habitat (typically 7 to 20 m apart), with stops at the beginning of each transect and approximately every 100 m to scan the entire visible area with binoculars. While walking the transects,

the biologist records all potential burrows and sign such as pellets, prey remains, and whitewash. The surveys should be conducted under suitable weather conditions, either in the morning between morning civil twilight and 10:00 AM, or in the evening between two hours prior to sunset and evening civil twilight.

The surveys were also conducted according to County of San Diego guidelines, which include the additional requirement for evening surveys. The County guidelines also refer to the 1995 CDFG Staff Report on Burrowing Owl Mitigation, which recommended that surveys be conducted during both the wintering and breeding seasons. (County of San Diego 2010)

2.1 Habitat Assessment and Background Research

A preliminary habitat assessment and one-time winter season survey were conducted on February 24, 2015 by REC Senior Biologist Catherine MacGregor and Field Biologist Lee BenVau. A formal pre-breeding season habitat assessment was conducted on February 4, 2016. The assessment provided 100 percent visual coverage of all potential BUOW areas on the Project site. Most adjacent private lands were surveyed with binoculars from the site. One adjacent property was visited for a general survey, during which burrowing owl habitat potential was evaluated and any burrows would have been detected. Satellite imagery from Google Earth was used to help locate all burrows.

Background research consisted of searching the California Natural Diversity Data base (CNDDDB) and SanBIOS for burrowing owl records in the Otay Mesa region. Numerous records of burrowing owls in the Project area can be found in the CNDDDB, including four within a mile to the south and southeast, two just a short distance to the southwest, and another two within a mile radius to the west. The four records to the south and southeast are from 2006 and 2009, but appear to be located in areas that are now developed. The locations of the two nearby records to the southwest are from 2006, within the footprint of the SR 125 extension. The two records to the west are also from 2006 and 2009; one appears to be on Brown Field airport land, and the other is close to SR 125. No newer records were found in CNDDDB, but the Lone Star mitigation conservation area to the northwest of the site has reportedly had success with introduction of breeding burrowing owls in manmade burrows.

2.2 Protocol Survey Transects

Based on the habitat assessment and background research, four burrowing owl breeding season surveys were performed according to the 2012 updated protocol to provide complete coverage of potential BUOW habitat on the site. See Table 1 below for a listing of all survey visits associated with the burrowing owl survey.

Table 1. Burrowing Owl Surveys Conducted on the Sunroad Centrum 250 Site

Date	Time	Temp (°F)	Sky	Wind (MPH)	Survey Type	Personnel
02/24/2015	0955 to 1730	60 to 62	Clear	6-9 to 6-11	BUOW Winter Season Check	C. MacGregor, L. BenVau
02/04/2016	0945 to 1415	61 to 66	Sunny, hazy	0-1 to 0-2	BUOW Habitat Assessment	C. MacGregor
04/01/2016	0705 to 1000	53 to 63	Partly cloudy to sunny, hazy	1-2 to 0-2	BUOW 1a	C. MacGregor, L. BenVau
04/05/2016	0700 to 1010	57 to 64	Hazy with light clouds	0 to 1-2	BUOW 1b	C. MacGregor, L. BenVau
04/28/2016	1735 to 1955	66 to 57	Sunny with clouds to partly cloudy	5-8 to 2-5	BUOW 2a	C. MacGregor, L. BenVau
04/29/2016	1730 to 1955	64 to 57	Light clouds to partly cloudy	3.5-6 to 2-5	BUOW 2b	C. MacGregor, L. BenVau
05/03/2016	1800 to 1910	71 to 64	Clear except for light clouds	5-10 to 1-3	BUOW 2c	C. MacGregor
05/26/2016	0600 to 1005	57 to 67	Overcast	0-3 to 2-6	BUOW 3a	C. MacGregor, L. BenVau
05/27/2016	0600 to 0950	60.5 to 64	Overcast	3-5 to 2.5-7	BUOW 3b	C. MacGregor, L. BenVau
06/21/2016	0615 to 1015	69 to 77	Partly cloudy to overcast	0 to 3-7	BUOW 4a	C. MacGregor, L. BenVau
06/22/2016	0625 to 1035	68 to 84	Sunny with light clouds	0-2 to 0-3	BUOW 4b	C. MacGregor, L. BenVau

It should be noted that REC and REC’s subconsultants have surveyed the site over 30 other times since REC began work on the project in 1998, and no sign of burrowing owl was detected onsite prior to 2015-2016.

All of the 2016 breeding season surveys were conducted within the California burrowing owl breeding season of February 1 through August 31 (Appendix B in CDFG 2012). The first survey was conducted during the early period of February 15 and April 15, and the second, third and fourth surveys were conducted during the peak breeding season of April 15 through July 15, with one survey after June 15, as recommended in the 2012 protocol. Each of the four surveys required two days of field work to cover all potential BUOW habitat. The two days for each of the four surveys are noted with an “a” and a “b” after the number of the survey in Table 1, above. The second survey was conducted during evenings and required a third day, marked with a “c”.

Acreage excluded from survey transects consisted of areas supporting continuous cover of tall Russian-thistle. However, all excluded areas were reviewed on Google Earth satellite images from earlier years, as the height and density vary from year to year. For instance, many areas that were mapped as excludable based on 2015 conditions of dense and tall Russian-thistle had to be added to the 2016 survey area because the Russian-thistle did not grow as much this year.

3.0 RESULTS

3.1 Burrows and Sign

REC biologists found 39 inactive BUOW burrows onsite in 2016. Of these, 24 are within the proposed Biological Open Space (BOS) and 15 within the proposed project footprint. The locations of all burrows are shown in Figure 4. Photographs of the burrows and site are provided in **Appendix C**. Satellite imagery in Google Earth was used to help locate all burrows, including those that were highly degraded by the time of the survey.

Burrows within the project footprint were located in previously farmed land in the field west of Harvest Road (photo 1), and in the southern portion of the eastern field (photos 2 and 3). In the eastern field, most were adjacent to Harvest Road and just north of Otay Mesa Road. Based on review of Google Earth satellite imagery, the burrows appeared between 2012 and 2014. Most burrows in the western field and in the southern portion of the eastern field appeared in the satellite images in 2012, with some appearing in the 2014 image (the 2013 image was not useful because it was obscured by cloud cover). The burrows within the northern BOS were located on the hillside above Johnson Canyon (photos 4 and 5). The burrows on the northern hillside appeared on the images during the same time period, but were most likely created slightly later because they were less eroded and collapsed than the southern burrows.

Burrows in the southern and western fields had no white-wash, pellets, feathers, or small mammal bones. They were recognizable only by the remains of the distinctive burrow aprons and holes. All of these burrows were weathered, holes were filled with eroded soil, and most aprons were colonized by plants such as Russian-thistle (see **Appendix C** photos 7 and 8). Of the burrows on the northern hillside, some were also highly degraded (photo 9) but some were in better condition, with unfilled holes and more substantial apron structure (photo 10). At 14 of the burrows, the holes were filled with weather-eroded soil. Four aprons had at least one small mammal bone. Three had a very small amount of white-wash, only one of which also had bones. The burrow with both a spot of whitewash and bones also had an intact hole and remains of pellets (photos 11 and 12). However, that burrow was colonized by western honey bees (*Apis mellifera*) and the entrance was partially blocked by a western black widow (*Latrodectus hesperus*) web, and it did not appear to have been recently used by owls. All other unfilled burrow openings were also covered by spider webs and/or light debris, and showed no evidence of recent owl use.

The northern hillside burrows were located within an area of grassland characterized by shorter vegetation height and fewer invasive plants than most of the non-native grassland on the mesa. The grassland here was more characteristic of typical non-native grassland with relatively low cover of Russian-thistle. Three of the hillside burrows were located in native grassland strongly dominated by needlegrass, with much lower invasive species cover than other grassland onsite. It appears that the potential habitat on the northern hillside, where most burrows were located, is the best burrowing owl habitat onsite.

Ground squirrels and their burrows were most common in the western field and its surrounding berms, the southeastern corner of the site, and the berm on the western side of the biological open space area. No ground squirrel burrows were observed in the central mima-mound area (which is very cobbly). Very few were observed in the main southern grassland or northern hillside. Soil berms occur along the edges of, and within the site, but none of the detected burrows was located in a berm. Potential surrogate burrows such as a culvert, rock piles, and debris piles showed no sign of burrowing owl use.

3.2 Potential Perches

Perches onsite include 6-ft posts, shrubs, large rocks, dead trees, wooden stakes, and an entry sign/trellis. No burrowing owl sign was found under or around any of these potential perches. One owl pellet and few shed feathers were found under a post, but they were identified as barn owl (*Tyto alba*) sign based on the size of the pellet and the coloration of the feathers.

3.3 Potential Prey

Botta's pocket gopher (*Thomomys bottae*) activity and small rodent (mouse) holes were observed throughout the fields. Pocket gopher activity was common in the cobbly mima-mound area, but little evidence of other fossorial mammal activity was observed in that area. Several potential prey small bird species and many invertebrate prey species were observed throughout the site. Few suitable reptile or amphibian prey were observed.

3.4 Summary of Results

In summary, REC's 2016 protocol surveys documented 39 inactive burrowing owl burrows, most of which appeared to have been created between 2012 and 2014. No burrows showed signs of recent activity (i.e. 2015 or 2016). Of these, 24 were within the proposed northern biological open space and 15 were within the proposed Project footprint. Many burrows were highly weathered and degraded; the burrows in the best condition were on the northern hillside above Johnson Canyon. The large number of burrows was surprising, considering that burrowing owls had not been detected onsite during surveys before 2015.

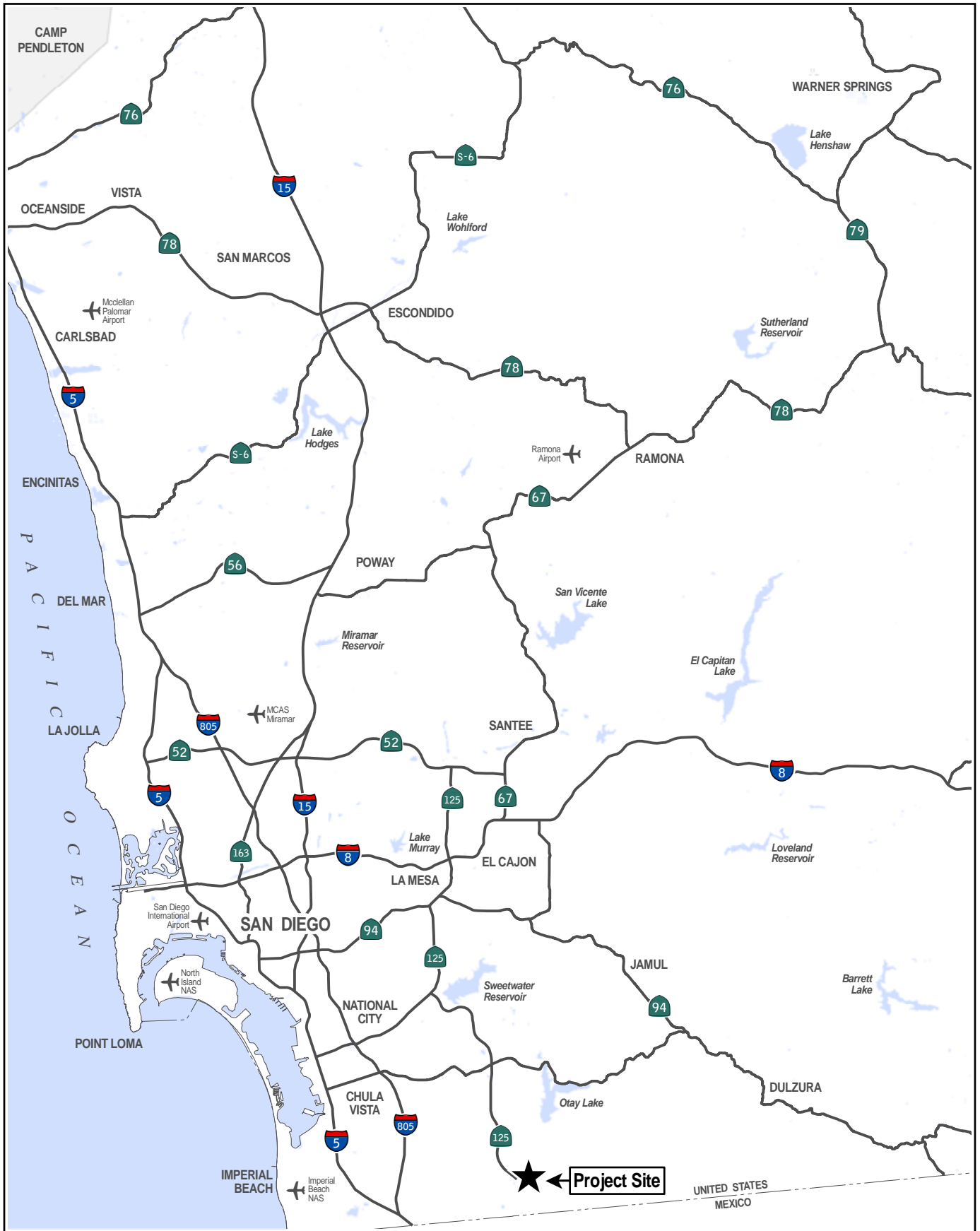
4.0 CONCLUSIONS

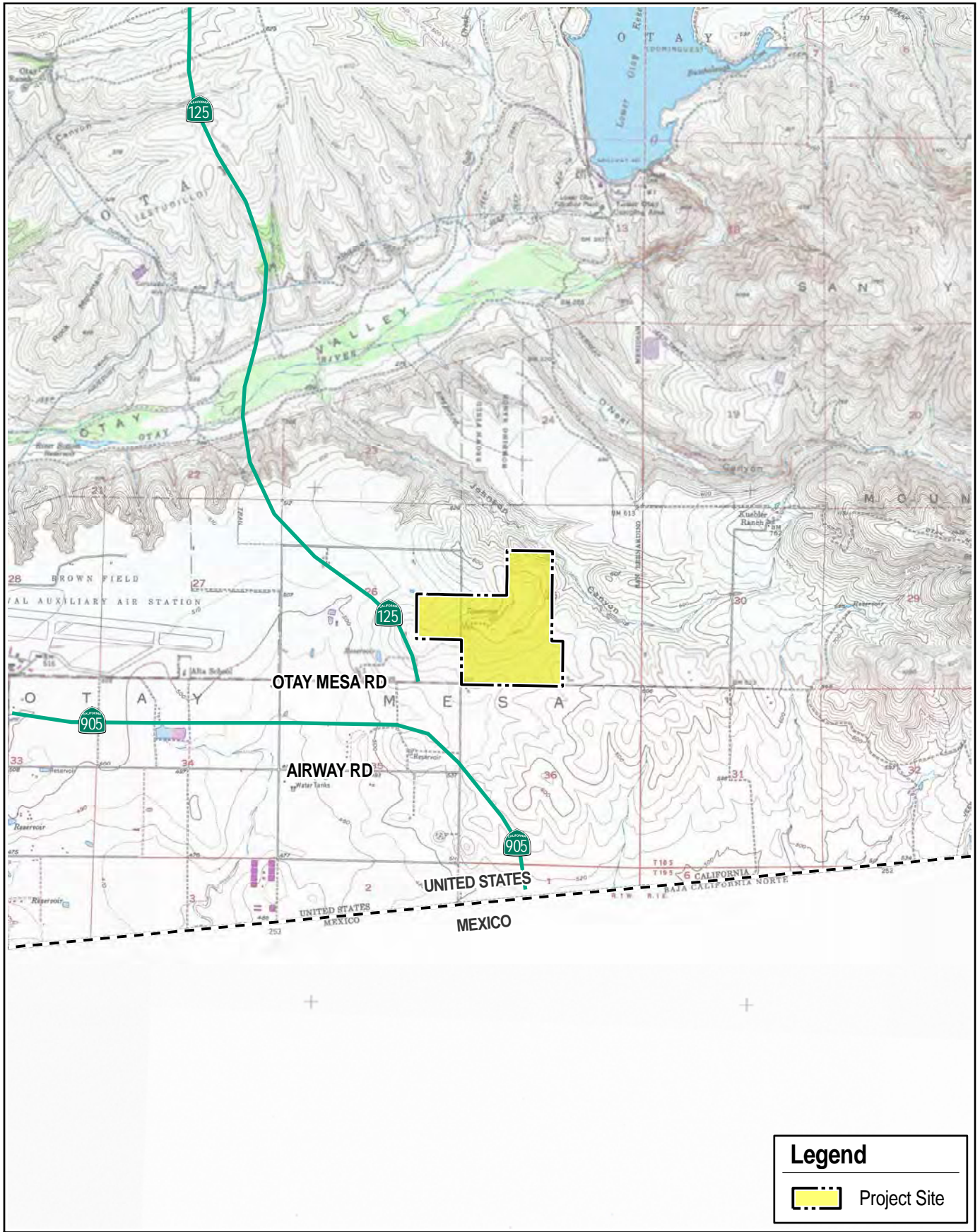
The Project site contains suitable grassland habitat of varying quality, nearby extensive open space, prey, perches, and 39 inactive burrowing owl burrows. It is unclear why the burrows appeared in 2012-2014 but are no longer in use. Possible factors include use of recorded Cooper's hawk (*Accipiter cooperi*) calls at the power plant adjacent to the southern site boundary, the presence of SR 125 a short distance to the west, and ongoing freeway construction to the south.

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Legend

- Project Boundary
- - - Impacts Boundary
- - - 500-ft Offsite Mapping Limit

Vegetation/Land Cover

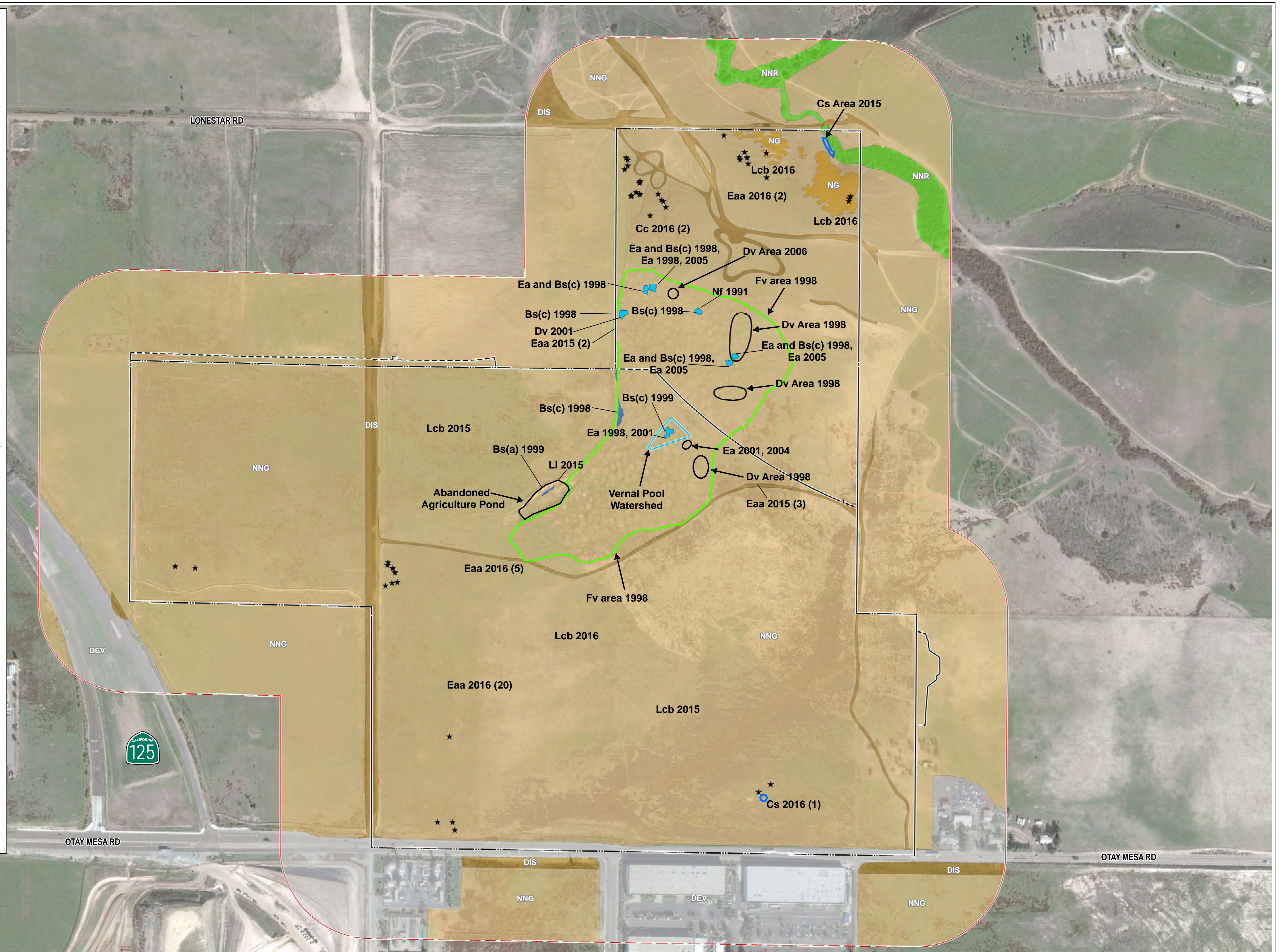
- DEV Developed
- DIS Disturbed
- DW Disturbed Wetland
- NG Native Grassland
- NNG Non-Native Grassland (including abandoned agricultural pond)
- NNR Non-Native Riparian
- VP Vernal Pool

Special-Status Plants and Years Observed

- Cs [year] *Convolvulus simulans* area small-flower bindweed
- Dv [year] *Dudleya variegata* area variegated dudleya
- Ea [year] *Eryngium aristulatum* var. *parishii* San Diego button-celery
- Fv [year] *Ferocactus viridescens* area coast barrel cactus
- Nf [year] *Navarretia fossalis* spreading navarretia
- Non-Point Special-Status Plants Observations:
Bahiopsis laciniata 1999 (CSS/NNG mima mounds)
 San Diego sunflower

Special-Status Animals and Years Observed

- ★ *Athene cunicularia* inactive burrow, 2016 burrowing owl
- Bs(a) [year] *Branchinecta sandiegensis* (adult) San Diego fairy shrimp
- Bs(c) [year] *Branchinecta sandiegensis* (cyst) San Diego fairy shrimp
- Cc [year] *Circus cyaneus* northern harrier
- Eaa [year] *Eremophila alpestris actia* California homed lark
- Ll [year] *Lanius ludovicianus* loggerhead shrike
- Lcb [year] *Lepus californicus bennettii* San Diego black-tailed jackrabbit
- Non-Point Special-Status Animals Observations:
Diadophis punctatus similis, 1998-99 San Diego ring-necked snake
Accipiter cooperii, 2015 (NNG flyover) Cooper's hawk
Aimophila ruficeps canescens, 1999 Southern California rufous-crowned sparrow
Buteo regalis, 1998-99 ferruginous hawk
Cathartes aura, 2015 (NNG flyover) turkey vulture
Circus cyaneus, 1999, 2015 (NNG flyover) northern harrier
Elanus leucurus, 1998-99 white-tailed kite
Tyto alba, 1998-99, 2016 barn owl



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Legend

- Project Boundary
- 100-ft Offsite Mapping Limit
- Impacts Boundary
- Biological Open Space

Vegetation/Land Cover

- DEV Developed
- DIS Disturbed
- DW Disturbed Wetland
- NG Native Grassland
- NNG Non-Native Grassland (including abandoned agricultural pond)
- NNR Non-Native Riparian
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variegated dudleya
 - Ea [year] *Eryngium aristulatum* var. *parishii*
San Diego button-celery
 - Fv [year] *Ferocactus viridescens* area
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 - Nf [year] *Navarretia fossalis*
spreading navarretia
- Non-Point Special-Status Plants Observations:
Bahiopsis laciniata 1999 (CSS/NNG mima mounds)
 San Diego sunflower

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burrowing owl
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San Diego fairy shrimp
 - Bs(c) [year] *Branchinecta sandiegensis* (cyst)
San Diego fairy shrimp
 - Cc [year] *Circus cyaneus*
northern harrier
 - Eaa [year] *Eremophila alpestris actia*
California horned lark
 - LI [year] *Lanius ludovicianus*
loggerhead shrike
 - Lcb [year] *Lepus californicus bennettii*
San Diego black-tailed jackrabbit
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 Cooper's hawk
Aimophila ruficeps canescens, 1999
 Southern California rufous-crowned sparrow
Buteo regalis, 1998-99
 ferruginous hawk
Cathartes aura, 2015 (NNG flyover)
 turkey vulture
Circus cyaneus, 1999, 2015 (NNG flyover)
 northern harrier
Elanus leucurus, 1998-99
 white-tailed kite
Tyto alba, 1998-99, 2016
 barn owl



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APPENDIX A
PLANTS OBSERVED ON THE SUNROAD CENTRUM 250 SITE

Species Name	Common Name	Family	Habitat
<i>Acacia cyclops</i> *	Cyclops acacia	Fabaceae	NNG
<i>Allium haematochiton</i>	red-skin onion	Alliaceae	NG, NNG
<i>Artemisia californica</i>	coastal sagebrush	Asteraceae	NNG
<i>Arundo donax</i> *	giant reed	Poaceae	NNG
<i>Atriplex semibaccata</i> *	Australian saltbush	Chenopodiaceae	NNG
<i>Avena barbata</i> *	slender wild oat	Poaceae	NNG, VP
<i>Avena fatua</i> *	wild oat	Poaceae	NNG, VP
<i>Avena sp.</i> *	oats	Poaceae	NNG, NG, VP
<i>Baccharis salicifolia subsp. salicifolia</i>	mule-fat, seep-willow	Asteraceae	DW, NNG
<i>Baccharis sarothroides</i>	broom baccharis	Asteraceae	NNG
<i>Bahiopsis laciniata!</i>	San Diego sunflower	Asteraceae	CSS/NNG (1999)
<i>Bloomeria crocea var. crocea</i>	common goldenstar	Themidaceae	NNG
<i>Brassica nigra</i> *	black mustard	Brassicaceae	NNG, NG
<i>Bromus diandrus</i> *	ripgut grass	Poaceae	NNG
<i>Bromus madritensis subsp. rubens</i> *	red brome, foxtail chess	Poaceae	NNG
<i>Calochortus splendens</i>	splendid mariposa lily	Liliaceae	NNG
<i>Calystegia macrostegia</i>	morning-glory	Convolvulaceae	NNG, NG
<i>Centaurea diluta</i> *	pale-flower centaurea	Asteraceae	NNG
<i>Centaurea melitensis</i> *	toçalote	Asteraceae	NNG
<i>Chenopodium murale</i> *	nettle-leaf goosefoot	Chenopodiaceae	NNG
<i>Chlorogalum parviflorum</i>	small flower soap plant/amole	Agavaceae	VP, NNG
<i>Convolvulus arvensis</i> *	field bindweed	Convolvulaceae	NNG
<i>Convolvulus simulans!</i>	small-flower bindweed	Convolvulaceae	NNG
<i>Corethrogyne filaginifolia</i>	sand-aster	Asteraceae	NNG
<i>Croton setiger</i>	doveweed	Euphorbiaceae	NNG
<i>Cyperus sp.</i>	sedge	Cyperaceae	NNG
<i>Deinandra fasciculata</i>	fascicled tarweed	Asteraceae	VP, NNG, DIS
<i>Dichelostemma capitatum</i>	blue dicks	Themidaceae	NNG, VP
<i>Distichlis spicata</i>	saltgrass	Poaceae	NNR
<i>Dittrichia graveolens</i> *	stinkwort	Asteraceae	NNR
<i>Dudleya variegata!</i>	variegated dudleya	Crassulaceae	NNG
<i>Eleocharis sp.</i>	spike-rush	Cyperaceae	VP
<i>Erigeron canadensis</i>	horseweed	Asteraceae	NNG
<i>Erigeron sumatrensis</i> *	asthmaweed	Asteraceae	NNG
<i>Eriogonum fasciculatum</i>	California buckwheat	Polygonaceae	VP, NNG
<i>Erodium botrys</i> *	long-beak filaree/storksbill	Geraniaceae	NNG, VP
<i>Erodium brachycarpum</i> *	short-beak filaree/storksbill	Geraniaceae	NNG, VP
<i>Erodium cicutarium</i> *	red-stem filaree/storksbill	Geraniaceae	DIS, NNG
<i>Eryngium aristulatum var. parishii!</i>	San Diego button-celery	Apiaceae	VP
<i>Ferocactus viridescens!</i>	coast barrel cactus	Cactaceae	VP, NNG
<i>Festuca perennis</i> *	perennial rye grass	Poaceae	DW
<i>Foeniculum vulgare</i> *	sweet fennel	Apiaceae	NG, NNG
<i>Glebionis coronaria</i> *	garland daisy, crown daisy	Asteraceae	DW, NNG
<i>Grindelia camporum</i>	rayless gumplant	Asteraceae	NNG, DIS
<i>Hedypnois rhagadioloides</i> *	Crete hedypnois	Asteraceae	NNG
<i>Helianthus annuus</i>	western sunflower	Asteraceae	NNG
<i>Heliotropium curassavicum var. oculatum</i>	salt heliotrope	Boraginaceae	NNR
<i>Helminthotheca echioides</i> *	bristly ox-tongue	Asteraceae	NNG
<i>Heteromeles arbutifolia</i>	toyon, Christmas berry	Rosaceae	NNG

Species Name	Common Name	Family	Habitat
<i>Heterotheca grandiflora</i>	telegraph weed	Asteraceae	NNG
<i>Hirschfeldia incana</i> *	short-pod mustard	Brassicaceae	NNG
<i>Hordeum murinum subsp. glaucum</i> *	glaucous barley	Poaceae	NNG
<i>Isocoma menziesii var. vernonioides</i>	coastal goldenbush	Asteraceae	NNG
<i>Jepsonia parryi</i>	coast jepsonia	Saxifragaceae	NNG
<i>Lactuca serriola</i> *	prickly lettuce	Asteraceae	NNG
<i>Laennecia coulteri</i>	Coulter's fleabane	Asteraceae	NNG, NNR
<i>Lamarckia aurea</i> *	golden-top	Poaceae	NNG
<i>Lasthenia gracilis</i>	common goldfields	Asteraceae	NNG
<i>Lepidium nitidum</i>	shining peppergrass	Brassicaceae	VP
<i>Logfia arizonica</i>	Arizona Filago	Asteraceae	VP, NNG
<i>Lysimachia arvensis</i> *	scarlet pimpernel	Primulaceae	NNR, NNG, NG
<i>Malva neglecta</i> *	common mallow	Malvaceae	NNG
<i>Malva parviflora</i> *	cheeseweed	Malvaceae	NNG
<i>Malvella leprosa</i>	alkali mallow	Malvaceae	NNG
<i>Marrubium vulgare</i> *	horehound	Lamiaceae	NNG
<i>Medicago polymorpha</i> *	California burclover	Fabaceae	NNG
<i>Melilotus indicus</i> *	Indian sweetclover	Fabaceae	NNG
<i>Melilotus sp.</i> *	sweetclover/sourclover	Fabaceae	NNG
<i>Mesembryanthemum crystallinum</i> *	crystalline iceplant	Aizoaceae	NNG
<i>Mirabilis laevis var. crassifolia</i>	coastal wishbone plant	Nyctaginaceae	NNG
<i>Nicotiana glauca</i> *	tree tobacco	Solanaceae	NNG
<i>Olea europaea</i> *	olive	Oleaceae	NNG
<i>Opuntia sp.</i>	prickly-pear cactus (native)	Cactaceae	NNG, VP
<i>Osmadenia tenella</i>	osmadenia	Asteraceae	NNG
<i>Peritoma arborea var. arborea</i>	bladderpod	Cleomaceae	NNG
<i>Phalaris minor</i> *	little-seed canary grass	Poaceae	DW, NNG
<i>Plantago erecta</i>	dot-seed plantain	Plantaginaceae	DIS, NNG
Poaceae	unidentified non-native grass	Poaceae	DW, NNG
<i>Pseudognaphalium biolettii</i>	bicolor cudweed	Asteraceae	NNG
<i>Pseudognaphalium californicum</i>	California everlasting	Asteraceae	NNG
<i>Rhus integrifolia</i>	lemonadeberry	Anacardiaceae	NNG
<i>Rumex crispus</i> *	curly dock	Polygonaceae	NNR
<i>Salix gooddingii</i>	Goodding's black willow	Salicaceae	NNG
<i>Salix laevigata</i>	red willow	Salicaceae	DW
<i>Salsola sp.</i> *	Russian-thistle	Chenopodiaceae	NNG, VP
<i>Salsola tragus</i> *	prickly Russian-thistle, tumbleweed	Chenopodiaceae	NNG, VP, DIS
<i>Sidalcea sparsifolia</i>	checker-bloom	Malvaceae	NNG
<i>Silybum marianum</i> *	milk thistle	Asteraceae	NNR, NNG
<i>Sinapis arvensis</i> *	charlock	Brassicaceae	NNG
<i>Sisymbrium irio</i> *	London rocket	Brassicaceae	NNG
<i>Sisyrinchium bellum</i>	blue-eyed-grass	Iridaceae	VP, NNG
<i>Sonchus asper subsp. asper</i> *	prickly sow-thistle	Asteraceae	NNG
<i>Sonchus oleraceus</i> *	common sow-thistle	Asteraceae	NNG, NG
<i>Stipa cernua</i>	nodding needle grass	Poaceae	NG, NNG, VP
<i>Stipa pulchra</i>	purple needle grass	Poaceae	NG, NNG, VP
<i>Tamarix ramosissima</i> *	tamarisk/salt-cedar	Tamaricaceae	NNG, DW, NNR
<i>Tragopogon porrifolius</i> *	salsify, oyster plant	Asteraceae	NNG
<i>Uropappus lindleyi</i>	silver puffs	Asteraceae	NNG
<i>Urtica urens</i> *	dwarf nettle	Urticaceae	NNR, NNG
<i>Vicia sp.(*)</i>	vetch	Fabaceae	NNG

Species Name	Common Name	Family	Habitat
<i>Washingtonia robusta</i> *	Mexican fan palm	Arecaceae	DIS

*Non-native

! State or Federal special-status (State endangered, threatened, or rare, CRPR 1-4; Federal endangered, threatened, or candidate for listing)

DIS = Disturbed Land

DW = Disturbed Wetland

NG = Native Grassland

NNG = Non-Native Grassland

NNR = Non-Native Riparian

VP = Vernal Pool

**APPENDIX B
BIRDS OBSERVED ON THE SUNROAD CENTRUM 250 PROJECT SITE**

Species Name	Common Name	Habitat	Survey 1	Survey 2	Survey 3	Survey 4
<i>Corvus brachyrhynchos hesperis</i>	American crow	FO	1			1
<i>Falco sparverius sparverius</i>	American kestrel	NNG	1	1	1	
<i>Tyto alba (pratincola)</i>	barn owl	NNG		pellet and feathers		
<i>Sayornis nigricans semiater</i>	black phoebe	NNG	1			
<i>Athene cunicularia (hypugaea)!</i>	burrowing owl	NNG			burrows	
<i>Petrochelidon pyrrhonota tachina</i>	cliff swallow	NNG		2	25-30	5
<i>Corvus corax clarionensis</i>	common raven	FO	2	2	2	2
<i>Streptopelia decaocto*</i>	Eurasian collared-dove	NNG			2	
<i>Sturnus vulgaris vulgaris*</i>	European starling	NNG			2	
<i>Haemorhous mexicanus frontalis</i>	house finch	NNG	several	~30	9	10
<i>Eremophila alpestris actia!</i>	California horned lark	NNG	2, flock of ~20	7+	9	several
<i>Icterus cucullatus nelsoni</i>	hooded oriole	NNG			pair	
<i>Passer domesticus domesticus*</i>	house sparrow	NNG	several			
<i>Zenaida macroura marginella</i>	mourning dove	NNG, FO	1	8	4+	2
<i>Circus cyaneus!</i>	northern harrier	NNG	1			
<i>Mimus polyglottos polyglottos</i>	northern mockingbird	NNG	1			
<i>Buteo jamaicensis</i>	red-tailed hawk	NNG, FO	1	2		
<i>Agelaius phoeniceus</i>	red-winged blackbird	NNG, FO	4	2	6	
<i>Passerculus sandwichensis</i>	savannah sparrow	NNG	several			
<i>Melospiza melodia</i>	song sparrow	NNG	several		4	
Family <i>Emberizidae</i>	sparrow (unidentified)	NNG	several			
<i>Zonotrichia leucophrys</i>	white-crowned sparrow	NNG	small flock			
<i>Tyrannus verticalis</i>	western kingbird	NNG	1		3	
<i>Sturnella neglecta</i>	western meadowlark	NNG	many	10+	~13	5
<i>Setophaga coronata</i>	yellow-rumped warbler	NNG	several			
<i>Larus sp.</i>	larus gull (unidentified)	FO				1
<i>Calypte anna</i>	Anna's hummingbird	NNG				1

* non-native

! State or federal special-status species (State endangered, threatened, endangered candidate, fully protected, watchlist, or CDF sensitive; or federal endangered, threatened, candidate for listing, USFWS Bird of Conservation Concern)

Habitat Abbreviations

FO = Flyover

NNG = Non-native Grassland

APPENDIX C
Sunroad Centrum 250 2016 Burrowing Owl Report



1. Field west of Harvest Road, view toward north.



2. Field east of harvest road and site entry, view toward east.

APPENDIX C
Sunroad Centrum 250 2016 Burrowing Owl Report



3. Southern field east of Harvest Road, view toward south-southeast.



4. Non-native grassland on northern hillside, area of most burrows, view toward east.

APPENDIX C
Sunroad Centrum 250 2016 Burrowing Owl Report



5. Native grassland on northern hillside, view toward north.



6. Example of area excluded due to tall, dense Russian-thistle.

APPENDIX C
Sunroad Centrum 250 2016 Burrowing Owl Report



7. Example of abandoned burrow in western field.



8. Example of abandoned burrow near Harvest road in southern field.

APPENDIX C
Sunroad Centrum 250 2016 Burrowing Owl Report



9. Example of eroded abandoned burrow on northern hillside.



10. Example of abandoned burrow with spot of whitewash, but hole no longer open.

APPENDIX C
Sunroad Centrum 250 2016 Burrowing Owl Report



11. Burrow in best condition but inactive, with whitewash, pellets and bones, on northern hillside.



12. Disintegrating pellets and small mammal bones on apron of the best burrow, northern hillside.

APPENDIX G

**Quino Checkerspot Butterfly Reports, 1999, 2001,
and 2016**

Quino Checkerspot Butterfly Report, 1999

Report of a Directed Survey for the Quino Checkerspot Butterfly over the Sunroad Centrum Property, Otay Mesa San Diego, California

Prepared For:

R•E•C Environmental
2650 Jamacha Road
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Prepared By:

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12 June 1999
RBR Job Number 1730.10C

Report of a Directed Survey for the Quino Checkerspot Butterfly over the Sunroad Centrum Property, Otay Mesa San Diego, California

I. Introduction

A. Summary. The Sunroad Centrum Property is located in the extreme southern part of the City of San Diego, east of Brown Field, near the east edge of the Otay Mesa (see Figures 1 and 2). The site is characterized by a series of low rolling hills topographically above the mesa itself and at the southwestern edge of Johnson Canyon. The property includes colluvial deposits at the edge of the Mesa, the site is above the wave cut terrace to the west and on the low rolling hills composed of debris derived in large part from Otay Mountain to the east. No populations of the Dot-seed Plantain or other species known to be utilized by the Quino Checkerspot were found on site. However, extensive *Plantago/Castilleja* stands are known to occur to the west of this site and the Quino has been sighted both to the west and north of this property. Within the Sunroad Centrum property is a topographically high ground that is occupied by a mima mound complex and an eclectic suite of plant species. In that there are known to be Quino in the general vicinity of the property and in that the prevailing west wind would tend to move individuals from the known habitats to the west, it was felt that the hilltopping location should be surveyed in depth. The report documents a federal protocol survey to determine the presence or absence of the Quino Checkerspot Butterfly on the Sunroad Centrum property. The species was not found.

The bulk of the property is occupied by a ruderal association characteristic of abandoned agricultural fields. Some of the fields appear to have been in agriculture within the last year or two. The north central part of the property, however, is characterized by a mima mound topography. This area does not appear to have ever been disced or ploughed and it supports a number of native species. The tops of the mima mounds themselves are generally occupied by shrubs characteristic of the Coastal Sage Scrub. The interstices between the mounds are occupied by relatively large numbers of native bunch grasses and those areas are best characterized as disturbed native grasslands. The area, then, is a complex checker board of disturbed native grassland and disturbed Coastal Sage Scrub. Some of the mound interstices are developed as vernal pools. No populations of any of the food plants utilized by the Quino Checkerspot were found on the Sunroad Centrum property.

Despite the lack of food plants suitable for the Quino, an adult survey of the site was mandated by the subregional proximity of adult sightings and the proximity of known populations of the larval food plants. The north central "mima" mounds area is the highest local point on the topography and it was thought that this might serve as a hilltopping location. Adults have been found to the west and north of the Sunroad site and an extensive area (several acres) of larval habitat is located a short

distance to the west. For these reasons a comprehensive protocol survey was completed.

Given the complete lack of Dot-seed Plantain on-site, given the lack (on-site) of any plant population suitable for the Quino larvae, and the lack of any adult observations during the current (1999) field season, it is felt that the property does not support a population of the Quino Checkerspot Butterfly.

B. Background. The Quino Checkerspot Butterfly (*Euphydryas editha quino*; see Figure 4) was listed as an endangered species in January of 1997 (Fish and Wildlife Service, 1997). Thought at one time to be extinct, the subspecies is today (1999) found in a small number of populations in Riverside and San Diego Counties. As a wildlife species listed under the Federal Endangered Species Act (ESA) the Quino is afforded the considerable legal protections offered by the Act. Commission of a "take" of the species, either directly or indirectly, is prohibited by law. In order to assist land owners and in an effort to prevent a "take" of the species, the Fish and Wildlife Service has promulgated survey protocols for the species (Fish and Wildlife Service, 1999). These protocols identify geographical areas over which surveys for the adult butterflies are mandated and over which surveys are recommended when populations of certain plant species are present and/or in the presence of certain topographic features.

The Quino Checkerspot is best thought of as a "two phase" animal. The larvae are obligate feeders on one (two? three?) food plants: Dot-seed Plantain (*Plantago erecta*); perhaps Owl's Clover (*Castilleja exserta*); and possibly on other members of the Scrophulariaceae family (such as Chinese Houses, *Collinsia heterophylla*). The presence or absence of these food plants is usually sufficient to decide the presence or absence of the larvae on a given site. The second "phase" is the adult butterfly. The males of the species exhibit what is referred to as "hilltopping" behavior. They fly to prominent topographical points where they congregate, spending hours each day inspecting each butterfly that passes by, hoping to find a receptive female Quino. The adults are, additionally, found in association with the larval food plants, where they originally emerged from the pupa and where they subsequently lay eggs and roost. Properties with either plant populations that favor the Quino adults and larvae and/or with topography that favors the adults should be surveyed in order to define the presence or absence of the species.

The Sunroad Centrum Property is located in the County of San Diego, on the eastern edge of the Otay Mesa community. The site is east of Brown Field, east of (actually partly astride) Harvest Road, and north of Otay Mesa Road (see Figures 1 and 2). The approximately 250-acre property includes a series of low rolling hills that are truncated on the north by Johnson Canyon. East of these hills approximately two miles, the topography rises abruptly to Otay Mountain, which dominates the eastern skyline. The north-central part of the property lies at a higher elevation forming what might be interpreted as a hilltopping location. This area is above roughly the 600-foot contour and is dominated by a mima mound topography. The mima mound area includes some small enclosed basins and these are developed as vernal pools.

The Sunroad Centrum Property lies within an area defined in the Federal Survey Protocols as an "Adult Focused Survey Area." As such, a ground survey for at least the larval food plants is

mandated. Such a survey was performed in 1999 by members of the REC Environmental staff. No Dot-seed Plantain was found during that survey effort, or during any subsequent field visit to the site. In addition, no *Castilleja exserta* was found on site (except for one or two isolated individuals) and no *Collinsia heterophylla* was found within the bounds of the property. The majority of the property, as previously indicated, has been recently disced and/or ploughed for agricultural use and the larval food plants of the Quino Checkerspot would not necessarily be expected on those disrupted soils.

An extensive population of *Plantago erecta* along with numerous individuals and clumps of *Castilleja exserta* were found to the northwest of the subject property, along the north side of Lone Star Road. This is probably the most extensive area of "Quino habitat" that this author has seen (see Figure 3). An extensive population of the Quino Checkerspot is known at the southeast corner of Otay Mountain, a few miles to the east of this property. Another population of the Quino is known to the north of this site a few miles, on the north side of Otay Lake (Wier, Harold A., Dudek and Associates, 1999, personal communication to R. Riggan). Additionally, it is reported that RECON located Quino Checkerspots to the west of the project site, in the alignment of proposed route SR 125 (Wier, *ibid.*). Populations of the butterfly to the west of this site are all the more important when one considers that the prevailing wind is from the west.

Given the proximity of known populations of the Quino Checkerspot, and, given the habitat to the west, it was felt that the high part of the subject property could be defined as a hilltopping location. (See Figure 3). This area of disturbed, but native, vegetation, was selected due to both its relative elevation and due to the presence of the native plants (although no Quino food plants were present).

The 1999 flight season of the Quino Checkerspot was defined by the Fish and Wildlife Service as extending from 1 March through 9 May 1999. During this ten-week period butterfly surveys were limited to days that met certain specific wind, clarity (lack of cloud cover) and temperature conditions. Butterflies are thermally dependent and are simply not functional on cool, cloudy and/or excessively windy days. During the ten weeks of the flight season, more than 38 of the 70-days (or something greater than 54 percent of the days) were not available for survey work at the Sunroad Centrum site. Unsuitable days were characterized by excessive wind, cloud cover, rain, low air temperature, or (usually) some combination of these factors. The subject property lies at a unique location with respect to coastal weather parameters. Due to the proximity to the coast the site, is frequently one of the last locations where the morning-and-evening-low-clouds-along-the-coast ("June Gloom") burns off, or clears (although the clouds last even longer into the morning further to the west). Because the burn off occurs earlier in the day further inland (for example, on the high slopes of Otay Mountain), thermal heating on the more inland areas has already reduced air pressures inland and initiated the on-shore air flow by the time the clouds are clearing at the Sunroad Centrum site. In other words, by the time the clouds clear, the wind is picking up. For this reason, the subject property is hardly an ideal butterfly location.

The Sunroad Centrum site was surveyed seven times during the flight period of the Quino. This was the maximum given weather considerations, and assuming a seven-day work week on the part of the consultant. Of the last three weeks of the flight period, three whole days and only one or two half days (after coastal cloud burn-off) were suitable for butterfly work at Otay Mesa.

II. Project Description

A. Physical Environment. The geological formation underlying the entire site is mapped as "Otay Formation" by Kennedy and Tan (1977). However, the higher elevation parts of the site (especially the mima mound area) are characterized by numerous cobbles and small boulders derived from the Santiago Peak Metavolcanics, the country rock underlying Otay Mountain. This member of the Otay Formation appears, therefore, to be derived in part (if not wholly) from slope wash and colluvium from the mountains to the east. Around the periphery of the mima mound area are piles of these cobbles and boulders. Many of the piles are on the order of ten by 20 feet (or greater) and are typically one to two feet above the immediately adjacent terrain. Many of the piles seem to be set into depressions, rock only (no soil filler) extends below the level of the surrounding ground surface in many of the piles. It is assumed that these piles were created actinically by field workers clearing the cobbles and boulders from the adjacent fields (which have been ploughed and/or disced).

No springs, seeps or other permanent water sources were observed during the course of the survey effort with the exception of an artificially created cattle tank. This cattle tank or pond occupies an mechanically excavated basin and is visible on the U.S.G.S. Quadrangle Map for the region (see Figure 2 and 3). No definable wetlands (using the Federal tripartite definition; Environmental Laboratory, 1987) were observed within the project boundaries with the exception of a small number of vernal pools and the afore mentioned cattle tank.

B. Biological Environment. The vegetation over are the bulk of the Sunroad Centrum property has been severely disturbed and is dominated by a suite of ruderal species. The bulk of these areas appear to have been used in some form of agriculture. Typical plant species in this ruderal association include:

Centaurea melitensis
Hordeum leporinum
Brassica nigra
Erodium sp.
Eremocarpus setigerus
Hirschfeldia incana
Avena barbata
Bromus (several species)

The north central portion of the property is developed in a mima mound topography. This area has a sufficiently large deposit of cobbles and boulders that ploughing or discing was considered infeasible and the area was never used in mechanical agriculture (although it was probably extensively grazed). The mima mounds themselves support shrub species characteristic of the Coastal Sage Scrub. The interstices between the mima mounds are occupied by a suite of native and non-native grasses. This complex topography can be viewed as a checker board of disturbed Coastal Sage Scrub and disturbed Native Grasslands. Species typical of this checker board include:

Rhus integrifolia
Ferocactus viridescens
Isomeris arborea
Viguiera laciniata
Encelia californica
Simmondsia chinensis
Eriogonum fasciculatum
Artemisia californica
Malosma laurina
Stipa sp. (one or more species)
Avena barbata
Bromus sp. (several species)

Plant surveys (to determine the presence or absence of species suitable for the Quino larvae) were performed on this property in the spring of 1999 by the staff of REC Environmental. Neither *Plantago erecta* nor any suitable Scrophulariaceae were located as a result of the survey. Neither the *Plantago* nor any of the other species (except for a small number of widely scattered individuals of *Castilleja exserta*) were found on site during any of the subsequent field visits to the property.

The on-site vegetation is illustrated in Figures 5A and 5B. As can be seen in the photographs, ruderal species predominate along with the grasses. Perhaps due to Operation Gatekeeper and perhaps due to the proximity of the prison just to the north of the site (on the other side of Johnson Canyon; see Figure 1) the number of illegal aliens in this part of the Mesa has been significantly reduced. There does not appear to be significant off-road vehicle use of the property at this time. The only immediate factor militating for change is the pending development of most of the site for industrial/commercial use.

The suite of wildlife species found within the bounds of the property is comparable to that seen on any other disturbed ruderal, disturbed Native Grassland, Coastal Sage Scrub adjacent to the urban parts of the City. Rodents and birds dominate the fauna with reptiles are a close third. Sensitive wildlife species noted during the butterfly survey work included the following:

Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>
Northern Harrier	<i>Circus cyaneus</i>

Apparently a pair of the Harriers and one or more pair of the Rufous-crowned are nesting within the mima mound area of the property. Given the large habitat requirements of the Harrier probably only *one pair is present on this part of the Mesa*. Given the limited available habitat, only one or two pair of the Sparrow are anticipated.

Sensitive plant species include (but are not necessarily limited to):

San Diego Coyote Thistle	<i>Eryngium aristulatum</i>
San Diego Hasseanthus	<i>Dudleya variegata</i>

The *Eryngium* is, of course, found in the vernal pools on the property. The *Dudleya* is located in gravelly openings in the vegetation on the sides of the mima mounds. The *Dudleya* is illustrated (but misidentified) in a photo included in the field notes in the attached appendix to this report.

C. Proposed Development. The development plan for the property encompasses all but the northern part of the mima mound topography and the area immediately adjacent to (or within) Johnson Canyon. The bulk of the site will be padded out as approximately 5-acre industrial lots.

III. Field Methods

A detailed discussion of the field methods, the date of the surveys and the extant weather conditions on each of the field dates is included in the field notes and on the "General Forms" reproduced in this report as the appendix. These details will not be repeated here. The reader is referred to the appendix.

In general, the following considerations governed the conduct of the field survey:

- There were no populations of Dot-seed Plantain (*Plantago erecta*) on the Sunroad Centrum property. Field visits, therefore, were restricted to the one area of semi-native vegetation, an area which was also a potential hilltopping location (see Figure 3).
- The only hilltopping location within the bounds of the property is the mima mound area in the north central part of the site (see Figure 3).
- Due to the difficulty of accessing the property, field observers were required to walk in from Harvest Road. As such, a portion of the ruderal lands were examined during each of the field visits to the site.

Perhaps due to the dryness of the year, few butterflies were seen in the ruderal parts of the site. The bulk of the species and individuals were found within the north central "semi-natural" area. The bulk of the field effort was, accordingly, devoted to this part of the site.

IV. Results and Analysis

No adult or larval Quino Checkerspot Butterflies were seen during the course of the survey effort on the Sunroad Centrum property.

The following points highlight the results of the butterfly survey effort on the Sunroad Centrum property:

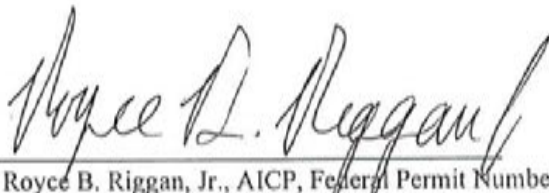
- A total of 10 butterfly species were observed. These are detailed in Table 1.

- Generally, the total number of species and the total number of individuals seemed less than one would anticipate given the habitats present on-site and the relative prominence of the hilltopping location. This is probably attributable to the sparse rain fall during the current year and the unique location of the site relative to the overcast burn off. For example, virtually no sulfurs were seen during the course of the survey of this property. The common Alfalfa Butterfly (*Colias eurytheme*) was actually rare this year on all of the properties examined, a condition that undoubtedly reflects the lack of growth (due to rain) in the normal suite of food plants utilized by this butterfly species. In the previous year a variety of mustards dominated the surrounding fields.
- The number of *Coenonympha tullia* found on the property was exceptional, up to 47 in one observational period. This population was apparently due to the to exceptional quantity of native bunch grasses in the north central part of the site.
- *Papilio zelicaon* was particularly common on-site but was highly localized along the north edge, next to Johnson Canyon, where there is a large stand of the species' larval food plant: *Foeniculum vulgare*.
- The absence of certain species was intriguing. For example, only a single "blues" was seen on the property, *Brephidium exilis*. And only a single individual was found, despite an extensive search of the relatively common larval food plant: *Atriplex semibaccata*. *B. exilis* can be an eruption species, sometimes seen in clouds of hundreds over a suitable food plant. Why only one individual on this site is unknown.

Given the complete lack of *Plantago erecta* on this site (and the virtual lack of *Castilleja exserta* or any possible alternative larval food plants for the Quino Checkerspot), and the lack of any Quino sightings on the Sunroad Centrum property, it would appear that the site can be developed without concern for a possible take of the Quino Checkerspot.

V. Certification

This report represent an independent survey and analysis of the Sunroad Centrum property for the occurrence of the Quino Checkerspot Butterfly. Any errors or omissions are solely the responsibility of the undersigned.



Royce B. Riggan, Jr., AICP, Federal Permit Number PRT-780195
 Principal
 RBRiggan and Associates
 RBR Job Number 1740.11D
 15 June 1999

Attachments:

1. References Cited
2. Table 1 — Butterfly Species Observed
3. Figure 1 — Project Location on a Thomas Brothers Map
4. Figure 2 — Project Location on a USGS Quadrangle Map
5. Figure 3 — Location of Potential Quino Resources
6. Figure 4 — Representative Butterflies Observed
7. Figure 5A — Site Photographs (Thumbnails)
8. Figure 5B — Site Photographs (Thumbnails)
9. Figure 5C — Site Photographs (slides)
10. Appendix
 - a. Copies of Pertinent Pages from Author's Field Notebook
 - b. Copies of FWS's General Forms

References Cited

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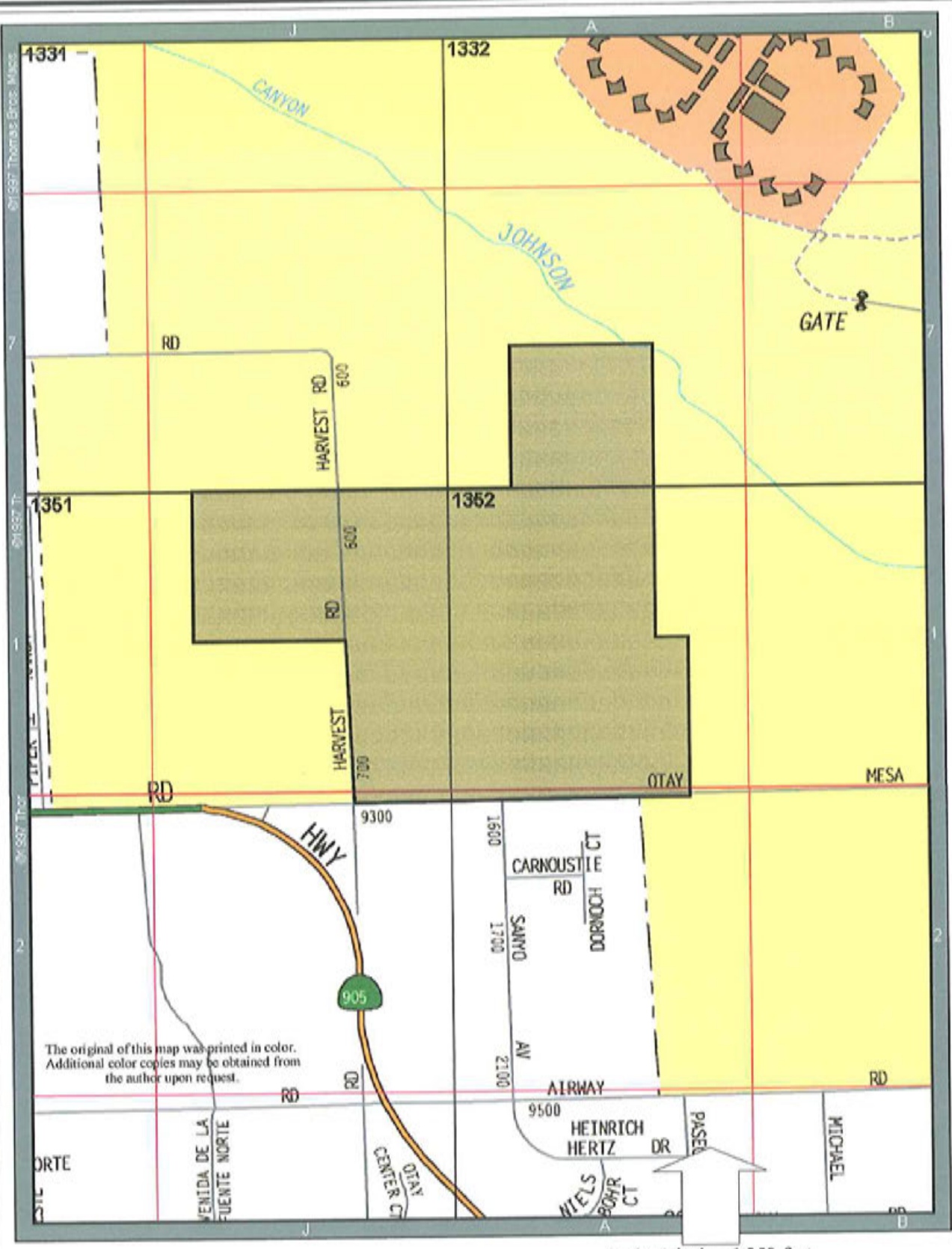
Table 1

Butterfly Species Observed on the
Sunroad Centrum Property, Otay Mesa,
as part of a Protocol Survey for the
Quino Checkerspot

Butterfly Species:	3/3/99	3/12/99	3/19/99	3/28/99	4/4/99	4/10/99	4/17/99	Note:
<i>Apodemia mormo</i>					1	1		Seen on or near <i>Eriogonum fasciculatum</i> in the primary survey area. The buckwheat is occasional on the tops of the mima mounds.
<i>Brephidium exilis</i>	1							A single individual was observed by three individuals at close range on an <i>Atriplex semibaccata</i> . Subsequent to that sighting, no additional individuals could be found despite a careful search.
<i>Coenonympha tullia</i>	27	19	37	22	47	2	12	Abundant, but found for the most part in the primary search area where native bunch grasses predominate. Not common in the ruderal areas where non-native annual grasses predominate.
<i>Erymis</i> cf. <i>funeralis</i>			1					The single individual seen with a white trailing edge on the HW was assumed to be a member of this species. Photographs were not obtained so differentiation to species was not possible.

Butterfly Species:	3/3/99	3/12/99	3/19/99	3/28/99	4/4/99	4/10/99	4/17/99	Note:
<i>Papilio zelicaon</i>	2			7	2	7	1	Found primarily on the north edge of the property where there are extensive stands of <i>Foeniculum vulgare</i> .
<i>Pontia protodice</i>	2	1		2			2	Seen as flybys, no hilltopping behavior was observed in the primary survey area.
<i>Strymon melinus</i>	1							Found in the lee of a shrub, near the hilltopping location on the property.
<i>Vanessa</i> sp.	1	1				1		Seen primarily as flybys, could not be observed with sufficient clarity to determine species. All appeared, however, to belong to the <i>cardui</i> group.
<i>Vanessa anabella</i>				1	6		1	Found primarily on the periphery of the property in association with stands of <i>Brassica nigra</i> .
<i>Vanessa atalanta</i>	1	1						Seen early in the season, this species' larvae feed on Stinging Nettle. Nettles were not observed on-site and are not known to occur in the immediate vicinity of the site.

Total: 10 identified species or genera.



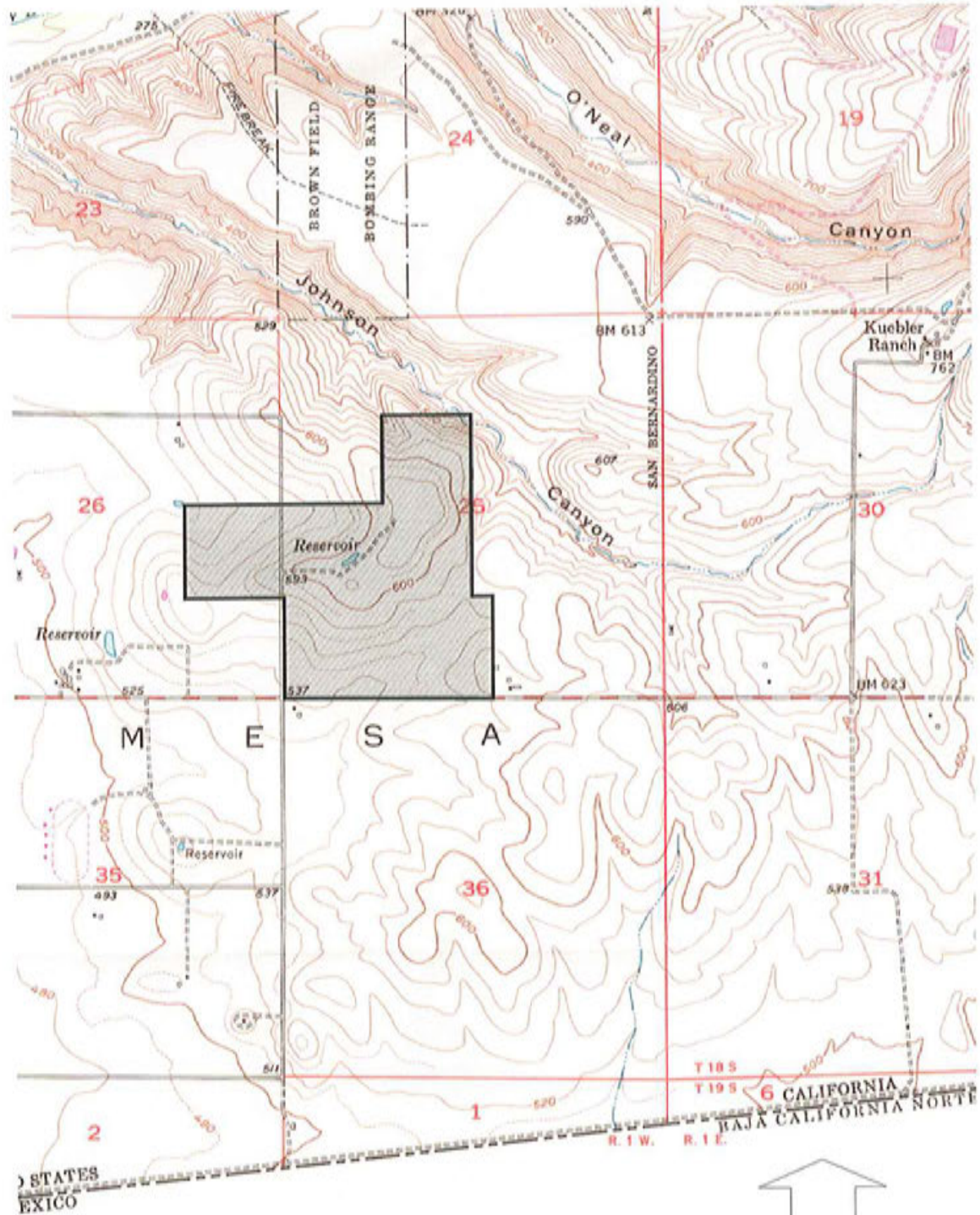
RBRiggin and Associates Job Number 1730.10C 25 February 1999

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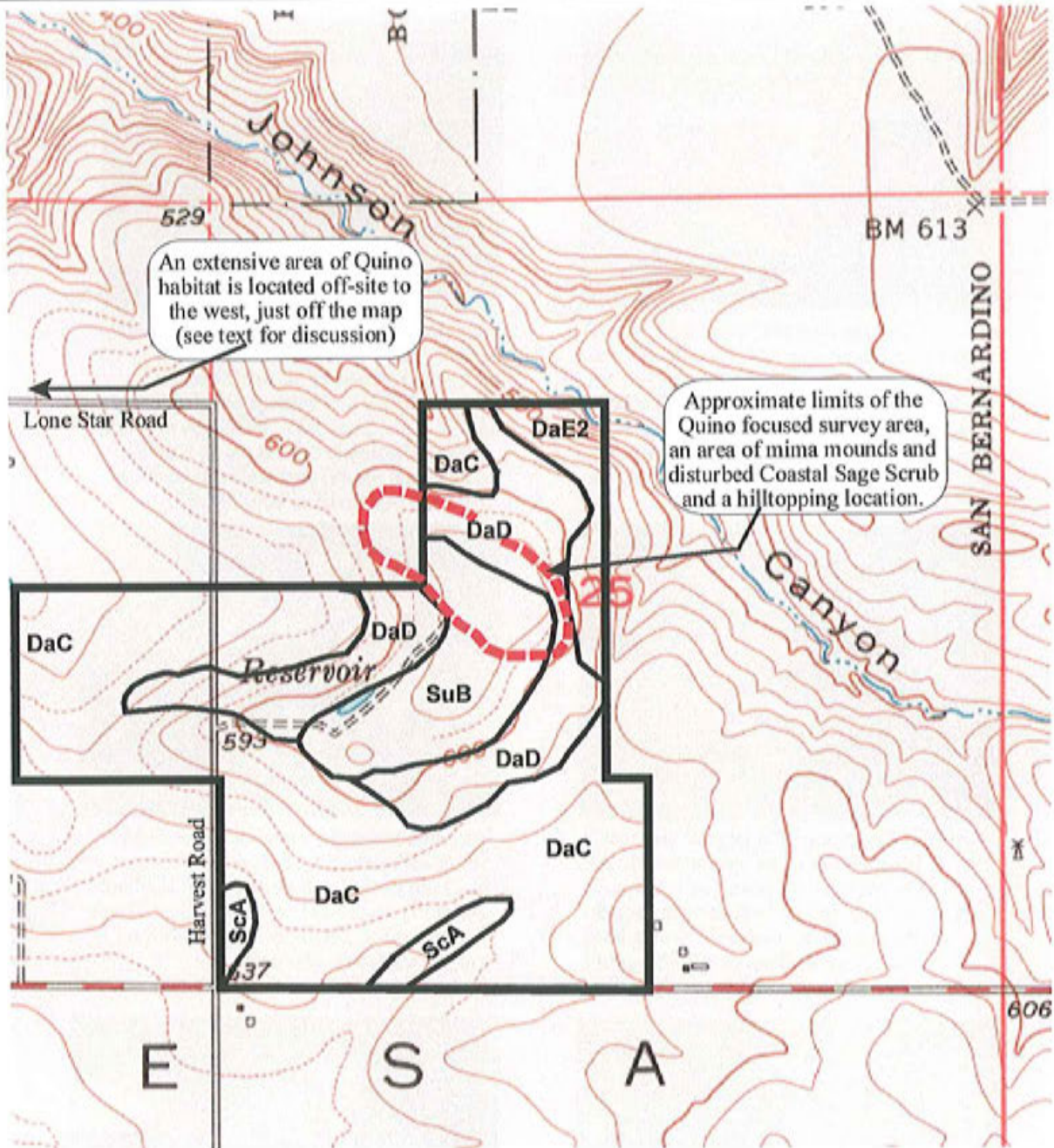
**RBRiggin
and
Associates**

**Location of the 250-acre Sunroad Centrum
Property on a Thomas Brothers Base Map**
[map © Thomas Bros Maps]

**Figure
1**



↑
Scale: 1-inch = 2,000-feet



KEY TO SOIL TYPES:

- DaC** — Diablo Clay, 20-30% slopes [surface layer moderately Alkaline clay, 27-inches thick]
- DaD** — Diablo Clay 9-15% slopes
- DaE2** — Diablo Clay 15-30% slopes, eroded
- ScA** — Salinas Clay 0-2% slopes [clay loam, may have a surface layer of clay]
- SuB** — Stockpen Gravelly Clay Loam, 2-5% slopes



Scale: 1-inch = 1,000-feet



Slide #1: View looking generally northeast across the northern part of the site. The Jamul Mountains are in the distance. The foreground field is dominated by *Brassica nigra* and was apparently in agriculture within the last few years. (photo taken 11 June 1999).



Slide #2: View looking generally south from the central part of the site. Otay Mesa Road and the industrial development beyond are visible in the background. The foreground is dominated by the recently abandoned agricultural fields in the south part of the project site.

The original of this graphic was printed in color. Additional color copies may be obtained from the author.

RBRiggan and Associates Job Number 1730.10C

15 June 1999

[:\1730-fig5A.wpg]

**RBRiggan
and
Associates**

**Site Photographs:
Prints of Slides #1 and #2.**

**Figure
5A**



Slide #3: View looking generally east across the north central part of the site. The state and federal prison complexes are visible in the background. Immediately in front of the prison buildings, the high ground surveyed as a part of this Quino effort is visible as are a few of the Coastal Sage Scrub shrubs on the mima mound tops.



Slide #4: View looking generally north across the high ground in the north central part of the site. Individual shrubs are generally on the tops of the mima mounds while the interstices are occupied by a disturbed native grassland. This is the area surveyed as a part of this Quino effort.

The original of this graphic was printed in color. Additional color copies may be obtained from the author.

RBRiggan and Associates Job Number 1730.10C

15 June 1999

[:\1730-fig5B.wpg]

**RBRiggan
and
Associates**

**Site Photographs:
Prints of Slides #3 and #4.**

**Figure
5B**



**1999
Field
Notes**

Plate 1A — Photograph of a segment of a *Crotalus viridis helleri*, the snake was trying to retreat into a boulder pile and had substantially flattened the exposed portion of its body. See Field Notes for 21 February 1999.
Plate 1B — *Peromyscus eremicus* found clambering in the top of an *Avena barbata* during the middle of the afternoon on a sunny day. See Field Notes for 21 February 1999

**Plate
1**



**1999
Field
Notes**

Plate 2A — Photograph of a segment of a *Plantago erecta* population found on Otay Mesa, northeast of Brown. See Field Notes for 21 February 1999.
Plate 2B — *Bothriocyrtum californicum* nest found on the south-facing slope of a property at the west edge of Otay Mesa. See Field Notes for 28 March 1999

**Plate
2**



**1999
Field
Notes**

Plate 5A — View of the central portion of the body of a *Crotalus viridis helleri* found in dense native and non-native grasses in an area of mima mounds. One two individuals. See Field Notes for 4 April 1999.
Plate 5B — Vegetative *Dudleya multicaulis* found on mima mounds on East Otay Mesa. See Field Notes for 28 March 1999.

**Plate
5**

Copies of four slides illustrating the site were included in the reports submitted to the Fish and Wildlife Service, provided to REC Environmental, to the project applicant and retained by RBRiggan and Associates.

If this report does not contain copies of the slides please refer to the thumbnails printed in the two proceeding Figures. Additional copies of the slides may be obtained from the author.

Appendices

1. Copies of RBR Field Note Entries
2. Completed FWS "Quino Checkerspot General Form" for Each Site Visit

3 March 1999

The following notes were made on the first of what is to be several field visits to a property on the eastern edge of the Otay Mesa, in the southern part of the City and County of San Diego. The property is referred to as the Sunroad Centrum site and it encompasses approximately 250 acres. The majority of the site lies in the southwest quarter of section 25, Township 18 South, Range 1 West. The property also includes the northeast quarter of the southeast corner of section 26 and the southeast quarter of the northwest quarter of section 25. The property is illustrated in this field notebook as Figure 8. This site visit is the first of several that will ultimately constitute a federal protocol presence/absence survey for the endangered Quino Checkerspot Butterfly (*Euphydryas editha quino*).

The larvae of the Quino Checkerspot feed primarily on *Plantago erecta*. The Sunroad Centrum property has been previously surveyed by staff members of REC Environmental. That fairly extensive effort produced no observations of the *Plantago*. In addition, none of what are considered secondary larval food plants were observed during the course of the survey effort. No individuals of *Collinsia heterophylla* were found and only one or two widely scattered individuals of *Castilleja exserta* were seen.

The bulk of the property has been used in recent years in intensive agriculture. Based on the ruderal vegetation that now occupies most of the site, it is difficult to ascertain the elapsed time since the last agricultural effort. Topographically, the north central portion of the site is higher ground and it is underlain by the Stockpen gravelly clay loam (Bowman, et al., 1973). The site is mapped as being underlain entirely by the Otay formation (Kennedy and Tan, 1977). If, in fact, this is correct geological mapping, then this particular member of the Otay formation is characterized by a significant component of cobbles and small boulders, all of which appear to be derived from the Santiago peak metavolcanics which dominate the high ground to the east. It would appear that the source of these cobbles and boulders is slope wash from the adjacent high ground. Agricultural activity (apparently hand transport to clear the fields for discing) has resulted in these rocks being concentrated into dense piles scattered across the site. The typical rock pile measures perhaps 15 by 25 feet, contains no vegetation, and stands above the immediately adjacent ground surface by 1 to 2 feet. The piles consist entirely of metavolcanic clasts.

The majority of this north central area is occupied by a series of mima mounds. The tops of the mounds support scattered individual shrubs characteristic of the Coastal Sage Scrub. Interstices between the individual mounds are generally dominated by a suite of grass species, many of which are native bunch grasses. The area between the mounds is probably best described as a disturbed native grass land.

Shrubs species characteristic of the mima mounds within the relictual grass land include the following:

Artemisia californica
Isomeris arborea
Opuntia sp.

Salvia mellifera
Eriogonum fasciculatum

At scattered locations within the property there are also a small number of vernal pools. These are generally found in the interstices between the individual mima mounds. These vernal pools are, of course, classifiable as wetlands. Indeed, at least one of the vernal pools contains a small number of individuals of the federally listed endangered *Eryngium aristulatum*. No attempt was made to survey or evaluate the pools as a part of this field effort. Other significant resources within the bounds of the Sunroad Centrum property are the subject of studies and reports developed, or being developed, by REC Environmental.

The balance of the property, that is the area outside of the remaining mima mounds, has been intensely used in recent years in agriculture and is today occupied by a ruderal association. This ruderal association is dominated by a fairly basic suite of native and non-native adventive weed species. Species typical of this association include:

Brassica nigra
Foeniculum vulgare
Centaurea melitensis
Bromus (several species)
Avena barbata

While no food plants (*Plantago*, *Castilleja*, or *Collinsia*) associated with the larvae of the Quino Checkerspot were located during the course of the plants survey of the property, it was felt that the high ground (that area above 620 feet) might serve as a hilltopping location for the Quino. The Quino has been observed (in the current year) approximately five miles to the north, on the north side of Otay Lake. The quino has also been observed in an area roughly a mile to two miles to the west of the property as a part of RECON's survey effort for state Route 125 (Harold A Wier, Dudek and Associates, personal communication, March, 1999).

In that the Quino has been observed to the west of the subject property (and keeping in mind that the prevailing wind is from the west), and considering observations of the Quino to the north and northeast, it was felt that an adult survey of the project site was mandated, if for no other reason than an abundance of caution. When one considers that the species has been found a short distance west and northwest it is, a priori, a reasonable assumption that species can be found hilltopping on the subject property. It is perhaps for this latter reason that the adult survey was conducted.

The field survey conducted on this date was between the hours of 1130 and 1315. At the beginning of the observational period wind measurements were made with the Turbometer at between 4.4 and 10.3 mph. Air temperature at the beginning of the observational period was 64.6 degrees Fahrenheit and humidity was 55 percent. It should be noted that wind speed is highly variable on-site. As one proceeds into the mima mound area one finds pockets within the terrain where wind speed is essentially zero due to the topographic relief. The property was entered at the 593 elevation point on Harvest Road. The observers preceded east from that point and subsequently concentrated their effort on the high ground (generally above the 620 foot contour). Observations of the site were made

by Riggan who was accompanied in the field by Denise Dixon and Dr. Danielle Flynn of the REC Environmental staff.

Butterfly species observed on this date (and the number of individuals per species) were as follows:

Coenonympha tullia — 27
Pontia protodice — 2
Vanessa atalanta — 1
Strymon melinus — 1
Papilio zelicaon — 2
Brephidium exile — 1
Vanessa sp. — 1
Erynnis sp. — 1

The extensive numbers of *Coenonympha tullia* are not unexpected. The entire 250 acre property is at some level dominated by grasses and the less disturbed areas are dominated by native grasses. Most of the other species noted were seen as flybys. The only exceptions were the *Strymon* which was found perched in the lee of a shrub near the crest of the (albeit subtle) hilltopping area and the *Brephidium* which was found tightly associated with an *Atriplex semibaccata*.

[Note added 10 May 1999: now that the flight season for the Quino is over it should be added that of the seven visits made to this property, a *Brephidium exile* was found only on this one field date. *Atriplex semibaccata* is fairly common in the ruderal parts of the property and individual plants and clumps of the plants were examined for this species but no others were found.]

Two Northern Harriers (*Circus cyaneus*) were seen on the property. One was seen in doing the display looping characteristic of mating or pair bonding.

[Note added on 12 June 1999: this pair was seen on-site throughout the observational period for the Quino. On a subsequent visit on this date, three individuals were seen flying and interacting together. One was thought to be a juvenile, ergo mating did occur on-site? However, neither a nest nor a fledgling was ever found during the survey of the site, however see other entries in these notes for this site].

12 March 1999

The following notes were made during a field visit to what is referred to as the Sunroad Centrum property on eastern Otay Mesa. This field visit is part of an ongoing survey of the property to determine the presence or absence of *Euphydryas editha quino*. This property has been previously described in this notebook (see the entry at 3 March 1999) and is illustrated as Figure 8.

Observations on this field date were made between the hours of 1230 and the 1400. Wind speed was measured at the beginning of the observational period at between 2.7 and 7.9 mph. Air temperature at the beginning of the period was measured at 70.4 degrees Fahrenheit and the humidity was 36

percent. The primary field survey was conducted by Riggan who was accompanied in the field by Elyssa Robertson of the REC Environmental staff. The property was entered from Harvest Road and the focus of the survey effort was the high ground, the hilltopping area generally located above 620 feet.

The following Butterfly species (and numbers of individuals) were seen during the course of the survey effort:

Coenonympha tullia — 19

Vanessa atalanta — 1

The rather small number of both species and individuals was surprising given the success on the site only a week previously. In that a large number of *Coenonympha* were flying, it was felt that weather conditions were appropriate for Butterfly activity. The one *Vanessa atalanta* noted was seen near Harvest Road in association with a dense stand of the *Brassica nigra*.

19 March 1999

The following the field notes were taken as part of an ongoing survey of the Sunroad Centrum property to determine the presence or absence of the federally endangered Quino Checkerspot Butterfly. The Sunroad Centrum property has been previously described in these notes at 3 March 1999. The property is also illustrated in this field notebook as Figure 8.

Field observations on this date were made by a single observer: Riggan. Weather conditions were measured at the beginning of the observational period. Wind speed was determined with a Turbometer as lying between 5.1 and 10.4 mph. It should be noted, once again, that wind is extremely erratic and that the wind speed measured on Harvest Road is not necessarily reflective of the wind speeds found within the microtopography of the mima mound complex. Air temperature was recorded at 74.6 degrees and humidity was 41 percent. All field observations were made between the hours of 1400 and 1630.

Only a single species of Butterfly was noted during the course of the survey effort:

Coenonympha tullia — 37

Given the very large number of *Coenonympha* observed and given their broad distribution throughout the central portion of the site, it was felt that the weather conditions were certainly consistent with the flight requirements of butterflies and general. One cannot readily speculate as to why additional butterfly species were not observed.

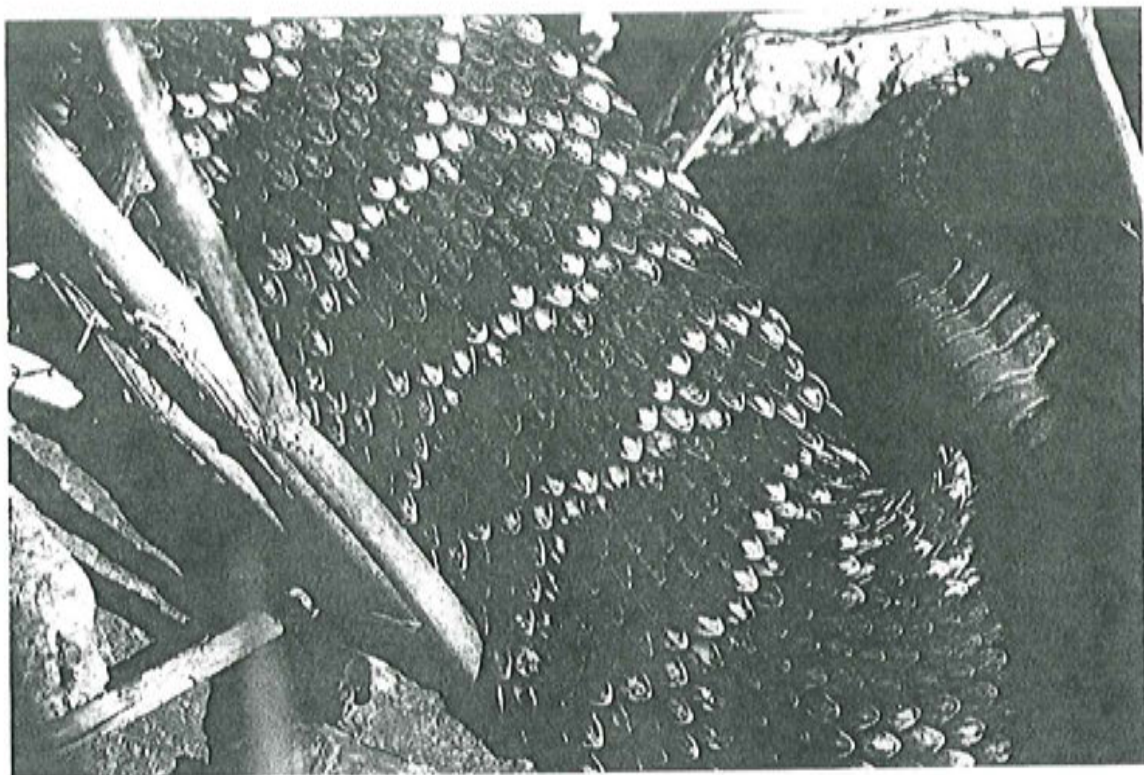
This is the third survey date on the Sunroad Centrum property. On this date, and on each of the previous two, extensive sign indicative of Voles (*Microtus californicus*) was seen in throughout the property. As a one might expect, a dense rodent population is typically correlated with a high number of predators. Near the end of the observational period, while returning to the truck, this

observer stopped momentarily near one of the numerous rock piles scattered across the site. Upon stopping, a brief (perhaps 1 to 2 seconds) rattle was heard. The observer immediately glanced around the area where he was standing thinking that a rattlesnake was in close proximity. Not seeing the snake, the author shifted his feet slightly only to hear a rattle lasting perhaps five seconds. The rattle was obviously close and a more intense visual scan was done of the immediate vicinity. This done, the author shifted his right foot again only to be now presented with a continuous rattle. Looking down the author realized that he was standing on an approximately 3 to 3.5 foot long Western Diamondback Rattlesnake, *Crotalus viridis helleri*. The snake had elevated the fore part of its body and was in a strike posture approximately eight inches from the author's ankle. Needless to say, the snake and its immediate vicinity were quickly abandoned. The author feels bad about this particular incident, in that the author is somewhat overweight and undoubtedly did significant internal damage to the poor animal by standing on it. Once released from the "weight", the snake immediately retreated into the rock pile. However, as it went it significantly flattened its body. This can be seen to a certain extent in the photograph of the snake on Plate 1 of these field notes. The flatness of the body was quite noticeable and one wonders if this might be a behavior adapted to predator avoidance? Would this flattened posture make the snake more difficult to pick up, especially by a hawk?

Also illustrated in Plate 1 [note that the dates on the Plate caption are wrong, they should refer to 19 March 1999] is a *Peromyscus* found up in the top of an *Avena barbata* stalk in the middle of the afternoon. The mouse held this position for several minutes allowing this and a number of other photographs. Based on the relatively uniform color of the tail it may be a *P. eremicus*. Why it was abroad in the middle of the day (attempting suicide as it were) is an unknown. There is no lack of food resources on the site, or at least that is the way the site appears to a human observer. Steve Montgomery opined that the *Peromyscus* populations are elevated due to last years El Niño event and there may simply be a great deal of competition for space. Perhaps this animal had been crowded into the upper part of the grass canopy.

After work was complete on the Sunroad Centrum site, properties to the west were examined briefly. An extensive population of *Plantago erecta* and *Castilleja exserta* was found. Both species were found together and both seemed to occupy a considerable acreage within the site. This is perhaps the most extensive Quino-suitable habitat that this author has found or observed. The habitat was located behind a posted barbed wire fence along the north side of Lone Star Road, beginning approximately 0.3-miles east of La Media Road. From this point the habitat extended approximately a ¼-mile or more (perhaps significantly more) to the east. The author elected to not violate the "no trespassing" signs posted at several locations along the well maintained fence and viewed the property with binoculars from the edge of Lone Star Road. Because of the flat terrain at this location it was difficult to see an appreciable distance from the fence line but in at least one location the Quino habitat seemed to extend at least 100-feet north of the road. The existence of this habitat further reinforces the argument for a formal adult survey of the Sunroad Centrum site. That site is located directly down wind from this Quino habitat area. A photograph of the *Plantago* is provided in Plate 2 of this field notebook. [Note that the date on the Plate is incorrect, it should read 19 March 1999].

There is a wild onion, *Allium* sp., growing within the survey area of the Sunroad Centrum site. The onion is in bloom at this time and *Coenonympha* were observed nectaring on the flowers. The



**1999
Field
Notes**

Plate 1A — Photograph of a segment of a *Crotalus viridis helleri*, the snake was trying to retreat into a boulder pile and had substantially flattened the exposed portion of its body. See Field Notes for 21 February 1999.
Plate 1B — *Peromyscus eremicus* found clambering in the top of an *Avena barbata* during the middle of the afternoon on a sunny day. See Field Notes for 21 February 1999

**Plate
1**



**1999
Field
Notes**

Plate 2A — Photograph of a segment of a *Plantago erecta* population found on Otay Mesa, northeast of Brown. See Field Notes for 21 February 1999.
Plate 2B — *Bothriocyrtum californicum* nest found on the south-facing slope of a property at the west edge of Otay Mesa. See Field Notes for 28 March 1999

**Plate
2**

Coenonympha were also seen nectaring on Blue-eyed Grass (*Sysrinchium bellum*) but, when both plants were present, they seemed to favor the *Allium*.

While walking through the primary survey area, a Northern Harrier (*Circus cyaneus*) was flushed from beneath a large, overhanging *Artemisia californica*, at a distance of only 2 meters. At that distance, of course, it is hard to tell who was more startled, the bird or the author. There was no sign of a nest, of eggs, or of young beneath the bush. However, a "nest" site of the Northern Harrier was observed by the author on a nearby property a few years previous. In that case there was no formal nest at all, rather, the downy chick was simply on the ground beneath a shrub. The soil beneath the shrub observed on this field date was clear and packed and could represent a site used frequently by the Harrier. It will be interesting to see if additional "nest" sites are found during the course of the Quino survey.

A striped phase California Kingsnake (*Lampropeltis getulus*) was found on the subject property. The snake was mature, perhaps in its 3rd or 4th year.

28 March 1999

The following notes were made during a field visit to what is referred to as the Sunroad Centrum property (RBR job number 1730.10C). This field visit is part of an ongoing series, which constitute a federal protocol survey for the endangered Quino Ceckerspot Butterfly (*Euphydryas editha quino*). The subject property has been previously described in these field notes, see the entry at 3 March 1999. The property is also mapped as Figure 8 of this field notebook.

Observations on this date were made between 1230 and 1400 hours. A single observer was onsite this date: Riggan. Wind speed was measured at the beginning of the observational period at between 3.2 and the 9.7 mph. It should be once again pointed out that wind speed was extremely erratic at this site and would frequently dropped to zero within the microtopography of the mima mound area. Air temperature at the beginning of the field effort was 74.6 degrees Fahrenheit and humidity was 44 percent. Temperature and humidity dropped slightly through the field period. The survey effort was concentrated in the north central portion of the site, generally above an elevation of approximately 620 feet. Entry was made from Hrvest Road and the area walked was comparable to that covered during previous survey dates.

The following butterflies (and numbers of individuals) were observed on this field date:

Papilio zelicaon — 7
Pontia protodice — 2
Coenonympha tullia — 22
Vanessa anabella — 1

Along the extreme northern edge of the principal survey area within the site, on the flatter slopes immediately overlooking Johnson Canyon, there are extensive stands of *Foeniculum vulgare*. The majority of the *Papilio zelicaon* were seen in this area, in association with the larval food plants.

In the two *Pontia protodice* were seen as flybys. Both of were examined carefully in binoculars so as to carefully determine the species. The size, color, and flight behavior are sufficient to distinguish in the species from the *Coenonympha*.

The single *Vanessa anabella* was found flying among *Brassica nigra* and the edge of Harvest Road.

The *Coenonympha tullia* were scattered throughout the focused survey area within the project site. The majority of individuals observed were flushed from within the dense grasses as the author walked slowly between the mima mounds. Typically, the flushed individuals would fly a few feet and then land within the grasses. This behavior allowed a fairly accurate count to be made in that one could clearly observe where each individual butterfly landed, thereby preventing double counts.

As happened on the previous field date, a Northern Harrier was flushed at close distance from beneath a shrub. Once again, there was no apparent nest, eggs, or fledglings beneath the shrub. However, the ground beneath shrub was relatively clear and appeared to be somewhat packed. The location where the adult bird was flushed on this date was in the general vicinity of the one seen upon 19 March, however it was a clearly different location.

A Ring-necked Snake (*Diadelpis amabilis*) was found in an opening in the grass in the northern part of the focused survey area. The snake was briefly captured and examined but was far too active for photography (the author was alone and has only two hands).

A juvenile rattlesnake (*Crotalus viridis helleri*) was found on Lone Star Road, approximately a quarter mile west of the junction with Harvest Road. This individual appeared to be approximately a year in age, based on its relative length.

Previous survey work on the subject property (by REC Environmental) resulted in the location of a few small populations of *Dudleya variegatus*. This species occurs in small, gravelly openings in the vegetation on the sides of mima mounds. This plant is considered a species of special concern by the Fish and Wildlife Service and is a List 1B plant on the CNPS Inventory. A photograph of the plant is included in this field notebook on Plate 5 [Note: the Plate is mislabeled] .

4 April 1999

The following field notes were made during the visit to the Sunroad Centrum property on the western part of Otay Mesa. This field visit was part of an ongoing federal protocol survey to determine the presence or absence of the Quino Checkerspot Butterfly (*Euphydryas editha quino*). The subject property has been previously described, refer to the entry in this field notebook at 3 March 1999.

Wind speed was measured at the beginning of the field visit using a Turbometer. Speeds of from 1.7 to 4.7 mph were recorded at the edge of Harvest Road. This particular location has an unrestricted reach to the west and the wind speeds measured at this location probably exceed those found within the primary survey area of the subject property. Within the primary survey area the microtopography of the mima mounds can effectively reduce wind speed to near zero. Air

temperatures and the beginning of the period were 69.9 degrees Fahrenheit and dropped to 66.1 degrees by the end of the observations. Humidity was relatively constant, measuring 32 percent at the beginning of the period and 31 percent at the end of the field observations. One observer onsite this date: Riggan.

If the following butterfly species (and numbers of individuals) were observed on this date:

Vanessa annabella — 6
Coenonympha tullia — 47
Apodemia mormo — 1
Papilio zelicaon — 2

The *Vanessa* were scattered among *Brassica nigra* near Harvest Road, outside of the primary survey area. One or two *Vanessa* were seen in flying within the primary survey area, possibly as hilltopping individuals.

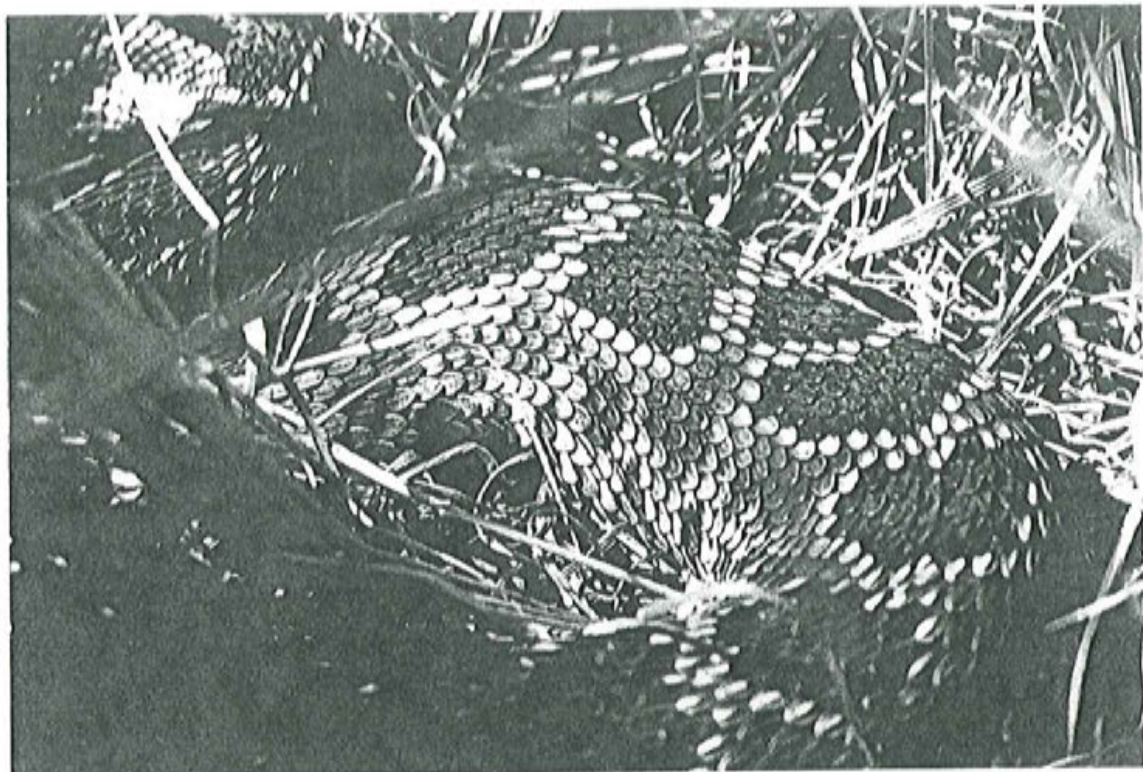
The *Coenonympha* appear to be closely tied to the presence of native bunch grasses. In the relatively recently disturbed (agricultural) fields, where the grasses are virtually all annuals and many are nonnative, the *Coenonympha* is not found.

The single *Apodemia mormo* was found in direct association with a small stand of *Eriogonum fasciculatum*. This shrub is sparse but relatively common on the tops of the mima mounds.

Spring migration is in full swing, large numbers of Cliff Swallows were seen over the site during the entire observational period.

In a figurative repeat of the observation of a *Peromyscus eremicus* on an earlier field date at this site, at least two voles were seen exposed, outside of their system of haunts and trails, in plain sight. Given the constant presence of a pair of Northern Harrier's on this property, the action of these voles is tantamount to suicide. It is relatively common to see voles moving beneath the grasses as one walks across the property. Rather, one should say that it is relatively common to see grasses move, indicating the passage of voles, as one walks across the property.

The author, once again, came within less than six inches of stepping directly in the middle of a pair of Western Diamondback Rattlesnakes (*Crotalus viridis helleri*). The two snakes were lying in the grass, intertwined about each other. As a humorous but factual anecdote, the snake which was effectively "on top" immediately retreated about three feet from its companion, coiling in heavy grass and proceeding to rattle continuously. The second snake, the one effectively "on the bottom" remained in the position it was found, neither moving nor making any attempt to rattle. One assumes that some sort of making behavior was either in progress and/or was interrupted. The snake that appeared to be "on the bottom" was photographed and appears in Plate 5 of this field notebook.



**1999
Field
Notes**

Plate 5A — View of the central portion of the body of a *Crotalus viridis helleri* found in dense native and non-native grasses in an area of mima mounds. One to two individuals. See Field Notes for 4 April 1999.
Plate 5B — Vegetative *Dudleya multicaulis* found on mima mounds on East Otay Mesa. See Field Notes for 28 March 1999.

**Plate
5**

10 April 1999

The following notes were made during a field visit to the Sunroad Centrum property (RBR Job Number 1730.10C). This visit is part of an on-going series of field surveys as part of a federal protocol survey of the property to determine the presence or absence of the Quino Checkerspot Butterfly (*Euphydryas editha quino*). The property has been previously described in these field notes, see the entry at 3 March 1999. The property is also illustrated in this notebook as Figure 8.

Observations on this date were made between the hours of 1230 and 1345. A single observer participated: Riggan. Wind speed was measured at the beginning of the observational period using a Turbometer, speeds were between 3.5 and 7.8 mph. Wind speeds within the site, as previously discussed, were less due to microtopographical considerations. Air temperature at the beginning of the period was 71.5 degrees Fahrenheit and the humidity was 32 percent. Temperatures were warming through the period.

The following butterfly species (and numbers of individuals) were seen during the field effort:

Papilio zelicaon — 7
Coenonympha tullia — 22
Vanessa sp. — 1
Apodemia mormo — 1

The *Papilio* were, once again, seen primarily along the northern edge of the site near the extensive stands of *Foeniculum vulgare*. This is a hilltopping species yet in this case the high ground is immediately adjacent to the larval food plants. This probably explains the large numbers seen on the site. In addition, the *Foeniculum* stand is in the lee of the high ground and, therefore, is exposed to less wind than is the balance of the hilltop. Some of the *Papilio* were observed nectaring on *Dichelostemma pulchella*.

As is apparently typical of the site, the *Coenonympha* were distributed commonly in the areas with native grasses and were sparse (or not present) in areas dominated by non-native, ruderal grasses and forbs.

The single *Vanessa* was a flyby (a member of the *cardui* group) and could not be identified to species. The *Apodemia mormo* was seen in association with a small stand of California Buckwheat (*Eriogonum fasciculatum*).

17 April 1999

The following notes were taken during a visit to the west Otay Mesa Sunroad Centrum property. This site is RBR Job Number 1730.11D and is the subject of an ongoing series of surveys (in accordance with federal protocols) to determine the presence or absence of the Quino Checkerspot Butterfly (*Euphydryas editha quino*). The property is illustrated as Figure 8 in these field notes and is

described in detail in the entry at 3 March 1999.

A single observer was on-site this date: Riggan. All observations were made between the hours of 1330 and 1500. Air temperature at the beginning of the period was 87.2 degrees and the humidity was 19 percent. There was no appreciable temperature change during the field period. Winds were measured with a Turbometer at the edge of Harvest Road; speeds of from 4.8 to 10.4 were recorded.

Spring is starting to pass. The grasses on the subject property are drying and this is the first field date when most of the non-shrubs were observed to be in water stress. Complete drying of the annual grasses should occur before our next visit to the site. As would be expected with drying conditions, a small suite of butterflies was observed on this date:

Pontia protodice — 2
Vanessa anabella — 1
Coenonympha tullia — 12
Papilio zelicaon — 1

The *Pontia*, *Vanessa* and *Papilio* were all flybys on the "hilltop" in the primary survey area of the site. The *Coenonympha* were scattered across the site as usual but the numbers are clearly dropping. It almost felt like one had to work to find them.

An interesting note: all this grass (including native bunch grasses and non-native annuals) and yet no HesperIIDae have been observed within the bounds of the property, not a single individual. One would think that at least a *Hylephila phyleus* would have been seen by now. That species is known to occur on native bunch grasses in chaparral stands close to the coast, why not in these fields??

[Note added on 10 May 1999: The Quino flight season was closed this morning by the Fish and Wildlife Service. During the ten weeks of the flight season, more than 38 of the 70-days (or greater than 54 percent) were unsuitable for survey work at the Sunroad Centrum site. Unsuitable days were characterized by excessive wind, cloud cover, rain, low air temperature, or some combination of these factors. The Sunroad Centrum site was surveyed seven times during the period. This was the maximum possible number of survey dates given weather considerations, and assuming a seven day work week on the part of the permitted consultant. Of the last three weeks of the flight period, only three whole days and one to two half days (after coastal cloud burn-off) were suitable for butterfly work in Otay Mesa.]

Quino Checkerspot General Form

Survey type: Habitat Assessment/Adult Survey

Surveyor: RIGGAN Date: 03/03/99 Site Visit No: ① 2 3 4 5 6 7 8 9 10 J# 1730

Total site acres: 250 Site Name: Sunroad Site Location: Okey Mesa

Time (24 hr)	Sky	Wind (Beaufort)	Temp F or C
Begin <u>1130</u>	<u>clear</u> partcloudy/overcast/fog/drizzle/shower	<1 1-3 <u>④-7</u> 8-12 >12	<u>64.6</u>
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	RAIN ↓
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
End <u>1315</u>	<u>clear</u> partcloudy/overcast/fog/drizzle/shower	<1 <u>④</u> 4-7 8-12 >12	<u>±70</u>

Total hours surveyed: 1.75
 Focused Survey Acres: <40 Elev Min: 600 ft Max 625 ft

Describe, map, and estimate areas surveyed below.

Host Plants ^a	Patch Size (ft ²)	No Plants/ft ²	Sparse/Dense ^b	Map ID ^c	
<u>none</u>					

a. Larval or nectar resources. Identify species. b. Sparse = plants not touching; dense = plants touching c. Corresponds to polygon on a map.

Surrounding land uses (including adjoining properties):

North <u>vacant / prison</u>	Distance <u>—</u> ft./mile → <u>variable</u>
South <u>agriculture / industrial</u>	Distance <u>—</u> ft./mile → <u>"</u>
East <u>vacant / agriculture</u>	Distance <u>—</u> ft./mile → <u>"</u>
West <u>vacant / agriculture</u>	Distance <u>—</u> ft./mile → <u>variable</u>

Habitat onsite (circle): open soils hilltop ridge Plantago Castilleja soil crusts old roads
 nectar clay soils rock outcrops

Conditions: (e.g., grazing agriculture sowbugs/earwigs recent fire grading)

Other: see field notes

Quino Checkerspot General Form

Survey type: Habitat Assessment/Adult Survey

Surveyor: RIGGAN Date: 03/12/99 Site Visit No: 12345678910 J# 1730

Total site acres: 250 Site Name: Sunroad Site Location: Oley Mesa

Time (24 hr)	Sky	Wind (Beaufort)	Temp F or C
Begin <u>1230</u>	<u>clear</u> partcloudy/overcast/fog/drizzle/shower	<1 <u>(3 4-7)</u> 8-12 >12	<u>70.4</u>
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	↑ K R E S T S ↓
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
End <u>1400</u>	<u>clear</u> partcloudy/overcast/fog/drizzle/shower	<1 <u>(3 4-7)</u> 8-12 >12	<u>±70</u>

Total hours surveyed: 1.5
 Focused Survey Acres: <40 Elev Min: 600ft Max: 625ft

Describe, map, and estimate areas surveyed below.

Host Plants ^a	Patch Size (ft ²)	No Plants/ft ²	Sparse/Dense ^b	Map ID ^c
<u>none</u>				

a. Larval or nectar resources. Identify species. b. Sparse = plants not touching; dense = plants touching c. Corresponds to polygon on a map.

Surrounding land uses (including adjoining properties):

North <u>vacant/prison</u>	Distance <u>—</u> ft./mile → <u>variable</u>
South <u>agriculture/industrial</u>	Distance <u>—</u> ft./mile → <u>"</u>
East <u>vacant/agriculture</u>	Distance <u>—</u> ft./mile → <u>"</u>
West <u>vacant/agriculture</u>	Distance <u>—</u> ft./mile → <u>variable</u>

Habitat onsite (circle): open soils hilltop ridge Plantago Castilleja soil crusts old roads
 nectar clay soils rock outcrops

Conditions: (e.g., grazing agriculture sowbugs/earwigs recent fire grading)
 Other: see field notes

Quino Checkerspot General Form

Survey type: Habitat Assessment/Adult Survey

Surveyor: RIGGAN Date: 03/19/99 Site Visit No: 1 2 3 4 5 6 7 8 9 10 # 1730

Total site acres: 250 Site Name: Sunroad Site Location: Oley Mesa

Time (24 hr)	Sky	Wind (Beaufort)	Temp F or C
Begin <u>1400</u>	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 <u>(4-7 8-)</u> 2 >12	<u>74.6</u>
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	Hilltop ↓ 1700 ft ↓ cooling
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
End <u>1630</u>	clear/partcloudy/overcast/fog/drizzle/shower <u>2% cloud cover</u>	<1 1-3 <u>(4-7 8-)</u> 2 >12	<u><70</u>

Total hours surveyed: 2.5
 Focused Survey Acres: 40 plus Elev Min: 600ft Max: 625ft
↪ see field notes

Describe, map, and estimate areas surveyed below.

Host Plants ^a	Patch Size (ft ²)	No Plants/ft ²	Sparse/Dense ^b	Map ID ^c	
<u>none</u>					

a. Larval or nectar resources. Identify species. b. Sparse= plants not touching; dense = plants touching c. Corresponds to polygon on a map.

Surrounding land uses (including adjoining properties):

North <u>vacant/prison</u>	Distance <u>—</u> ft./mile <u>→ variable</u>
South <u>agriculture/industrial</u>	Distance <u>—</u> ft./mile <u>→ "</u>
East <u>vacant/agriculture</u>	Distance <u>—</u> ft./mile <u>→ "</u>
West <u>vacant/agriculture</u>	Distance <u>—</u> ft./mile <u>→ variable</u>

Habitat onsite (circled): open soils hilltop ridge Plantago Castilleja soil crusts old roads
 nectar clay soils rock outcrops

Conditions: (e.g., grazing agriculture sqwbugs/earwigs recent fire grading)

Other: see field notes

Quino Checkerspot General Form

Survey type: Habitat Assessment/Adult Survey

Surveyor: RIGGAN Date: 03/28/99 Site Visit No: 1 2 3 4 5 6 7 8 9 10 J# 1730
 Total site acres: 250 Site Name: Sunroad Site Location: Otoy Mesa

Time (24 hr)	Sky	Wind (Beaufort)	Temp F or C
Begin <u>1230</u>	<u>clear</u> /partcloudy/overcast/fog/drizzle/shower	<1 <u>3</u> <u>4-7</u> <u>8</u> /12 >12	<u>74.6</u>
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	↓
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
End <u>1400</u>	<u>clear</u> /partcloudy/overcast/fog/drizzle/shower	<1 <u>3</u> <u>4-7</u> <u>8</u> /12 >12	<u>±78</u>

Total hours surveyed: 1.5
 Focused Survey Acres: <40 Elev Min: 600ft Max: 625ft

Describe, map, and estimate areas surveyed below.

Host Plants ^a	Patch Size (ft ²)	No Plants/ft ²	Sparse/Dense ^b	Map ID ^c	
<u>none</u>					

a. Larval or nectar resources. Identify species. b. Sparse= plants not touching; dense = plants touching c. Corresponds to polygon on a map.

Surrounding land uses (including adjoining properties):

North vacant/prison Distance — ft./mile variable
 South agriculture/industrial Distance — ft./mile "
 East vacant/agriculture Distance — ft./mile "
 West vacant/agriculture Distance — ft./mile variable

Habitat onsite (circle): open soils hilltop ridge Plantago Castilleja soil crusts old roads
 nectar clay soils rock outcrops

Conditions: (e.g., grazing agriculture sowbugs/earwigs recent fire grading)

Other: see field notes

Quino Checkerspot General Form

Survey type: Habitat Assessment/Adult Survey

Surveyor: RIGGAN Date: 04/04/99 Site Visit No: 1 2 3 4 (5) 6 7 8 9 10 J# 1730

Total site acres: 250 Site Name: Sunroad Site Location: Otey Mesa

Time (24 hr)	Sky	Wind (Beaufort)	Temp F or C
Begin <u>1345</u>	<u>(clear)</u> partcloudy/overcast/fog/drizzle/shower	<1 <u>(1-3 4-7)</u> 8-12 >12	<u>69.9</u>
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
End <u>1515</u>	<u>(clear)</u> partcloudy/overcast/fog/drizzle/shower	<1 <u>(1-3 4-7)</u> 8-12 >12	<u>66.1</u>

Total hours surveyed: 1.5
 Focused Survey Acres: <40 Elev Min: 600ft Max: 625ft

Describe, map, and estimate areas surveyed below.

Host Plants ^a	Patch Size (ft ²)	No Plants/ft ²	Sparse/Dense ^b	Map ID ^c	
<u>none</u>					

a. Larval or nectar resources. Identify species. b. Sparse = plants not touching; dense = plants touching c. Corresponds to polygon on a map.

Surrounding land uses (including adjoining properties):

North vacant/prison Distance — ft./mile variable
 South agriculture/industrial Distance — ft./mile "
 East vacant/agriculture Distance — ft./mile "
 West vacant/agriculture Distance — ft./mile variable

Habitat onsite (circle): open soils hilltop ridge Plantago Castilleja soil crusts old roads
 nectar clay soils rock outcrops

Conditions: (e.g., grazing agriculture sowbugs/earwigs recent fire grading)

Other: see field notes

Quino Checkerspot General Form

Survey type: Habitat Assessment/Adult Survey

Surveyor: RIGGAN Date: 04/10/99 Site Visit No: 1 2 3 4 5(6)7 8 9 10 J#1730
 Total site acres: 250 Site Name: Sunroad Site Location: Okey Mesa

Time (24 hr)	Sky	Wind (Beaufort)	Temp F or C
Beg ⁿ <u>1230</u>	<u>clear</u> partcloudy/overcast/fog/drizzle/shower	<1 <u>3 4-7</u> 8-12 >12	<u>71.5</u>
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	<u>71</u>
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/ partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
End <u>1345</u>	<u>clear</u> partcloudy/overcast/fog/drizzle/shower	<1 <u>3 4-7</u> 8-12 >12	<u>± 75</u>

Total hours surveyed: 1.25
 Focused Survey Acres: <40 Elev Min: 600ft Max: 625ft

Describe, map, and estimate areas surveyed below.

Host Plants ^a	Patch Size (ft ²)	No Plants/ft ²	Sparse/Dense ^b	Map ID ^c	
<u>none</u>					

^a Larval or nectar resources. Identify species. ^b Sparse = plants not touching; dense = plants touching ^c Corresponds to polygon on a map.

Surrounding land uses (including adjoining properties):

North vacant/prison Distance _____ ft./mile → variable
 South agriculture/industrial Distance _____ ft./mile → "
 East vacant/agriculture Distance _____ ft./mile → "
 West vacant/agriculture Distance _____ ft./mile → variable

Habitat onsite (circle): open soils hilltop ridge Plantago Castilleja soil crusts old roads
 nectar clay soils rock outcrops

Conditions: (e.g., grazing agriculture sowbugs/earwigs recent fire grading)

Other: see field notes

Quino Checkerspot General Form

Survey type: Habitat Assessment/Adult Survey

Surveyor: RIGGAN Date: 04/17/99 Site Visit No: 1 2 3 4 5 6 7 8 9 10
(mm/dd/yyyy)

Total site acres: 250 Site Name: Sunroad Site Location: Otey Mesa

Time (24 hr)	Sky	Wind (Beaufort)	Temp F or C
Begin <u>1330</u>	<u>clear</u> /partcloudy/overcast/fog/drizzle/shower	<1 1-3 <u>4-7</u> 8-12 >12	<u>87.2</u>
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	↓ 80 ↓
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
	clear/partcloudy/overcast/fog/drizzle/shower	<1 1-3 4-7 8-12 >12	
End <u>1500</u>	<u>clear</u> /partcloudy/overcast/fog/drizzle/shower	<1 1-3 <u>4-7</u> 8-12 >12	<u>±86</u>

Total hours surveyed: 1.5
 Focused Survey Acres: <40 Elev Min: 600 ft Max: 625 ft

Describe, map, and estimate areas surveyed below.

Host Plants ^a	Patch Size (ft ²)	No Plants/ft ²	Sparse/Dense ^b	Map ID ^c	
<u>none</u>					

a. Larval or nectar resources. Identify species. b. Sparse = plants not touching; dense = plants touching c. Corresponds to polygon on a map.

Surrounding land uses (including adjoining properties):

North vacant/prison Distance ft./mile → variable
 South agriculture/industrial Distance ft./mile → "
 East vacant/agriculture Distance ft./mile → "
 West vacant/agriculture Distance ft./mile → variable

Habitat onsite (circle): open soils hilltop ridge Plantago Castilleja soil crusts old roads
 nectar clay soils rock outcrops

Conditions: (e.g., grazing agriculture sowbugs/carwigs recent fire grading)

Other: see field notes

Quino Checkerspot Butterfly Report, 2001

Report of a Protocol Survey for the Quino Checkerspot Butterfly over the Sunroad Centrum Property, Otay Mesa San Diego County, California

Prepared For:

**R•E•C Environmental
9517 Grossmont Summit Drive
El Cajon CA 91941**

Prepared By:

**RBRiggan and Associates
10646 Marbury Avenue
San Diego, California 92126
619-233-5454**

**11 June 2001
RBR Job Number 1825.10C**

**Report of a Protocol Survey for the
Quino Checkerspot Butterfly Over the
Sunroad Centrum Property, Otay Mesa,
San Diego County, California**

Prepared For

**R•E•C Environmental
2650 Jamacha Road
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Prepared By

**RBRiggan and Associates
10646 Marbury Avenue
San Diego, California 92126**

11 June 2001
RBR Job Number 1825.10C

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Executive Summary

The Quino Checkerspot Butterfly (*Euphydryas editha quino*) is listed under the Federal Endangered Species Act (ESA) as an endangered species. Prior to construction that might adversely affect potentially occupied habitats, surveys are mandated so as to prevent a "take." The proposed Sunroad Centrum Property is located within the "mandatory" survey area established by the Federal Year 2000 Survey Protocols (Fish and Wildlife Service, 2000). A survey to determine the presence or absence of the species has been required, therefore, by the County of San Diego to meet the requirements of the CEQA (California Environmental Quality Act) documentation for the proposed project.

The protocol survey identified an extremely limited, low density, localized population of *Plantago erecta*, the primary food plant utilized by the Quino larvae, and it located two hilltopping locations utilized by other species of butterflies. The survey did not, however, locate either adults or larvae of the Quino Checkerspot Butterfly. Despite the presence of the small *Plantago* population, no Quino were observed and it is concluded that the property is not occupied by that Federally listed species.

Other Lepidoptera were identified during the course of the field survey and these are listed and discussed in detail in the following material. Certain other field observations relative to other biological resources on the site are detailed in the attached Field Notes. Butterflies found within the bounds of the site were consistent with the habitats present and/or in the immediate vicinity. Implementation of the proposed development will not affect populations of the Quino Checkerspot Butterfly. Absent any significant effect, no mitigation measures are required and none are recommended.

I. Introduction

The Quino Checkerspot Butterfly (*Euphydryas editha quino*) is a small, colorful, spring flying, butterfly listed under the Federal Endangered Species Act (ESA) as an endangered subspecies. Thought to be extinct in 1995, a small population was found in Riverside County in 1996 and the subspecies was listed as endangered in 1997 (Fish and Wildlife Service). Surveys in 1997-2000 have identified three disjunct populations of the subspecies: one in the Lake Skinner area of Riverside County, one in the Otay Mountain area of San Diego County, and one in the Jacumba area of San Diego County.

The Quino Checkerspot Butterfly (*Euphydryas editha quino*) is best thought of as a "two phase" animal. The larvae are obligate feeders on one (two? three?) food plants: Dot-seed Plantain (*Plantago erecta*); perhaps Owl's Clover (*Castilleja exserta*); and possibly on other members of the Scrophulariaceae family. The presence or absence of these food plants is usually sufficient to determine the presence or absence of the larvae on a given site. The second "phase" is the adult butterfly. The males of the species exhibit what is referred to as "hilltopping" behavior. They fly to

prominent topographical points where they congregate, hours each day inspecting each butterfly that passes by, hoping to find a receptive female Quino.

Surveys for the Quino focus on populations of the larval food plants and on topographic high points where butterflies are observed (exhibiting reproductive) breeding behavior. Portions of a given property that are not suitable, such as the extensive Mustard fields over 170 acres of this 250-acre property, are excluded from a survey effort under the current spending rent protocols (Fish and Wildlife Service, 2000).

Only limited populations of the Dot-seed Plantain and other species known to be utilized by the Quino Checkerspot were found on the Sunroad site. However, extensive *Plantago/Castilleja* stands are known to occur to the west of this property and the Quino has been sighted both to the west (in the SR 125 corridor) and to the north of this property (north of Otay Lake on the Otay Ranch). In that there are known to be Quino is the general vicinity of the property and in that the Otay Mesa was historically occupied by extensive populations of the species (Murphy and White, 1984), it was felt that a federal protocol survey for the species was warranted. The species was, however, not found.

II. Project Location and Description

The Sunroad Centrum Property is located in the extreme southwestern part of the County of San Diego, east of Brown Field, near the east edge of the Otay Mesa (see Figures 1 and 2), but outside of the San Diego City Corporate Boundary. The site is characterized by a series of low rolling hills topographically above the primary mesa itself and at the southwestern edge of Johnson Canyon.

The geological formation underlying the entire site is mapped as "Otay Formation" by Kennedy and Tan (1977). However, the higher elevation parts of the site (especially the mima mound area) are characterized by numerous cobbles and small boulders derived from the Santiago Peak Metavolcanics, the country rock underlying Otay Mountain. This member of the Otay Formation appears, therefore, to be derived in part (if not wholly) from slope wash and colluvium from the mountains to the east. Around the periphery of the mima mound area are scattered piles of these cobbles and boulders. A few of the piles are on the order of ten by 20 feet (or greater) and are typically one to two feet above the immediately adjacent terrain. These seem to be set into depressions, rock only (no soil filler) extends below the level of the surrounding ground surface in many of the piles. It is assumed that these piles were created actinically by field workers clearing the cobbles and boulders from the adjacent fields (which have been ploughed and/or disced).

Surficial soils mapped on the property are illustrated in Figure 3 and include the following (Bowman, et al., 1973):

- Diablo Clay — these soils are well-drained, moderately deep to deep clays derived from soft, calcareous sandstone and shale. On-site they occupy the bulk of the lower 200 acres and roughly half of the upper 50 acres. The surface layer is mildly alkaline clay, about 27 inches

thick.

- Salinas Clay — this soil has a surface layer of clay and a substratum of clay to clay loam. On-site it occupies two small (approximately 10 acres) fingers along the southern boundary.
- Stockpen Gravelly Clay Loam — this soil is located on marine terraces. Mima mounds are typical in undisturbed areas of this soil type. On-site it occupies the central portion where the “pond” exists.
- Linne Clay Loam — this soil consists of well-drained, moderately deep clay loams derived from soft calcareous sandstone and shale. The surface layer is moderately alkaline, about 15 inches thick. On-site, it occupies a small corner in the northwestern section of the property.

The development plan for the property encompasses all but the north-central part of the site. This latter area is dominated by a mima mound topography and it supports the greatest plant and wildlife diversity found in the immediate vicinity. Johnson Canyon to the north provides adjacent open space and may provide the necessary corridor to link any preserve on the Sunroad property with the wildlands being retained along Otay River to the north. The bulk of the Sunroad site will be padded out as industrial lots.

III. Methods

The Sunroad Centrum Property was surveyed approximately once a week during the roughly five-week duration of the year 2001 Quino season (but see following discussion). Weather conditions at the beginning and ending of each survey period were recorded and are presented in Table 1. The property was subject to an extensive pedestrian field effort with the focus of the effort being directed to the mima mound area in the north central part of the site and to the *Plantago* populations and other areas that could conceivably support the Quino Checkerspot (see Figures 4 and 6).

Of the 250-acres within the Sunroad ownership, approximately 170-acres were excluded from consideration due to their being occupied by a near monotypic stand of Black Mustard (*Brassica nigra*; see Figures 4 and 6). The Mustard forms such a dense closed canopy as to preclude any plant that would be utilized by the Quino.

The north central part of the property, approximately 80-acres, is characterized by a mima mound topography and is occupied by a complex matrix of non-native grassland, disturbed Coastal Sage Scrub and disturbed Native Grassland. It is this area that supported the limited population of *Plantago erecta* and of *Castilleja exserta* and it is this area that was subject to the intense pedestrian survey effort for the Quino. On each site visit, multiple, parallel transects were walked through this area with the observer focusing on the lepidopteran fauna.

During all survey efforts for the Quino Checkerspot, this observer was equipped with a collapsible

insect net (BioQuip), close focusing photographic gear, close focusing binoculars (10x30), and insect collecting equipment (various containers and killing jars). The photographic gear used this season consisted of a Canon Elan II body with a Canon Image Stabilized 75-300mm USM lens fitted with a 500D close up lens. This equipment allowed a minimum working distance of approximately fourteen inches with a maximum magnification of approximately 1:1. A Canon 380EX Speedlight flash was used in all field photography along with the ETTL capabilities of the camera system. This allowed all field photos to be shot at f16 and 1/125th when desired. On all field dates, wind, air temperature, and humidity were taken with a "TurboMeter" and a Control Company "Thermo-Hygro" meter respectively (both instruments available through Forestry Suppliers, Inc.). With these instruments it was possible to record wind speed to the nearest 0.1 mph, temperature to the nearest 0.1° and humidity to the nearest 1 percent.

Wherever possible, collecting was used to verify what would otherwise be transient field observations. For example, on this and other field sites, many of the Ladies were netted in order to confirm the species, as were many of the smaller whites, and voucher specimens were taken of selected species. All specimens taken on this and other sites are viewable in the author's private collection.

A discussion of the beginning and ending of the "official" year 2001 Quino field season is in order. The year 2000 survey protocols (Fish and Wildlife Service, 2000) have been applied to this year due to the fact that a court challenge has prevented the Service from updating or modifying the guidelines. From the outside looking in, it also appears that the pending legal action has influenced the beginning and ending dates of the field season for this year. Ostensibly, this year's field season began on 1 March (for the area south of State Route (SR) 78 and below an elevation of 2,000-feet) and ended on 19 April (http://carlsbad.fws.gov/Rules/QuinoButterfly/Quino_htms/quino_flight.htm). There are, however, several notable difficulties with these beginning and ending dates.

The Quino Checkerspot (and butterflies in general) are bugs of bright skies and warm temperatures. Their flight is even more temperature dependent than moths and a number of other insects. Even the activity of the larvae is thermally dependent. On cloudy days the larvae cannot get their body temperature to sufficiently high enough level to actively feed. Weather then, is the first parameter that heavily influences the 2001 "official" flight season. For example, during the first eleven days of the season (1 March through 11 March) only two of the days were potentially suitable flight days while the other nine were encumbered by significant cloud cover (one hundred percent for several days), by rain, or by high winds, or by a combination of these conditions. Indeed, the first Quino adults of the year were not observed until 8 March, seven days after the opening of the season. Similarly, as the season progressed, the weather did not improve markedly until after the second week of April. For the nineteen days from 21 March through 9 April, only three of the days were suitable for butterfly work any where on the coastal strip of the County (or into the coastal foothills). The other sixteen days were typified by deep coastal eddies resulting in one hundred percent cloud cover along the coast and into the foothills. Clearly Quino were having a rough go of it during this time period.

Despite these weather restraints, the Service closed the Quino flight season south of SR 78 and below 2,000-feet in elevation, on 19 April. It appears that this date was arbitrary and more related to the outstanding lawsuit than it was to the actual behavior of the target species. For example, Robert Faught (personal communication to R. B. Riggan, Jr.) found three adult Quino on Otay Mountain on 9 May and Ken Osborne (personal communication to R. R. Riggan, Jr.) had several adult Quino at Lake Skinner the second week in May. It appears that the warm weather in the period following 9 April significantly favored the Quino.

For these reasons, it is felt that continuing the Otay Mesa survey seven days past the recommended closing of the "official" flight season is certainly in keeping with the actual biology of the Quino during the spring of 2001. Indeed, secondary food plants (Owl's Clover, *Castilleja exserta*) were not noted on the Sunroad site until the last week of the actual survey period (see slides accessioned into the senior author's collection).

IV. Results

The vegetation over are the bulk of the Sunroad Centrum property has been severely disturbed by past agricultural use and is dominated in the current year by Black Mustard (*Brassica nigra*). Nearly 170-acres out of the 250-acre site is essentially a giant mustard field (see Figure 4). Relatively small parts of the "excluded-area," in addition to the Black Mustard, also supported a typical suite of ruderal (non-native grassland) species. Typical plant species in this ruderal association include:

Centaurea melitensis
Hordeum leporinum
Erodium sp.
Hirschfeldia incana
Avena barbata
Bromus (several species)

The north central portion of the property retains a mima mound topography. This area has a sufficiently large deposit of cobbles and boulders that ploughing or discing was apparently considered infeasible and this portion of the Sunroad property was never used in mechanical agriculture (although it was probably extensively grazed). The mima mounds themselves support shrub species characteristic of disturbed Diegan Coastal Sage Scrub (element code 32500, in the sense of Holland, 1986). The interstices between the mima mounds are occupied by a suite of native and non-native grasses along with numerous native geophytes and a number of native forbs. This complex topography can be viewed as a checker board of disturbed Coastal Sage Scrub and disturbed Native Grasslands. Species typical of this checker board include:

<i>Viguiera laciniata</i>	San Diego Sunflower
<i>Simmondsia chinensis</i>	Jojoba
<i>Eriogonum fasciculatum</i>	California Buckwheat

<i>Artemisia californica</i>	California Sagebrush
<i>Malosma laurina</i>	Laurel Sumac
<i>Nassella</i> sp.	Needlegrass
<i>Sisyrinchium bellum</i>	Blue-eyed Grass
<i>Calochortus splendens</i>	Mariposa Lily

Sensitive plant species include (but are not necessarily limited to):

Coast Barrel Cactus	<i>Ferocactus viridescens</i>
San Diego Coyote Thistle	<i>Eryngium aristulatum</i>
San Diego Hasseanthus	<i>Dudleya variegata</i>

The *Eryngium* is, of course, found in the vernal pools on the property. These were not censused as a part of this field effort but at least four pools with *Eryngium* were noted. The *Dudleya* is located in gravelly openings in the vegetation on the sides of the mima mounds. The *Dudleya* is illustrated in Figure 7 as a caterpillar eats away the succulent parts.

The greatest potential for the occurrence of *Plantago erecta* and other Quino larvae food plants is along the edges of the trails and jeep roads that cross the property and in association with the parts of the disturbed Sage Scrub and disturbed Native Grassland communities that exhibit open interstitial spaces. On the first site visit to the property, a walking tour of the site was conducted to determine if any larval food plants could be found. Only two small populations of *Plantago* were located during the first and subsequent visits to the site. These small populations occupy a portion of the east-west jeep track in the northern part of the property and a small area on the east side of the north-south jeep track in the central part of the focused survey area. Both populations are de minimus, consisting of only a few scattered individuals of *Plantago* (see Figure 6).

The following points highlight the results of the butterfly survey effort on the Sunroad Centrum property:

- A total of 14 butterfly species were observed. These are detailed in Table 1.
- The number of *Coenonympha tullia* found on the property was exceptional, up to 287 in one observational period. This population was apparently due to the to exceptional quantity of native bunch grasses in the north central part of the site.
- *Papilio zelicaon* was common on-site, but was highly localized at two points: along the north edge, next to Johnson Canyon, where there is a large stand of the species' larval food plant: *Foeniculum vulgare*; and on the hilltopping location east of elevation 593 on Harvest Road (see Figure 6).
- The absence of certain species was intriguing. For example, only two single "blues" were seen on the property, *Brephidium exile* and *Icaricia acmon*. Despite an extensive search of the relatively common larval food plant of *Brephidium exile*, *Atriplex semibaccata*, only one

butterfly was seen. *B. exile* can be an eruption species, sometimes seen in clouds of hundreds over a suitable food plant. Why only one individual on this site is unknown.

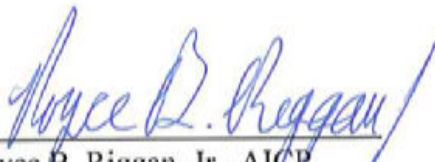
A compilation of the butterflies observed during the protocol survey effort is presented as Table 2. The reader's attention is directed to this table, to the attached Figure 5, and to the attached Field Notes for additional information and detail on the results of the field efforts.

V. Recommendation

In that neither larvae nor adults of the Quino Checkerspot Butterfly were identified during the protocol survey; and, only an extremely limited population of food plants suitable for the Quino Checkerspot were identified within the bounds of the property, it would appear that development of the Sunroad Centrum Property will have no effect on the endangered Quino Checkerspot Butterfly. Absent a demonstrable effect on the species, no mitigation measures are required, and none are recommended.

VI. Certification

This report is based on an independent review and analysis of the 250-acre property within the County of San Diego identified as the Sunroad Centrum Property. Any errors or omissions are solely the responsibility of the author.



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RBR Job Number 1825.10BC
11 June 2001

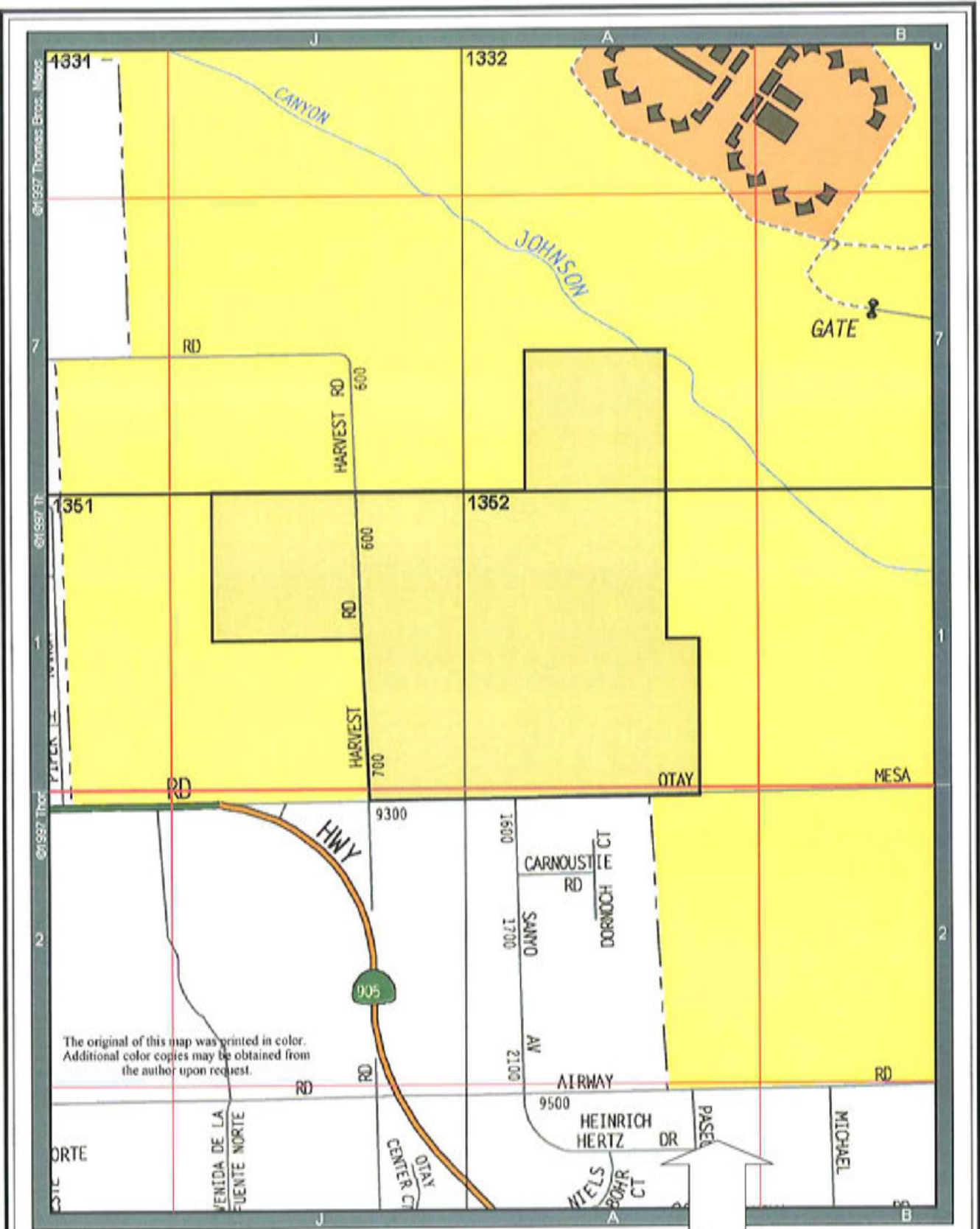
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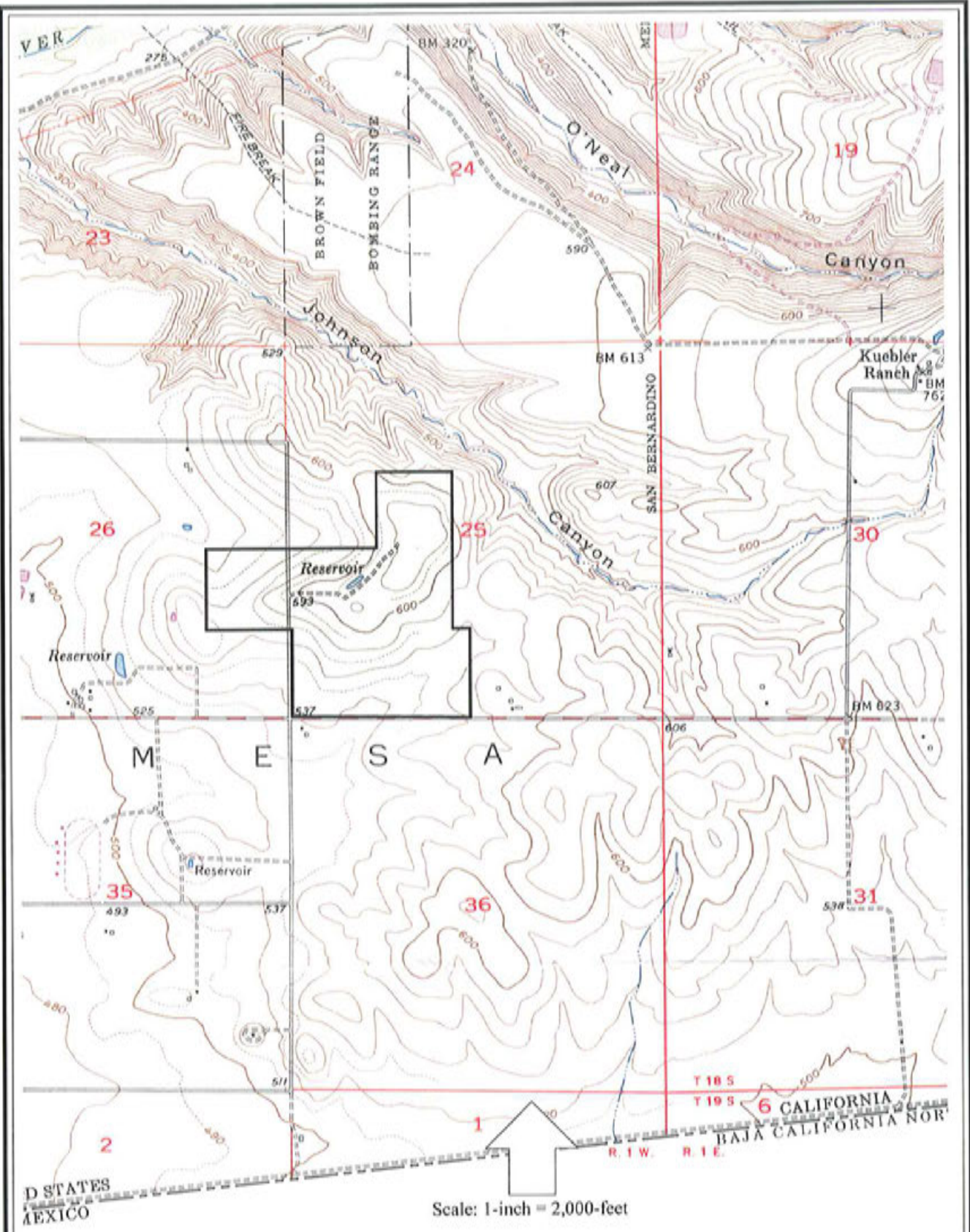
RBRiggan and Associates Job Number 1825.10C 7 June 2001

[1825-fig1.wpg]

**RBRiggan
and
Associates**

**Location of the 250-acre Sunroad Centrum
Property on a Thomas Brothers Base Map**
[map © Thomas Bros Maps]

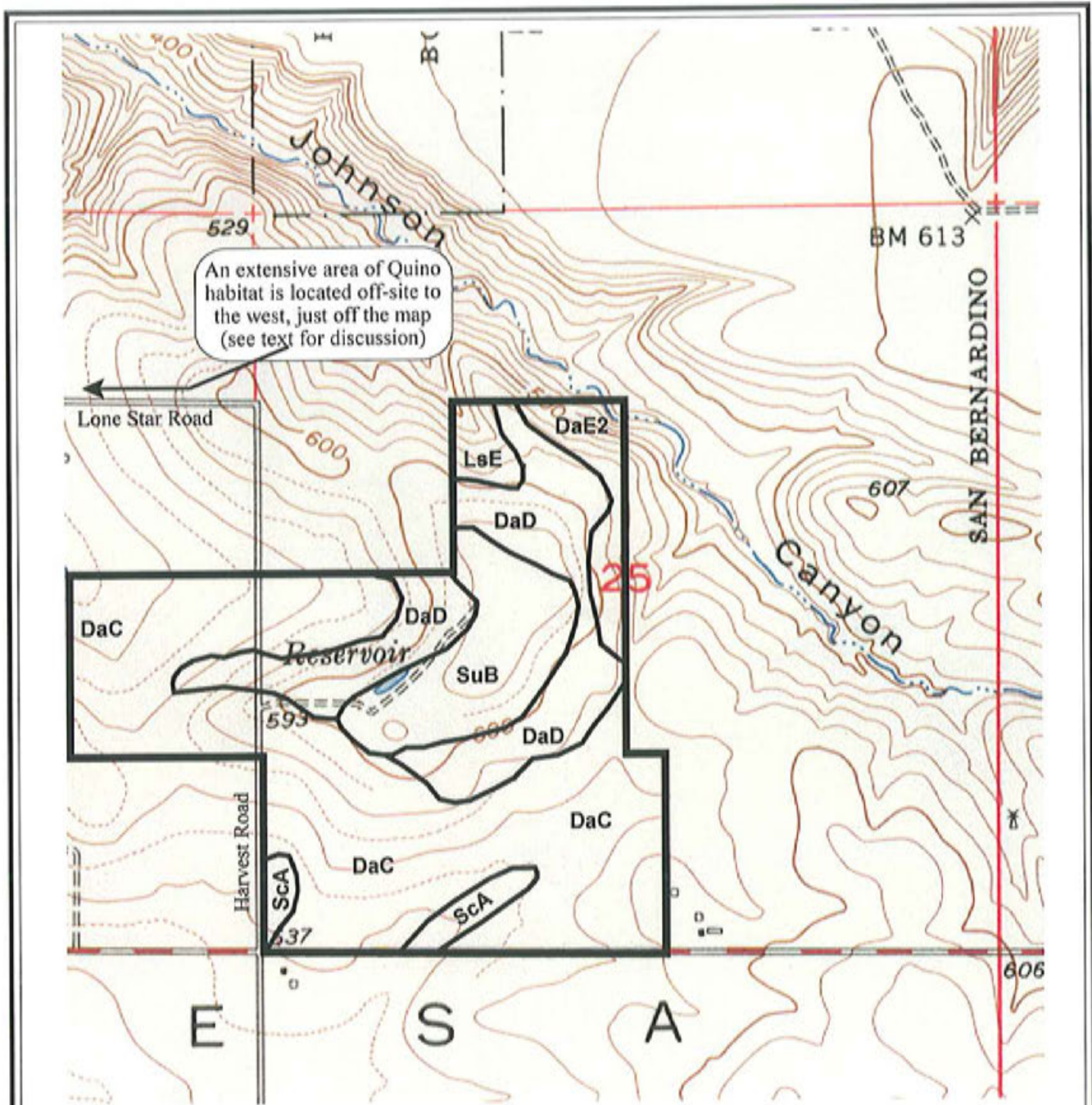
**Figure
1**



RBRiggan and Associates Job Number 1825.10C 7 June 2001

[A1825-fig2.wpg]

<p>RBRiggan and Associates</p>	<p>Location of the 250-acre Sunroad Centrum Property on a Scanned Portion of the U.S.G.S. 7½-minute Otay Mesa Quadrangle Map</p>	<p>Figure 2</p>
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KEY TO SOIL TYPES:

- DaC** — Diablo Clay, 2-9% slopes [surface layer moderately Alkaline clay, 27-inches thick]
- DaD** — Diablo Clay 9-15% slopes
- DaE2** — Diablo Clay 15-30% slopes, eroded
- ScA** — Salinas Clay 0-2% slopes [clay loam, may have a surface layer of clay]
- SuB** — Stockpen Gravelly Clay Loam, 2-5% slopes
- LsE** — Linne Clay Loam, 9-30% slopes



Scale: 1-inch = 1,000-feet

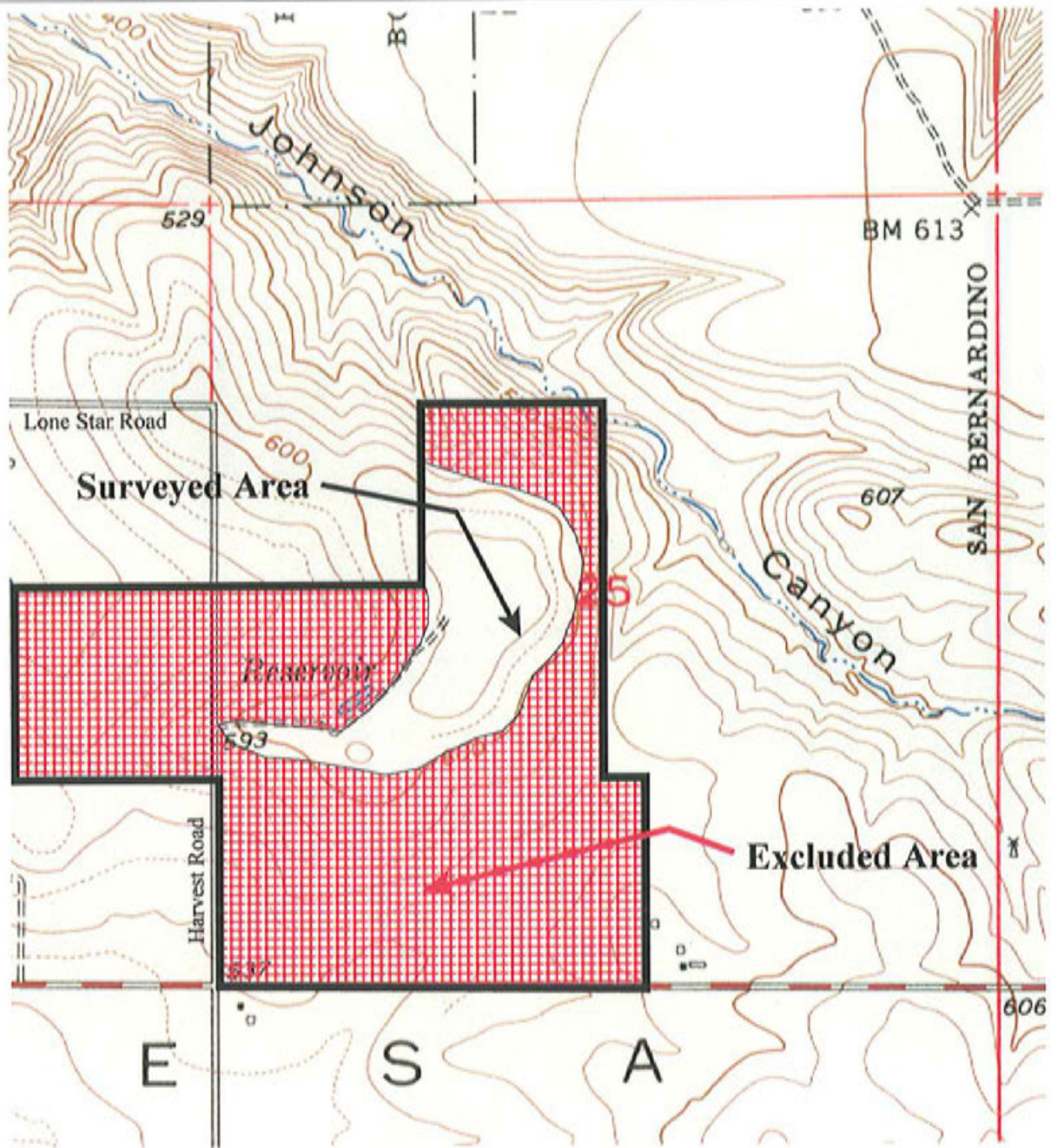
RBRiggan and Associates Job Number 1825.10C 7 June 2001

[\\1825-fig3.wpg]

**RBRiggan
and
Associates**

**The 250-acre Sunroad Centrum Property
with Soil Types Delineated (after Bowman, et
al., 1973) and Other Resources Identified**

**Figure
3**



NOTE: Areas excluded from the 2001 Quino survey effort are shown in red in the above graphic. Areas shown in red had been generally subject to agricultural disturbance in recent years and supported a near monotypic stand of Black Mustard (*Brassica nigra*). This mustard stand was sufficiently dense as to physically retard penetration by field observers. One hundred percent ground cover was achieved. The non-excluded area also supported dense growths of non-native "weeds" but this area had not been subject to agriculture as recently and supported significant native vegetation along with mima mound topography (see text for additional information).



Scale: 1-inch = 1,000-feet

RBRiggin and Associates Job Number 1825.10C 7 June 2001

[A1825-fig-4.wpg]

**RBRiggin
and
Associates**

**The 250-acre Sunroad Centrum Property with
"Exclusion" areas shown (Per the Federal
Survey Protocols — See Text for Discussion)**

**Figure
4**



California Ringlet (*Coenonympha tullia*) — An abundant species on the Sunroad property. The larvae of this somewhat obscure species feed on annual grasses, a food source abundant on the project site. (Photo of a specimen on-site.)



Sara Orange-tip (*Anthocharis sara*) — Individuals of this species were seen on-site only early in the flight season. The larvae feed on a variety of mustard family plants. This is a photograph of the underside of a mounted specimen from the author's reference collection.



Behr's Metalmark (*Apodemia virgulti*). This species is abundant in the foothills and was seen regularly on the Sunroad property. The larvae are found on California Buckwheat, a shrub that is relatively sparse on the site, being found primarily on the old mima mounds.



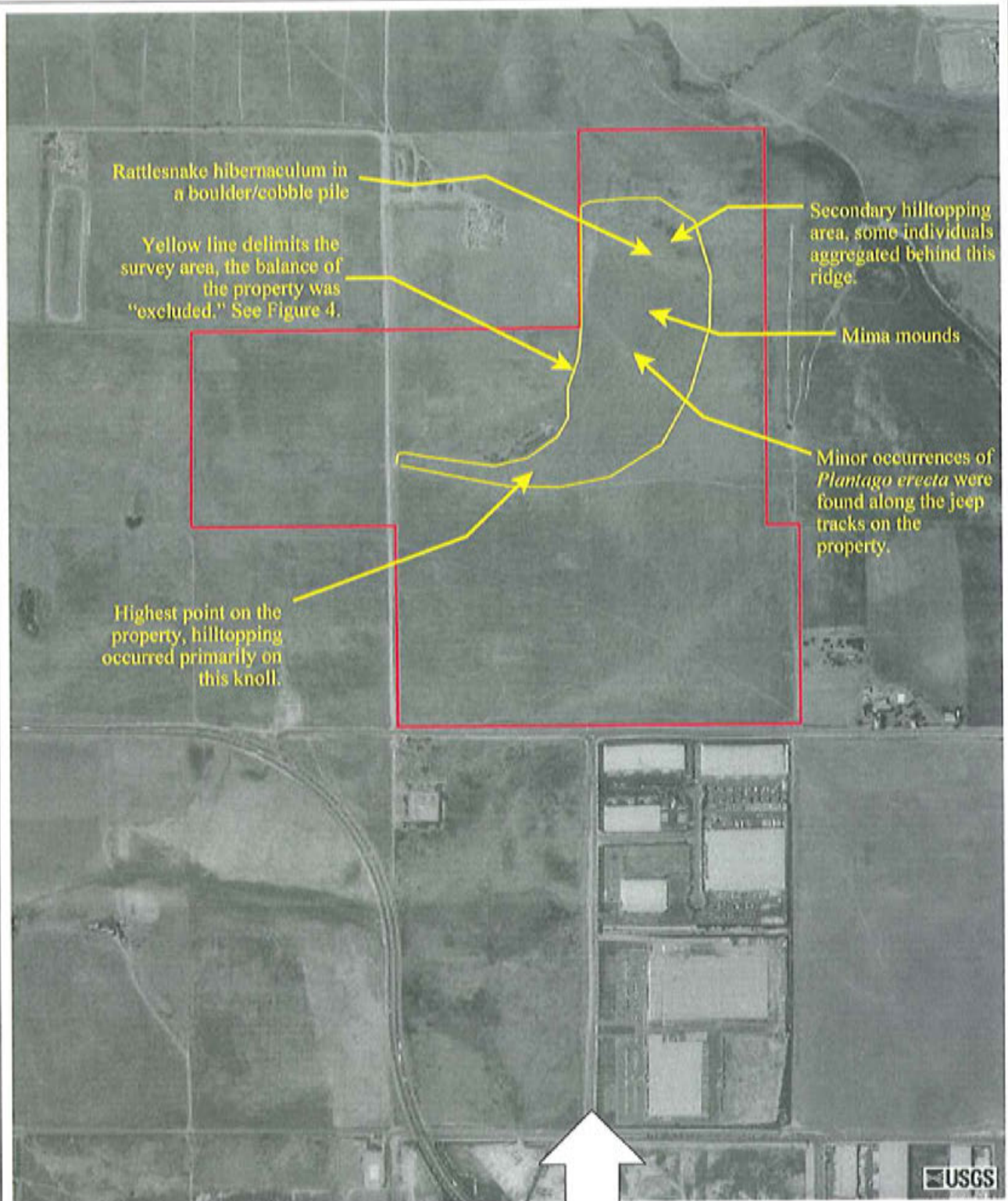
Painted Lady (*Vanessa cardui*) — The one "lady" seen with any commonality on the Sunroad site. At least a few individuals of this species were noted during each of the survey dates. However, the extensive numbers seen in migration on other properties were not noted on the Sunroad site.



Common White (*Pontia protodice*) — Occasional on the Tract. This normally common species was seen only irregularly during the 2001 flight season. The larvae of this species feed on a variety of mustard family plant species.



Anise Swallowtail (*Papilio zelicaon*) — This large butterfly was relatively common in the northern part of the property and on the central "hilltopping" location. In the northern area were extensive stands of "Anise" (*Foeniculum vulgare*) the larval food plant of the species.



The original of this graphic was produced in color. Additional color copies may be obtained from the author.



No Scale



Mesa Brodiaea (*Brodiaea jolonensis*). Abundant on-site in depressions between the mima mounds. The only Brodiaea encountered during the field effort.



Southern Pacific Rattlesnake (*Crotalus viridis helleri*). A mating pair found under a sheet of plywood in the west central part of the property. The heavy grasses and abundant Vole population favor this species.



Owl's Clover (*Castilleja exserta*). This is suspected to be a Quino larvae food plant. Individuals of this species were found sparsely in the northeastern part of the Quino survey area (see Figure 4).



Un-named caterpillar consuming a *Dudleya variegata* plant. One hopes that the caterpillar species is as sensitive as is the *Dudleya*.

Chocolate Lilies (*Fritillaria biflora*). These lilies were found only in the extreme northern part of the Quino survey area, where they were highly localized but common.



The original of this graphic was produced in color. Additional color copies may be obtained from the author.

Table 1

**Summary of Weather Conditions at the
Time of the Individual Survey Dates**

Sunroad Centrum Property						
Date	Beginning of Observational Period			End of Observational Period		
	Wind	Air Temp	Humidity	Wind	Air Temp	Humidity
14 March	—	—	—	1.6-3.9mph	70.7°	47%
27 March	2.2-4.6	77.8°	49%	4.2-8.7	70.5°	48%
16 April	3.7-9.9	76.8°	46%	3.2-8.7	77.2°	39%
21 April	0.0-5.7	78.9°	47%	2.3-8.6	80.3°	39%
26 April	1.5-6.3	83.6°	40%	0.3-3.8	69.7°	45%

Table 2

**Summary of the Butterfly Species
Observed on the Sunroad Centrum Property in Otay Mesa,
San Diego County, California**

Scientific Name*/Common Name	14 March	27 March	16 April	21 April	26 April
<i>Anthocharis sara</i> (Sara Orange-tip)	2	1	—	—	—
<i>Apodemia virgulti</i> (Morman Metalmark)	5	22	20	9	17
<i>Brephidium exile</i> (Pygmy Blue)	1	—	—	—	—
<i>Coenonympha tullia</i> (California Ringlet)	105	287	103	42	29
<i>Erynnis</i> sp. (Dusky-wing)	—	12	—	2	—
<i>Erynnis</i> cf. <i>funeralis</i> (Funereal Dusky-wing)	—	1	—	—	—
<i>Icaricia acmon</i> (Acmon Blue)	1	—	—	—	—
<i>Papilio zelicaon</i> (Anise Swallowtail)	25	13	3	1	—
Pierid, undifferentiated (White)	1	—	—	—	3
<i>Pieris rapae</i> (Cabbage White)	—	—	3	—	—
<i>Pontia protodice</i> (Common White)	—	15	10	7	8
<i>Strymon melinus</i> (Gray Hairstreak)	4	—	—	—	—
<i>Vanessa</i> sp. (Lady)	2	—	5	7	—
<i>Vanessa annabella</i> (West Coast Lady)	1	1	—	—	2
<i>Vanessa cardui</i> (Painted Lady)	—	13	14	18	19
<i>Zerene eurydice</i> (California Dogface)	—	—	—	—	1
Total Individuals/ Total Species Observed	147/ 9	365/ 9	158/ 6	86/ 6	79/ 7

*For a discussion of the species names, identification, and species observed, see text.

Attachment A

Field Notes

Field Notes Relative to the Sunroad-Centrum Site Extracted from the Field Notebook of Royce Riggan, Jr.

14 March 2001

The following notes were taken during a visit to the 250-acre property on east Otay Mesa known as the Sunroad-Centrum site, RBRiggan and Associates Job Number 1825.10C. RBRiggan and Associates has been retained to conduct a Quino Checkerspot presence/absence survey over the entire ownership. The property is illustrated in Figure X of these Field Notes and may be described as a portion of the SW $\frac{1}{4}$ of section 25, the SE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 25, and the NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 26, all Range 1 West, Township 18 South, of the San Bernardino Meridian. The site encompasses an area of gently rolling hills on the eastern edge of the Mesa, approximately two-miles from the toe of Otay Mountain. The site appears to be overlain by slope wash from the highlands to the east. Rounded cobbles and small boulders are common and highest part of the property still exhibits a mima mound topography.

However, all but perhaps 100-acres of the property is occupied by a near monoculture of Black Mustard (*Brassica nigra*). On this date, with the mustard stands far from mature, an attempt was made to walk to the center of one of the 40-acre "mustard" parcels. The vegetation is sufficiently dense as to preclude ground visibility and the vegetation is sufficiently dense as to physically retard the progress of the field worker. Clearly, this vegetation is sufficient to warrant an "exclusion" under the current federal survey protocols for the Quino (Fish and Wildlife Service, 2000).

The north central, roughly 100-acres of the property does not appear to have been farmed; as does the balance of the site. The principle reason for this conclusion is the mima mound topography that dominates much of this part of the site. Individual mounds rise as much as four feet (or more) above the adjacent terrain which frequently appears as small cobble lined basins. The vegetation in this part of the property is that of a heavily disturbed native grassland — geophytes of several species are common in the basins, *Stipa* sp. is common among the non-native grasses, and the mima mound tops appear to support a relictual Coastal Sage Scrub association. This latter association is poorly developed on the property and it is difficult to decide whether that is due to prior disturbance or if the association only occupied a limited component (the tops of the mima mounds only) even pre-historically?

This is the first visit made to the site out of five required visits. On this date, the site was walked between 0845 and 1315 hours. Weather measurements were not made at the beginning of the observational period, suffice it to say that it was warm, clear, dead calm, and with low humidity. The ending humidity was 47%, the ending temperature was 70.7 degrees and the ending winds were from 1.6 to 3.9 mph. The site was surveyed by two observers: the R. Riggan and Gretchen Morse.

Butterflies observed included:

Papilio zelicaon (25) — The extreme north edge of the property, as it falls away into Johnson Canyon, supports an extensive growth of Sweet Fennel (*Foeniculum vulgare*). The bulk of these Anise Swallowtails were seen along the north edge of the high ground adjacent to that Fennel association.

Coenonympha tullia (105) — throughout the area surveyed. This number is conservative and under estimates the number of individuals seen. These numbers reflect the amount of native grasses remaining in the “mima mound” part of the property.

Apodemia virgulti (5)

Vanessa sp. (2)

Pierid (1)

Strymon melinus (4)

Anthocharis sara (2)

Icaricia acmon (1)

Vanessa annabella (1)

Brephidium exile (1)

Considerable effort was expended on this first field date in an attempt to locate on-site populations of *Plantago erecta*. Obviously the “excluded” mustard areas of the property will not support this species. The only “openings” seen that would be favorable to its growth were the limited number of vehicle tracks that cross the property. A probable small and dispersed population of the *Plantago* was found on the jeep track in the northeastern part of the property, near the eastern property line. The identification was suspect due to the early growth stage (vegetative) of the small plants. [The identification was confirmed the following site visit]. No other *Plantago* was seen during this site visit.

In the northern part of the property there are two patches of boulders and cobbles that lie unconformably on the soil surface. These piles are on the order of 30-feet by 15-feet and are elliptical in shape. Each consists of several hundreds (thousands??) of cobbles and boulders stacked on one another and with sufficient depth that (when looking down between the rocks) the “bottom” cannot be ascertained. The only explanation we have been able to conjure up is that these are waste piles for rocks encountered during the plowing of the adjacent properties. Apparently (??) over a period of years, each time an offending rock was encountered in the adjacent fields, it was carried to one of these two piles and dumped. It appears that, over a period of years, the weight of the rocks has pushed downward, displacing the underlying clay soils and being the rock pile down almost to the surface level of the surrounding soils.

On the northwestern most of these two cobble piles a total of five *Crotalus viridis helleri* were found in an area approximately 10-feet in diameter, primarily on the boulder pile but including a small area of grass at the edge of the pile. This finding was not without a modicum of humor in that the junior author, approaching the rocks reluctantly, ended up “bunny hopping” at least two of the snakes. Several of the individuals were photographed and the slides filed in the senior author’s collection. It would appear that the cobble pile functions as a hibernaculum! All five of the Southern Pacific Rattlesnakes were coiled, sunning themselves, as if this was one of the first warm days they had encountered since winter. A sixth Southern Pacific was found sunning itself at the edge of the more eastern boulder/cobble pile. [Note added on 3 June 01: Pete Yingling opined that while there has

been suspicion that the Southern Pacifics in San Diego County utilize hibernacula, it has only been confirmed in less than a handful of cases. That observation makes the occurrence of this cobble pile all the more significant a find].

Western Meadowlarks and Grasshopper Sparrows were both noted on the Sunroad site. The Grasshopper Sparrows were calling on territory.

A large number of geophytes were noted on the property (at least within the bounds of the "mima mound" area). On this field date *Zigadenus fremontii* and *Fritillaria biflora* were at the peak of their phenology. Both were photographed and slides are cataloged in the senior author's collection. The *Zigadenus* were scattered throughout the mima mound area while the *Fritillaria* were isolated in a few clusters in the extreme northern part of the mima mound area. *Dodecatheon clevelandii* were also in full bloom across the site, being most abundant in the low spaces between the individual mounds.

27 March 2001

The following notes were taken during a visit to the 250-acre property on east Otay Mesa known as the Sunroad-Centrum site, RBRiggan and Associates Job Number 1825.10C. RBRiggan and Associates has been retained to conduct a Quino Checkerspot presence/absence survey over the entire ownership. The project site, its location, and the geology and vegetation are described in greater detail in these notes at 14 March 01. The reader's attention is directed to that entry for additional information.

This is the second visit made to the site out of five required visits. On this date, the site was visited between 1245 and 1515 hours. The weather at the beginning of the survey was 77.8 degrees, 49% humidity and winds from 2.2 - 4.6 mph. At the end of the survey, the temperature was 70.5 degrees, humidity was 48%, and the ending winds were from 4.2 to 8.7 mph. The site was surveyed by two observers: Riggan and Gretchen Morse.

It should be noted that there is considerable variability across the site in wind speed due to the micro-topography of the terrain. Wind measurements are made at the point on Harvest Road where the Jeep is routinely parked. This is a high point (shown as "593" the USGS quadrangle map — see Field Notes Figure X). The wind has a clear reach to the west from this point, which is also the local high point. For these reasons, wind speeds measured at this point were considered to be maxima for the immediate vicinity. As one moved back into the mima mound topography the wind became much more irregular and generally wind speed dropped. At a micro-scale, the depressions between the mima mounds frequently were still, even though there was a wind blowing a few feet above the maximum height of the mounds.

Butterflies observed included:

Papilio zelicaon (13) — The majority of individuals were seen hilltopping on the high ground just to the east of "593" (see Field Notes Figure X). Additional individuals were flying in the northeastern corner of the study area (see Field Notes Figure X),

beyond which there are large stands of *Foeniculum vulgare*.

Coenonympha tullia (287) — This is a conservative number, it probably under estimates the actual number of *Coenonympha* observed. There is a significant component of native grass (a bunch grass, probably a *Stipa* sp.) in the interstices between the mounds and, to a lesser extent on the facies of the mounds.

Apodemia virgulti (22) — isolated on the uncommon *Eriogonum fasciculatum* shrubs that are sparse on the mounds.

Vanessa cardui (13)

Vanessa annabella (1)

Pontia protodice (15)

Anthocharis sara (1)

Erynnis sp. (12) — none were collected. A number were *E. funeralis* but many lacked the whit terminal band on the HW.

Erynnis cf. *funeralis* (1)

Other observations by Morse included zero *Crotalus viridis helleri* (THANK GOD!), Grasshopper Sparrows, Western Meadowlarks and one Black-tailed Jack Rabbit (*Lepus californicus bennettii*). There appears to be a low density population of the latter species within the bounds of the subject property.

The suite of blooming annuals and perennials is changing. Those observed on the 14th are now being replaced in visual dominance by a native onion (*Allium* sp.; not keyed, species uncertain), and Blue-eyed Grass (*Sisyrinchium bellum*). The latter was particularly common and both were generally found in the interstices between the mounds. Both were photographed and slides are cataloged in the senior author's collection.

Plantago erecta was found in bloom on the subject property today. A small scattering of individuals was seen along the jeep road in the northeastern part of the survey area, where previously reported. An additional diffuse, small population was found in openings in the vegetation in the south central part of the survey area (see Field Notes Figure X). Both populations were de minimus in area and in number of individuals. Indeed, both were so small that finding them was almost serendipitous.

16 April 2001

The following notes were taken during a visit to the 250-acre property on east Otay Mesa known as the Sunroad-Centrum site, RBRiggan and Associates Job Number 1825.10C. RBRiggan and Associates has been retained to conduct a Quino Checkerspot presence/absence survey over the entire ownership. The project site, its location, and the geology and vegetation are described in greater detail in these notes at 14 March 01. The reader's attention is directed to that entry for additional information.

This is the third visit made to the site out of five required visits. On this date, the site was visited between 1300 and 1545 hours. The weather at the beginning of the survey was warm and windy with a temperature of 76.8 degrees Fahrenheit, a humidity of 46% and winds ranging from 3.7 to 9.9 mph

[however, see discussion of wind under the notes dated 27 March 2001]. The ending humidity was 39%, the ending temperature was 77.2 degrees and the ending winds were from 3.2 to 8.7 mph. The site was surveyed by two observers: the senior author and Gretchen Morse.

Butterflies observed included:

Pontia protodice (10) — These larger whites are easily distinguished from the smaller Ringlet's; especially given the flight pattern of the latter species. As many as possible of the whites were netted so as to confirm the species identification. All so netted were *P. protodice*.

Papilio zelicaon (3) — a few individuals were seen hilltopping on the high ground to the east of the point on Harvest Road labeled as "953."

Coenonympha tullia (103) — Again, this number is probably an under estimate of the number of individuals actually seen. Within the area surveyed the Ringlets were most common where the native bunch grasses were most common. As one moved away from the native grasses, into old farmed areas where the grasses are exclusively non-native weed species, the number of *Coenonympha* observations dropped to zero.

Apodemia virgulti (20)

Vanessa sp. (5)

Vanessa cardui (14) — most of these individuals were seen moving to the north. A significant migration of the *V. cardui* occurred this season. The flight peaking a few days before this field observation. Virtually billions of individuals of this species moved through San Diego County over a few days in the middle part of April. That so few individuals were seen on-site this date was a little of a surprise. Apparently the bulk of the coastal migration has passed.

Pieris rapae (3) — a few individuals were seen closely or were netted.

Plantago erecta was observed in bloom on the east-west jeep track in the northern part of the property and in small, bare patches of ground on the east side of the north-south jeep track in the south central part of the area surveyed. These are the same de minimus populations previously reported in these notes..

Other observations by Morse included one *Crotalus viridis helleri* (that I almost stepped on!), Western Meadowlarks, Grasshopper Sparrows and *Dudleya variegata* not yet in bloom being munched on by caterpillars. The senior author was able to obtain photographs of the latter event and these slides are cataloged into the author's collection. One image is reproduced in these Field Notes as Figure X.

A single *Lampropeltis getulus* (California or Common Kingsnake) was found near Harvest Road. The individual was in an area subject to future disturbance and it had a somewhat unique pattern, being half striped and half banded. For these reasons it was relocated to a different habitat (a preserve of comparable elevation and coastal exposure). Photographs were also obtained and are cataloged in the senior author's collection.

A considerable number of large, dark moths were flushed from the vegetation within primary survey area by both workers. Two were netted and accessioned into the author's collection. Both proved to

be individuals of *Autographa californica* (the Alfalfa Looper, a moth of the family Noctuidae; see Lafontaine and Poole, 1991, Fascicle 25.1). This is a common species but it was surprising to see so many in broad daylight during a Quino survey.

Several large (± 20 -30mm) beetles assignable to the Meloidae (Blister Beetles) were found feeding on the blooms of *Calochortus splendens*. A series of these were taken and are in the author's collection. They appear to be assignable to *Lytta*.

21 April 2001

The following notes were taken during a visit to the 250-acre property on east Otay Mesa known as the Sunroad-Centrum site, RBRiggan and Associates Job Number 1825.10C. RBRiggan and Associates has been retained to conduct a Quino Checkerspot presence/absence survey over the entire ownership. The project site, its location, and the geology and vegetation are described in greater detail in these notes at 14 March 01. The reader's attention is directed to that entry for additional information.

This is the fourth visit made to the site out of five required visits. On this date, the site was visited between 1130 and 1430 hours. The weather at the beginning of the survey was warm and windy with a temperature of 78.9 degrees Fahrenheit, a humidity of 47% and winds ranging from 0.0 to 5.7 mph. The ending humidity was 39%, the ending temperature was 80.3 degrees and the ending winds were from 2.3 to 8.6 mph.

The survey effort this date was conducted by the senior author. Butterflies observed included the following:

Coenonympha tullia (42) — as the site slowly dries out with the progressing spring, the number of individual Ringlets slowly is dropping.

Vanessa sp. (7) — *V. anabella* is common at this location and many of these may have been of that species. However, in not all cases can a distinction be made without netting the individual.

Vanessa cardui (18) — the majority of these individuals were moving north, despite the relative amount of lapsed time since the primary migration.

cf. *Pontia protodice* (7)

Erynnis sp. (2)

Apodemia virgulti (9)

Papilio zelicaon (1)

The number of *Autographa californica* has also dropped considerably. Several individuals, however, were flushed during the field check of the site.

A number of individuals (larvae) of *Hemileuca electra electra* were noted on their host plant, *Eriogonum fasciculatum*. This subspecies of moth (one of the Saturniidae) is limited in distribution to coastal southern California and coastal Baja California between Los Angeles and San Quintin respectively (see Tuskes, Tuttle, and Collins, 1996). Some concern has been expressed in the past as to the long-term viability of this subspecies population given its location in the coastal parts of the Californias. No attempt was made to assess the population size on the Otay Mesa property but it is

limited to the host plant, which is of restricted occurrence on-site, primarily to the tops of mima mounds.

26 April 2001

The following notes were taken during a visit to the 250-acre property on east Otay Mesa known as the Sunroad-Centrum site, RBRiggan and Associates Job Number 1825.10C. RBRiggan and Associates has been retained to conduct a Quino Checkerspot presence/absence survey over the entire ownership. The project site, its location, and the geology and vegetation are described in greater detail in these notes at 14 March 01. The reader's attention is directed to that entry for additional information.

This is the fourth visit made to the site out of five required visits. On this date, the site was visited between 1445 and 1700 hours. The weather at the beginning of the survey was warm and windy with a temperature of 83.6 degrees Fahrenheit, a humidity of 40% and winds ranging from 1.5 to 6.3 mph. The ending humidity was 45%, the ending temperature was 69.7 degrees and the ending winds were from 0.3 to 3.8 mph. The site was surveyed by two observers: the senior author and Gretchen Morse.

Butterflies observed included:

Coenonympha tullia (29) — still flying on-site in significant numbers. This species is at least bi-voltine in southern California and individuals can be found flying into the early fall.

Apodemia virgulti (17) — seen station keeping on the host plant, *Eriogonum fasciculatum*.

Vanessa cardui (19) — still moving north, but in greatly reduced numbers.

Pierid (3) — these were large whites but could not be netted or closely approached. In all probability they were Common Whites.

Pontia protodice (8)

Colias eurydice (1) — the first sulphur seen on the subject property.

Vanessa annabella (2) — seen in association with the weedy areas adjacent to the primary survey area. These individuals were hilltopping and were not moving in a migratory manner.

The *Plantago erecta* is wilting on the east-west jeep track in the northern part of the property and in the small, bare patches of ground on the east side of the north-south jeep track. Some green remains but the plants are fading rapidly.

Three *Crotalus viridis helleri* were seen on this site visit. A mating pair were found beneath four by eight sheet of plywood. They were photographed and a slide set has been accessioned into the senior author's collection. It is interesting to note that all ten individuals seen on the property this spring were varying shades of tan and brown in color. This color pattern contrasts markedly with the basic black and white pattern that the subspecies exhibits in the higher foothills and in the mountains of San Diego County. This "brown" color pattern is consistent through the coastal foothills, for example all of the individuals of the subspecies observed in the hills of the City of Poway have been of the same color scheme. If the brown color scheme is consistent along the coast and the black and white pattern consistent in the higher elevations, one wonders how well defined is the contact line between the two forms and if there are obvious gradations between the two types at that boundary??

The third *Crotalus viridis helleri* was found on the trail and was nearly stepped on by the senior author's son who exhibited a vertical leap certainly consistent with the fine traditions of the airborne infantry.

The sequential blooming of geophytes and other notable spring annuals continues across the primary survey area. *Brodiaea jolonensis* is now coming into bloom and is abundant on the floors of the depressions between the mima mounds. Slides were obtained and have been accessioned into the senior author's collection. Virtually all of the other geophytes (including the *Calochortus splendens*) are well past their phenology as of this field date.

It would also be appropriate to note that no broad expanses of nectar plants suitable for the Quino were noted within the primary study area during the entire survey period. While the geophytes and others noted in text were visually impressive, none constituted an extensive potential nectar source. The vegetative landscape is dominated by grasses with geophytes with a few scattered shrubs. "Wild flowers" are not a significant component of the on-site vegetation.

A discussion of the beginning and ending of the "official" year 2001 Quino field season is in order. This is a standard paragraph that is being appended in some form to all of the author's studies for the year. The year 2000 survey protocols (Fish and Wildlife Service, 2000) have been applied to this year due to the fact that a court challenge has prevented the Service from updating or modifying the guidelines. From the outside looking in, it also appears that the pending legal action has influenced the beginning and ending dates of the field season for this year. Ostensibly, this year's field season began on 1 March (for the area south of State Route (SR) 78 and below an elevation of 2,000-feet) and ended on 19 April (http://carlsbad.fws.gov/Rules/QuinoButterfly/Quino_htms/quino_flight.htm). There are, however, several notable difficulties with these beginning and ending dates.

The Quino Checkerspot and butterflies in general are bugs of bright skies and warm temperatures. Their flight is even more temperature dependent than moths and a number of other insects. Even the activity of the larvae is thermally dependent. On cloudy days the larvae cannot get their body temperature to sufficiently high enough level to actively feed. Weather then, is the first parameter that heavily influences the 2001 "official" flight season. For example, during the first eleven days of the season (1 March through 11 March) only two of the days were potentially suitable flight days while the other nine were encumbered by significant cloud cover (one hundred percent for several days), by rain, or by high winds, or by a combination of these conditions. Indeed, the first Quino adults of the year were not observed until 8 March, seven days after the opening of the season. Similarly, as the season progressed, the weather did not improve markedly until after the second week of April. For the nineteen days from 21 March through 9 April, only three of the days were suitable for butterfly work any where on the coastal strip of the County (or into the coastal foothills). The sixteen days were typified by deep coastal eddies resulting in one hundred percent cloud cover along the coast and into the foothills. Clearly Quino were having a rough go of it during this time period.

Despite these weather restraints, the Service closed the Quino flight season south of SR 78 and below 2,000-feet in elevation, on 19 April. It appears that this date was arbitrary and more related to the outstanding lawsuit than it was to the actual behavior of the target species. For example, Robert Faught (personal communication to R. B. Riggan, Jr.) found three adult Quino on Otay

Mountain on 9 May and Ken Osborne (personal communication to R. R. Riggan, Jr.) had several adult Quino at Lake Skinner the second week in May. It appears that the warm weather in the period following 9 April significantly favored the Quino.

For these reasons, it is felt that continuing the Otay Mesa survey seven days past the recommended closing of the "official" flight season is certainly in keeping with the actual biology of the Quino during the spring of 2001. Indeed, secondary food plants (Owl's Clover, *Castilleja exserta*) were not noted on the Sunroad site until the last week of the actual survey period (see slides accessioned into the senior author's collection).

**Quino Checkerspot Butterfly Report, 2016
with USFWS “Proposed 2016 Quino Checkerspot
Survey Protocol” Attached**

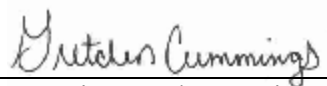
Report of a Federal Protocol Survey for the Quino Checkerspot Butterfly Over the Sunroad Centrum 250 Property County of San Diego, California

Prepared for:

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18 May 2016
Job Number 1747.10C

**Report of a Federal Protocol Survey
for the Quino Checkerspot Butterfly
Over the Sunroad Centrum 250 Property
County of San Diego, California**

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3. Figure 3 — Host Plant Locations on the Sunroad Centrum 250 Project Shown on a blow up of the U.S.G.S. 7½-minute Otay Mesa Quad Map
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Appendix A — Field Notes

Executive Summary

The Quino Checkerspot Butterfly (*Euphydryas editha quino*) is listed under the Federal Endangered Species Act (ESA) as an endangered subspecies. Prior to development-related activities that might adversely affect habitats potentially occupied by the butterfly, surveys are recommended so as to prevent a “take” of the species under the ESA. A federal protocol survey for the Quino Checkerspot Butterfly was conducted by Cummings and Associates during the 2016 flight season. No adult or larval Quino were found during the 2016 survey effort. One larval Quino host plant species, Dot-seed Plantain (*Plantago erecta*), was noted during the field surveys and it is represented on-site as a medium density population along the old Lone Star Road alignment.

I. Introduction

The Quino Checkerspot Butterfly (*Euphydryas editha quino*) is a small, spring flying butterfly listed under the Federal Endangered Species Act (ESA) as an endangered subspecies. Thought to be extinct in 1995, a small population was found in Riverside County in 1996 and the subspecies was listed as endangered in 1997 (USFWS, 1997). Critical habitat for this species was dedicated in 2002 (USFWS, 2002), then revised and finalized in 2009 (USFWS, 2009).

The Quino Checkerspot Butterfly is best thought of in two “phases”. The larvae (or first “phase”) are obligate feeders on a limited variety of food plants: Dot-seed Plantain (*Plantago erecta*), Owl’s Clover (*Castilleja exserta*), Woolly Plantain (*Plantago patagonica*), White Snapdragon (*Antirrhinum coulterianum*), Chinese Houses (*Collinsia concolor*), and Thread-leaved Bird’s Beak (*Cordylanthus rigidus*). The second “phase” is the adult butterfly which is much more mobile. The males of the species exhibit what is referred to as “hilltopping” behavior. They fly to prominent topographical points where they inspect each butterfly that passes-by in the hopes of finding a receptive female Quino.

This federal protocol survey for the Quino was conducted in accordance with the Proposed 2016 Quino Checkerspot Survey Protocol (USFWS, 2016). The survey for the Quino focused on the “open” areas in the vicinity of the old Lone Star Road alignment, and on the medium density population of the larval food plants. There were no appropriate high points on-site upon which to focus survey efforts.

II. Property Location and Description

The Sunroad Centrum 250 Property is comprised of Assessor’s Parcel Numbers 646-080-28, 646-080-33, 646-080-29, 646-08-31, 646-080-26, and 646-080-27. It is located in the extreme southern part of San Diego County, just north of the Mexican border on the north side of Otay Mesa Road and east of the South Bay Expressway (125) - see Figures 1 and 2. Mima mound topography occupies the central portion of the site and there are two small patches of Native Grassland habitat in the northeast corner of the site. However, the majority of the property is quite overcome with shin to thigh-high non-native plants, namely a dense stand of Russian Thistle (*Salsola tragus*) combined with Oats (*Avena fatua*) and Mustards (*Brassica nigra* and *Hirschfeldia incana*).

The underlying geology of the property is mapped as the Otay Formation (Todd, 2004). This mapping is consistent with the clay soils seen on the property. The surficial soils mapped by Bowman (1973) include the following:

- Diablo clay, 15 to 30% slopes, eroded (DaE2);
- Diablo clay, 9 to 15% slopes (DaD);
- Stockpen gravelly clay loam, 2 - 5% slopes (SuB);
- Linne clay loam, 9 to 30% slopes (LsE); and
- Salinas clay, 0 to 2% slopes (ScA).

The vegetative communities found on the property can be classified into five types:

Non-Native Grassland. The majority of the site is occupied by Non-Native Grassland dominated by a dense stand of Russian Thistle (*Salsola tragus*) combined with Oats (*Avena fatua*) and Mustards (*Brassica nigra* and *Hirschfeldia incana*). This habitat type is best described as Non-Native Grassland (Holland, 1986; Holland Element Code 42200). There are composition variations within this habitat caused by different underlying soils and human disturbances. One of these variations occurs along the old Lone Star Road alignment. Although there is Russian Thistle in this area too, its growth is stunted allowing native species, such as the Dot-seed Plantain to grow.

Native Grassland. Two small patches of Native Grassland (Holland, 1986; Holland Element Code 42100) occur in the northeastern portion of the property. Although interspersed with non-natives, dense native bunch grasses (*Stipa lepida*) dominate in this area.

Agriculture Stock Pond. An Agriculture Stock Pond occurs roughly in the middle of the property. The pond is now dry and is ringed with Russian Thistle.

Disturbed Habitat. Dirt trails traverse the property and are heavily used by off-road vehicles. Due to the consistent, heavy use, no vegetation grows on these trails and, as such, these areas are best classified as Disturbed Habitat (Holland, 1986; Holland Element Code 11300).

Non-Native Riparian. Johnson Canyon crosses the extreme northeast corner of the site. The canyon is occupied by a Tamarisk grove (*Tamarix* sp.). Therefore, this area is best classified as Non-Native Riparian habitat (Holland, 1986; Holland Element Code 65000).

III. Methods

Per the 2016 Quino Checkerspot Butterfly Survey Protocol (USFWS, 2016), a site assessment was conducted on 4 February 2016. The first portion of this site visit was dedicated to conducting the site assessment and the section portion of the visit was allocated to an initial host plant survey. The

majority of the site was able to be excluded due to the occurrence of dense Russian Thistle and other non-native plant species. The areas not excluded from the survey were considered suitable Quino habitat (see Figure 2). On 1 May 2016, the site assessment was revised and the host plant mapping was completed between 0900 and 1015 hours prior to the start of the first Quino survey which occurred between 1015 and 1400 hours. Four subsequent visits were conducted representing the remainder of the Quino survey dates. During all survey efforts for the Quino Checkerspot, the undersigned was equipped with a collapsible insect net (BioQuip), close focusing photographic gear, and close focusing binoculars (8x42). The photographic gear used this season consisted of a Nikon D300 body and a 70 - 300 mm Quantaray lens with a macro function. This equipment allowed a minimum working distance of approximately fourteen inches. During the six field dates, wind, and air temperature were taken with a Kestrel. With this instrument, it was possible to record wind speed to the nearest 0.1 mph, and temperature to the nearest 1°. Weather conditions at the beginning and ending of each survey period were recorded and are presented in Table 1.

IV. Results

A total of six site visits were made to the Sunroad Centrum 250 property between 4 February and 3 April. A medium density population of Dot-seed Plantain (*Plantago erecta*) was observed on-site (see Figure 3 for location). No larvae or adult Quino Checkerspot were observed on the property during any of the six site visits.

The following points highlight the results of the butterfly survey effort on the Sunroad Centrum 250 property:

- A total of 12 butterfly species were identified during the Quino survey (see Figure 4 for photos of the representative butterfly species observed and Table 2 for a list of the butterfly species).
- Two butterfly species, the Western Pygmy-Blue and the Anise Swallowtail, were observed during all six surveys.

A compilation of the butterflies observed during the protocol survey effort is presented as Table 2. The reader's attention is directed to that table, to the attached Figure 4, and to the attached Field Notes for additional information and details on the results of the field effort.


During the course of the survey, a concerted effort was made to identify other plant and wildlife species that would be considered sensitive. While this part of the field effort does not constitute a comprehensive survey, any observations of interest must be reported per the requirements of the federal protocol for the Quino. No other sensitive species were noted within the suitable Quino habitat.

V. Recommendation

Although a medium density population of a Quino larval host plant was identified on-site, no larvae nor adults of the Quino Checkerspot were identified during the 2016 protocol survey. Therefore, any proposed future development of the Sunroad Centrum 250 property will have no effect on the endangered Quino Checkerspot Butterfly. Absent a demonstrable effect on the species, no mitigation measures are required, and none are recommended.

VI. Surveyor Certification

I certify that the information in this survey report and attached exhibits fully and accurately represents my work. Any errors or omissions are solely my responsibility.



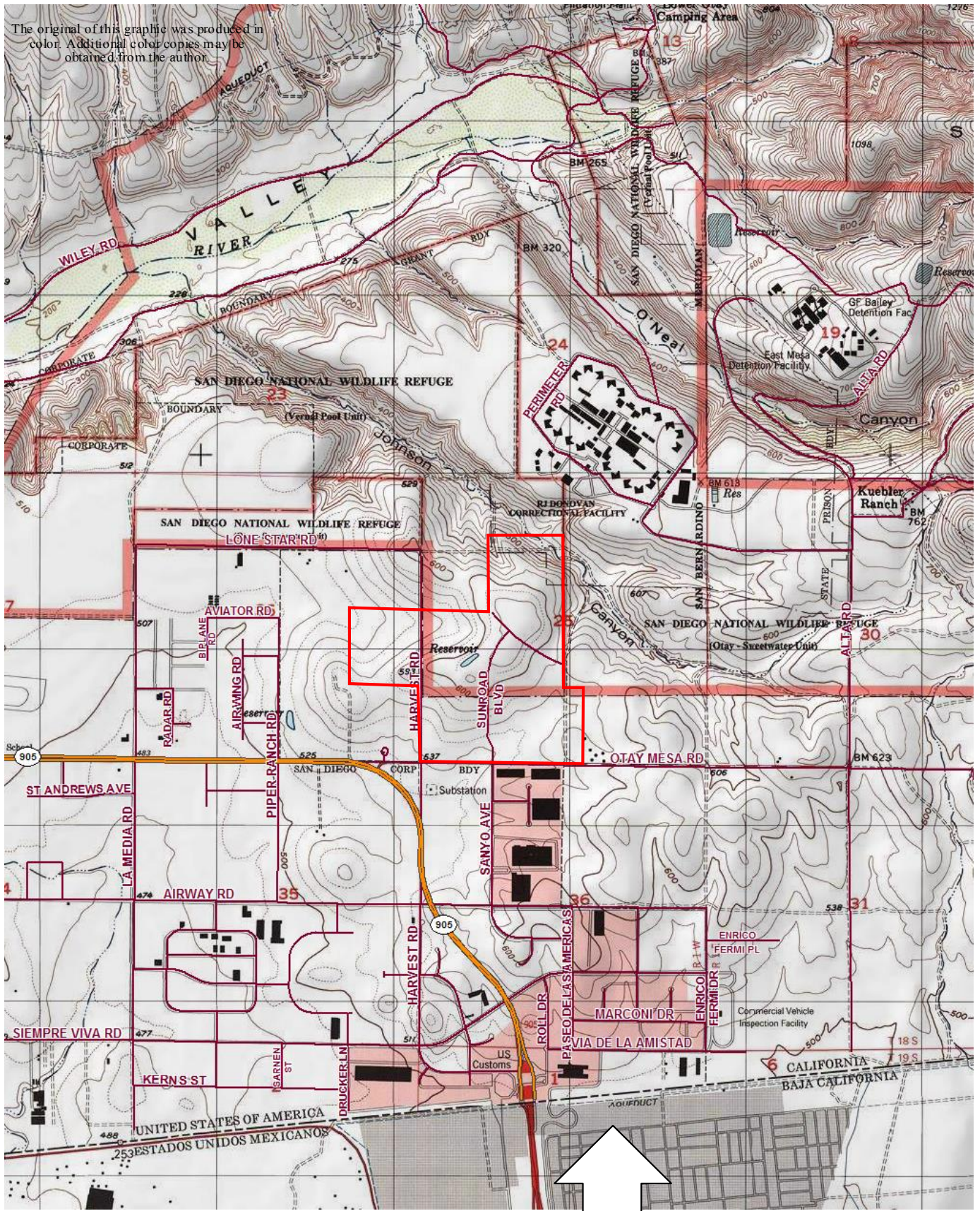
Gretchen Cummings
Principal/Consulting Biologist
[TE-031850-4]

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Date

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The original of this graphic was produced in color. Additional color copies may be obtained from the author.



Cummings and Associates Job Number 1747.10C 26 February 2016

Scale: 1-inch = 2,000-feet

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**Cummings
and
Associates**

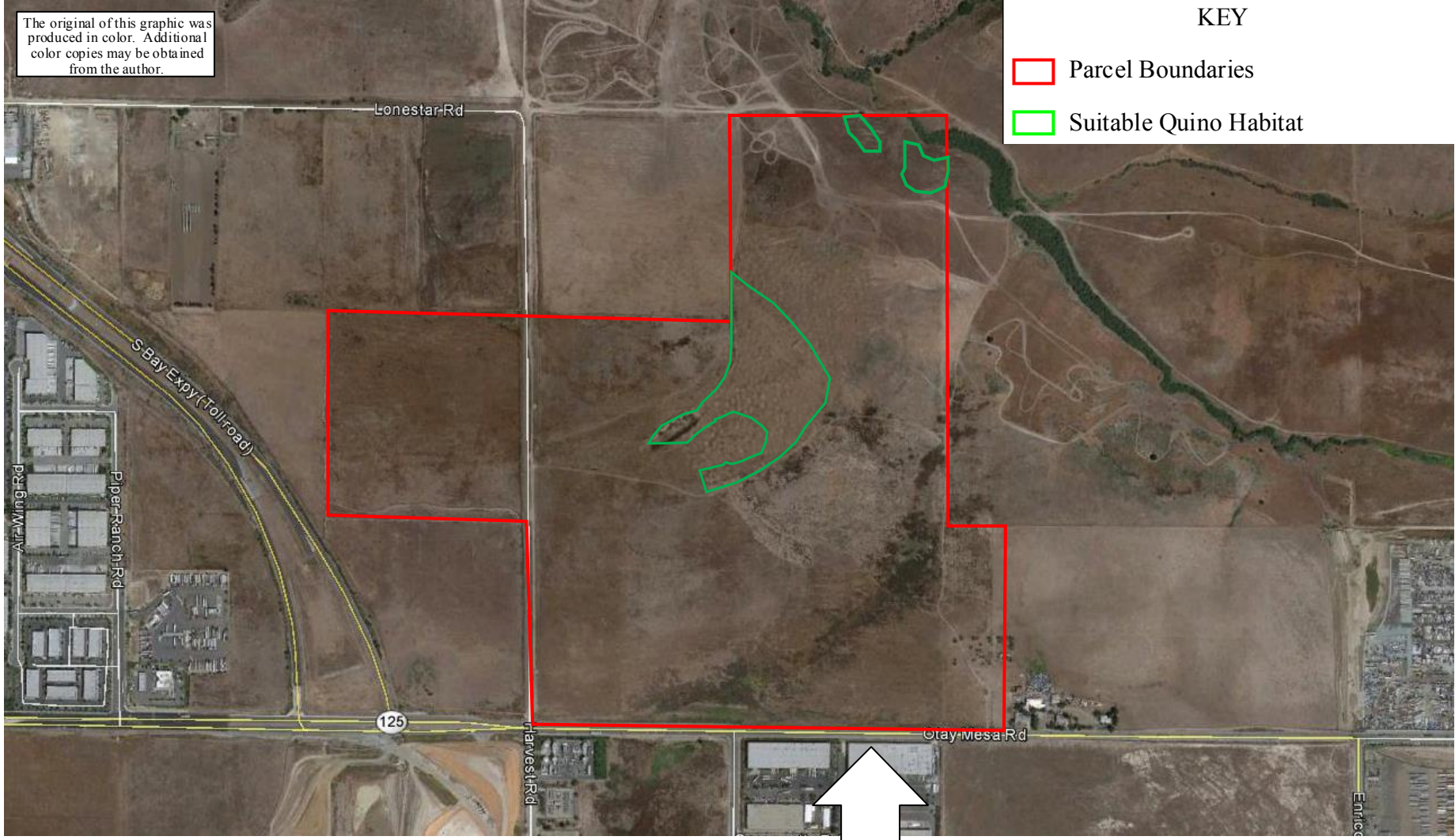
**Sunroad Centrum 250 Project Shown on the
U.S.G.S. 7 ½-minute Otay Mesa Quad Map**
[Base Map Created with TOPO!® ©2006 National Geographic;
©2005 TeleAtlas]

**Figure
1**

The original of this graphic was produced in color. Additional color copies may be obtained from the author.

KEY

-  Parcel Boundaries
-  Suitable Quino Habitat



Cummings and Associates Job Number 1747.10C 1 March 2016

Scale: 1-inch = 1,000-feet

[:\1747-Fig-2-rev.pptx]

**Cummings
and
Associates**

**Suitable Quino Habitat on the Sunroad Centrum 250 Project
Shown on an Aerial Photo
[Base Photo © 2016 Google; Imagery Date 4/14/2015]**

**Figure
2**

KEY

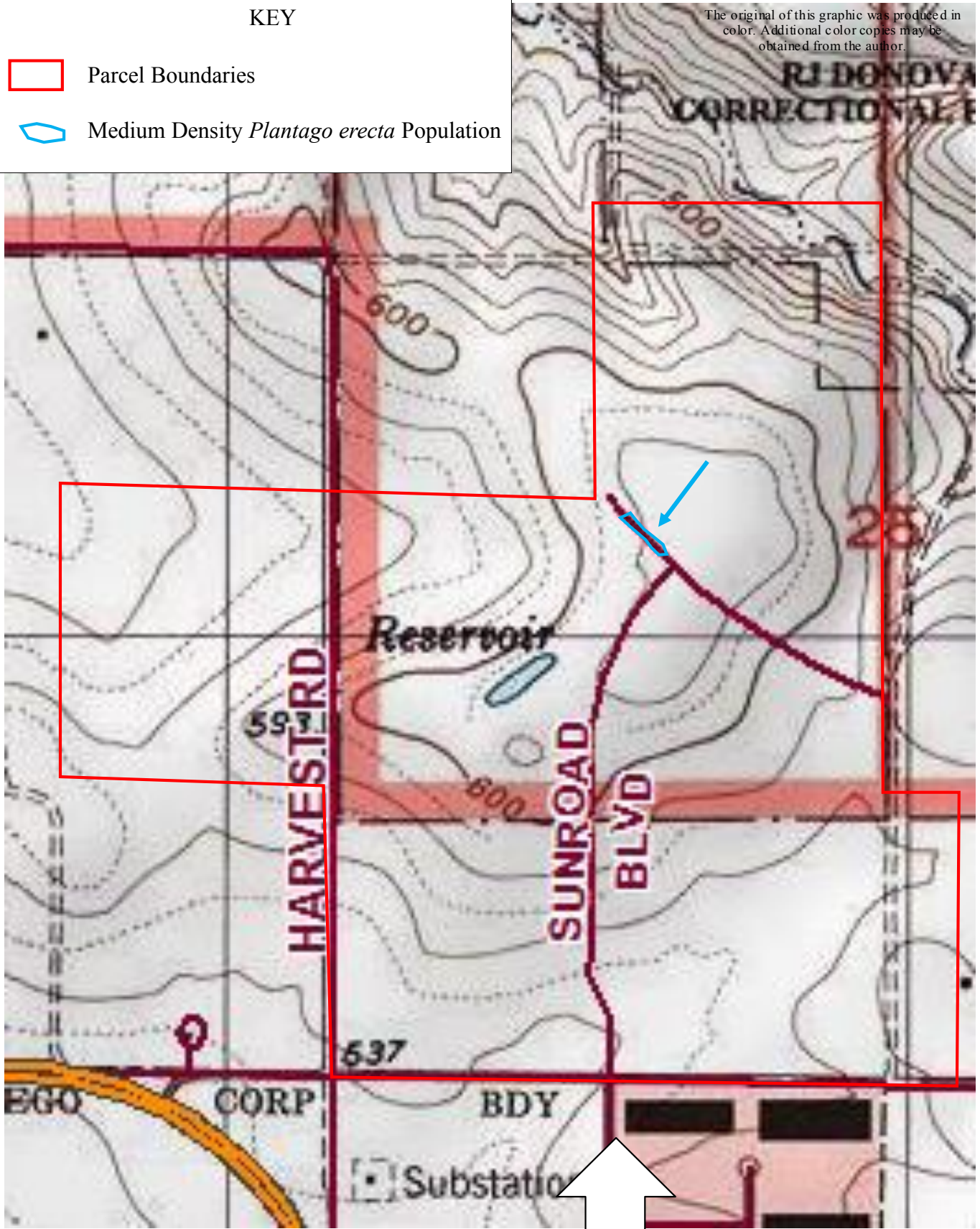


Parcel Boundaries



Medium Density *Plantago erecta* Population

The original of this graphic was produced in color. Additional color copies may be obtained from the author.



Cummings and Associates Job Number 1747.10C 1 March 2016

Scale: 1-inch = 500-feet

[:\1747-Fig-3.ppp]

**Cummings
and
Associates**

**Sunroad Centrum 250 Project Shown on the
U.S.G.S. 7 1/2-minute Otay Mesa Quad Map**
[Base Map Created with TOPO!® ©2006 National Geographic;
©2005 TeleAtlas]

**Figure
3**



Figure 4A — Western Pygmy-Blue (*Brephidium exile*)

This species was seen during all six survey dates. The larvae feed on Russian Thistle, Satlbushes, and others. [Photo taken on-site during the Quino survey.]

Figure 4B — Anise Swallowtail (*Papilio zelicaon*)
This species was observed during all six survey dates. The larvae feed on Sweet Fennel. [Photo taken on-site during the Quino survey.]



Figure 4C — Gray Hairstreak (*Strymon melinus*)
This butterfly species was seen during the last four site visits. Larvae feed on plants in the Pea Family and Mallow Family [Photo taken on-site during the Quino survey.]

Figure 4D — White Checkered-Skipper (*Pyrgus albescens*)
This species was seen during four of the five Quino surveys. The larvae of this species feed on a variety of Mallow Family plant species. [Photo taken on-site during the Quino survey.]



Table 1**Summary of Weather Conditions at the
Time of the Individual Survey Dates**

Sunroad Centrum 250 Property									
Survey	Date	Beginning of Observation Period				End of Observation Period			
		Time	Cloud Cover	Wind	Air Temp	Time	Cloud Cover	Wind	Air Temp
Site Assessment and Initial Host Plant Mapping	4 Feb	0930	Clear	< 1.2 mph	61.3°F	1340	Clear	2.4 - 4.1 mph	73.8°F
Finalize Host Plant Mapping	1 Mar	0900	30%	< 1.3 mph	67.5°F	1015	30%	< 2.0 mph	73.1°F
Quino Survey #1	1 Mar	1015	30%	< 2.0 mph	73.1°F	1400	40%	1.9 - 8.1 mph	73.8°F
Quino Survey #2	8 Mar	1000	Clear	2.8 - 4.8 mph	60.1°F	1330	Clear	5.9 - 8.3 mph with gusts to 11.4 mph	65.1° F
Quino Survey #3	18 Mar	1355	Clear	4.8 - 8.4 mph	71.9°F	1555	Clear	3.9 - 8.7 mph	73.4°F
Quino Survey #4	24 Mar	1330	Clear	7.0 - 11.5 mph	79.7°F	1530	Clear	4.1 - 9.1 mph	79.5°F
Quino Survey #5	3 Apr	1430	20%	4.3 - 8.3 mph	73.5°F	1630	30%	3.7 - 7.2 mph	74.2°F

[:\1747weather-tbl.wpd]

Table 2

**Summary of the Butterfly Species Observed at the Sunroad Centrum 250 Property
County of San Diego, California**

Scientific Name ^{1/} Common Name	4 Feb ^{2,3}	1 Mar ³	1 Mar ³	8 Mar	18 Mar	24 Mar	3 Apr
<i>Anthocharis sara</i> Sara Orangetip	—	—	—	—	1	1	—
<i>Brephidium exile</i> Western Pygmy-Blue	2	1	22	13	7	2	2
<i>Colias</i> sp. Sulphur	—	—	2	—	—	—	—
<i>Colias eurytheme</i> Orange Sulphur	—	—	—	—	—	—	1
<i>Erynnis funeralis</i> Funereal Duskywing	—	—	1	1	2	—	1
<i>Papilio zelicaon</i> Anise Swallowtail	2	1	8	4	4	1	3
<i>Pieris rapae</i> Cabbage White	—	—	1	—	—	—	—
<i>Pontia protodice</i> Checkered White	—	—	—	—	2	—	—
<i>Pyrgus albescens</i> White Checkered-Skipper	—	—	1	3	—	2	1

Scientific Name ¹ / Common Name	4 Feb ^{2, 3}	1 Mar ³	1 Mar ³	8 Mar	18 Mar	24 Mar	3 Apr
<i>Strymon melinus</i> Gray Hairstreak	—	—	—	1	1	1	3
<i>Vanessa annabella</i> West Coast Lady	—	—	—	2	1	—	1
<i>Vanessa cardui</i> Painted Lady	—	—	—	1	—	—	—
<i>Vanessa virginiensis</i> American Lady	—	—	—	—	—	—	5
Undifferentiated White	—	—	—	—	—	1	4
Total Individuals/ Total Species Observed	4/ 2	2/ 2	35/ 6	25/ 7	18/ 7	8/ 6	21/ 9

¹For a discussion of the identification and species observed, see text. Nomenclature taken from:

Cassie, Brian, J. Glassberg, A. Swengel, and G. Tudor. 2001. North American Butterfly Association (NABA) Checklist & English Names of North American Butterflies. Second Edition. North American Butterfly Association, Inc., Morristown, NJ, 60 pp.

²The first part of this site visit was the “site assessment” according to the Proposed 2016 Quino Checkerspot Survey Protocol.

³The latter part of the 4 February 2016 site visit was spent looking for host plants. The first part of the 1 March 2016 site visit was spent finalizing the host plant mapping. The second part of the 1 March 2016 visit was the first Quino survey.

Appendix A

Field Notes

2016 Field Notes for the Quino Survey over the Sunroad Centrum 250 Property in Otay Mesa

4 February 2016

A Quino Checkerspot Butterfly habitat assessment and initial host plant survey was conducted over the Sunroad Centrum 250 property today (Cummings and Associates Job #1747.10C). The field survey occurred between 0930 and 1340 hours. The sky was sunny and clear throughout the site visit. The temperature rose during the survey period from 61.3°F at 0930 hours to 73.8°F at 1340 hours. Wind speeds were measured at < 1.2 mph at the beginning of the survey. At the completion of the visit, wind speeds were measured between 2.4 - 4.1 mph. Butterfly species observed during the habitat assessment and initial host plant survey were:

Brephidium exile (2)
Papilio zelicaon (2)

The only Quino host plant identified on-site was Dot-seed Plantain (*Plantago erecta*). A medium density population was noted along the old Lone Star Road alignment.

1 March 2016

The first part of today's visit was dedicated to finishing the Quino host plant mapping over the Sunroad Centrum 250 property (Cummings and Associates Job #1747.10C). This field work occurred between 0900 and 1015 hours. The sky was partly cloudy with 30% high cloud cover throughout the survey. Temperature increased from 67.5°F at 0900 hours to 73.1°F at 1015 hours. Wind speeds were measured at < 1.3 mph at the onset of the survey and at < 2.0 mph at the end.

Butterflies observed were:

Papilio zelicaon (1)
Brephidium exile (1)

The second part of today's survey represented the first of the protocol Quino surveys over the Sunroad Centrum 250 property (Cummings and Associates Job #1747.10C). The protocol survey occurred between 1015 and 1400 hours. The ambient temperature increased slightly from 73.1°F at the onset of the field visit to 73.8°F at the end of the survey. The wind was blowing from the west during the observation period. Wind speeds were measured at < 2.0 mph at the beginning of the visit and between 1.9 - 8.1 mph at the end of the survey. The sky was partly cloudy with 30% cloud cover at 1015 hours and 40% cloud cover at 1400 hours. Butterflies observed were:

Colias sp. (2)
Pyrgus albescens (1)
Erynnis funeralis (1)
Brephidium exile (22)
Pieris rapae (1)
Papilio zelicaon (8)

Nectaring sources included:

Erodium spp.
Dichelostemma capitatum
Sidalcea malviflora
Calystegia macrostegia
Lasthenia californica
Plantago erecta
Acmispon glaber
Allium praecox
Peritoma arborea
Sisyrinchium bellum
Calochortus splendens
Hedypnois cretica

NOTE: The only flowering plant in the Non-Native Grassland area was *Dichelostemma capitatum*.

8 March 2016

The second Quino protocol survey was conducted over the Sunroad Centrum 250 property today (Cummings and Associates Job #1747.10C). This second survey was conducted between 1000 and 1330 hours. The sky was sunny and clear throughout the survey. The temperature increased from 60.1°F at 1000 hours to 65.1°F at 1330 hours. Winds were blowing from the northwest at speeds between 2.8 - 4.8 mph at 1000 hours. At the end of the survey, the winds were blowing from the west, and were measured between 5.9 - 8.3 mph with gusts up to 11.4 mph. Butterfly species observed during this second protocol survey were:

Papilio zelicaon (4)
Brephidium exile (13)
Erynnis funeralis (1)
Pyrgus albescens (3)
Strymon melinus (1)
Vanessa annabella (2)
Vanessa cardui (1)

Nectaring sources included:

Dichelostemma capitatum
Brassica nigra
Sidalcea malviflora
Calystegia macrostegia
Lasthenia californica
Plantago erecta
Allium praecox
Peritoma arborea
Sisyrinchium bellum
Calochortus splendens

The *Plantago erecta* was still flowering, but some were starting to yellow.

Other observations included two Coyotes (*Canis latrans*) laying down together in the man-made “wetland”.

18 March 2016

Today the third of the required Quino protocol surveys was conducted over the Sunroad Centrum 250 property (Cummings and Associates Job #1747.10C). The field visit occurred between 1355 and 1555 hours. The sky was sunny and clear throughout the survey. Ambient temperatures were measured at 71.9°F at the onset of the visit and at 73.4°F at the end of the observation period. At the beginning of the survey, the wind was blowing from the west at speeds ranging from 4.8 - 8.4 mph. By the end of the visit, the winds were still blowing from the west, and were measured between 3.9 - 8.7 mph. Butterfly species observed during this visit were:

Papilio zelicaon (4)
Pontia protodice (2)
Erynnis funeralis (2)
Brephidium exile (7)
Anthocharis sara (1)
Vanessa annabella (1)
Strymon melinus (1)

Nectaring sources during this visit included:

Hirschfeldia incana
Medicago polymorpha
Dichelostemma capitatum
Calochortus splendens
Calystegia macrostegia

Sisyrinchium bellum
Lasthenia californica
Sidalcea malviflora
Plantago erecta
Acmispon glaber
Allium praecox

Some of the *Plantago erecta* was still green and flowering, but some has started to dry. Plants varied in height up to 2".

24 March 2016

Today the fourth of the required Quino protocol surveys was conducted over the Sunroad Centrum 250 property (Cummings and Associates Job #1747.10C). The field visit occurred between 1330 and 1530 hours. The sky was sunny and clear throughout the survey. Ambient temperatures were measured at 79.7°F at 1330 hours and at 79.5°F at 1530 hours. At the beginning of the survey, the wind was blowing from the west at speeds ranging from 7.0 - 11.5 mph. By the end of the visit, the winds were blowing from the west at speeds ranging from 4.1 - 9.1 mph. Butterfly species observed during this visit were:

Pyrgus albescens (2)
Papilio zelicaon (1)
Undifferentiated White (1)
Brephidium exile (2)
Anthocharis sara (1)
Strymon melinus (1)

Nectaring sources during this visit included:

Brassica nigra
Calystegia macrostegia
Calochortus splendens
Sisyrinchium bellum
Dichelostemma capitatum
Allium praecox
Lasthenia californica
Plantago erecta
Acmispon glaber
Melilotus indicus

NOTE: The only flowering plant in the Non-Native Grassland area was *Brassica nigra*.

Some of the *Plantago erecta* was still flowering, but definitely drying out.

3 April 2016

Today the fifth of the required Quino protocol surveys was conducted over the Sunroad Centrum 250 property between 1430 and 1630 hours (Cummings and Associates Job #1747.10C). The sky was partly cloudy throughout the survey with approximately 20% cloud cover at 1430 hours and 30% cloud cover at 1430 hours. Temperatures ranged from 73.5°F at the onset of the visit to 74.2°F at the end of the observation period. Wind speeds ranged between 4.3 - 8.3 mph from the west at the beginning of the butterfly survey. At the end of the visit, wind speeds were measured between 3.7 - 7.2 mph from the west. Butterfly species observed were:

Papilio zelicaon (3)
Undifferentiated White (4)
Strymon melinus (3)
Vanessa virginiensis (5)
Pyrgus albescens (1)
Brephidium exile (2)
Erynnis funeralis (1)
Colias eurytheme (1)
Vanessa annabella (1)

Nectaring sources during this visit included:

Brassica nigra
Calystegia macrostegia
Calochortus splendens
Bloomeria crocea
Sisyrinchium bellum
Eriogonum fasciculatum
Lasthenia californica
Brodiaea jolonensis
Acmispon glaber

NOTE: The only flowering plants in the Non-Native Grassland area were *Brassica nigra* and *Calystegia macrostegia*.

All of the *Plantago erecta* was dried out.

The only other observation of note was a Coyote (*Canis latrans*).

[:\1747Field Notes.wpd]

Proposed 2016 Quino Checkerspot Survey Protocol

The intent of this proposed Quino Checkerspot Butterfly (QCB) protocol is to combine elements of past U.S. Fish and Wildlife Service (FWS) protocols to use for the 2016 season (at a minimum). In order to do this, the 2002, early 2014, and late 2014 protocols were used. To that end, reporting and required survey areas remain the same as the December 2014 protocol. The protocol is as follows:

1.1 SITE ASSESSMENTS AND HOST PLANT MAPPING

- Site assessments involve conducting a general field survey of the site and mapping excluded areas and QCB survey areas, as defined below, on a U.S. Geological Survey 7.5' (1:24,000) topographic quadrangle map enlarged 200 percent.
- The site assessment shall be conducted before the first QCB survey and prior to host plant mapping.
- Excluded Areas not recommended for QCB surveys:
 - Orchards, developed areas, or areas largely dominated by non-native vegetation;
 - Small in-fill parcels (plots smaller than an acre completely surrounded by urban development);
 - Active/in-use agricultural fields without natural or remnant inclusions of native vegetation or that are completely without any fallowed or unplowed areas;
 - Closed-canopy woody vegetation including forests, riparian areas, shrub-lands, and chaparral. "Closed-canopy woody vegetation" describes shrubs or trees growing closely together in which the upper portions of the vegetation converge (are touching) to the point that the open space between two or more plants is not significantly different than the open space within a single plant. Closed canopy shrub-land and chaparral are defined as vegetation so thick that it is inaccessible to humans except by destruction of woody vegetation (branches) for at least 100 meters;
 - Small openings (e.g., less than an acre) completely enclosed within dense chaparral provided a site-specific justification is included in the report.
- QCB Survey Areas are all areas that are not excluded, regardless of the presence or absence of QCB host plants or nectar sources.
- Upon completion of the site assessment, QCB Survey Areas will be surveyed for known host and nectar plants such as dwarf plantain (*Plantago erecta*), woolly plantain (*Plantago patagonica*), white snapdragon (*Antirrhinum coulterianum*), rigid bird's beak (*Cordylanthus rigidus*) and/or Chinese houses (*Collinsia concolor*). All locations of host plants will be mapped with a GPS unit (or equivalent) and populations will be estimated to categorize density of host plant patches. For example, density categories could be: low density (1 - 100 plants), medium density (100 – 1,000 plants), and high density (1,000 – 10,000+ plants).

2.1 QUINO SURVEYS

- An appropriate reference population) will be surveyed on a weekly basis, starting the second week of January, by a permitted biologist. For 2016, Marron Valley will be used as the reference population, and it will be used to define the flight season for Management Units 3 (Janal) and 4 (Alisos) that is identified in the Management Strategic Plan for Western San Diego County (http://sdmmp.com/reports_and_products/Management_Strategic_Plan.aspx). Different parts of the QCB range may require different reference sites, and any reference sites chosen for other parts of the range will be approved by the Service. Reference population(s) will be monitored by only entities agreed up and approved by the Service. The purpose of this is to not overly sample the habitat and potentially negatively affect the population.
 - The monitoring biologist will assess the condition of host plants within the reference population, and note any signs of egg, larva (caterpillar), pupa (chrysalis), and adult butterflies.
 - The monitoring biologist will note weather conditions at the reference site and, to the extent feasible, monitoring days will be based on the weather conditions outlined in Section 3.0.
 - The biologist will work with the Service to make a reasonable effort to notify biologists potentially planning to conduct focused surveys in 2016, of the weekly survey results. This may occur by any means, including posting the results on a dedicated website or other similar media.
- QCB surveys shall not be conducted concurrently with any other focused survey (e.g. a coastal California gnatcatcher or QCB host plant survey). However, additional host or nectar plants observed during the survey effort should be mapped and quantified per Section 1.0.
- The entire QCB Survey Area identified in Section 1.0 shall be surveyed for QCB each week.
- Surveys shall be conducted weekly and spaced no closer than 4 calendar days apart (see Section 3.0 WEATHER- RELATED CONDITIONS).
- Surveys shall be conducted for a minimum of 5 weeks and will be initiated within one week of observed QCB flight at the reference site(s). It will be the surveyor's responsibility to stay informed of the reference site comparable to their specific project site. If no Quino are observed in the first 5 weeks, surveys will continue until the flight season is over or demonstrably on the decline in the reference site as determined in coordination with the surveyor and the Service.
- Surveys should be conducted at a rate of approximately 5-10 acres (2-4 hectares) per person-hour. Survey rate can depend on topography and other physical factors at the survey site. A full description of the QCB Survey Area should be provided in the survey report, noting any deviations from this specified survey rate.
- Survey routes shall be roughly parallel to each other and spaced approximately 30 feet (10 meters) apart.
- Survey routes shall cover within 15 feet (5 meters) of site boundaries and/or the perimeter of

excluded areas.

3.1 WEATHER-RELATED CONDITIONS

- Surveys will not be conducted when the following weather conditions exist:
 - Fog, drizzle, or rain;
 - Sustained or gusting winds that average greater than 15 miles (24 kilometers) per hour measured over a 30 second period at a height of 4-6 feet (1.2-1.8 meters) above ground level;
 - Temperature in the shade at ground level is less than 60° F (15.5° C) on a clear, sunny day with less than 50 percent cloud cover, or less than 70° F (21° C) on days with 50 percent or more cloud cover;

- Weather conditions are to be measured on site, using appropriate instrumentation, and are not to be estimated or obtained from internet websites where measurements are recorded off site;

- A weekly survey should only be missed because of week-long adverse weather. If a weekly survey is missed due to weather conditions, two surveys should be conducted on non-consecutive days the following week.