Appendix D-3
Biological Resources Technical Report Supplemental Analysis
Otay Ranch Resort Village – Alternative H
GPA 04-003, SP 04-002, TM5361, REZ 04-009
Environmental Log Number ER 04-19-005

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1 INTRODUCTION

Dudek Senior Biologist Anita Hayworth, PhD has reviewed the Otay Ranch Resort Village Alternative H ("Alternative H") site for analysis of the biological impacts resulting from the alternative. Graphics specific to Alternative H are attached that illustrate impacts to the vegetation communities and special status resources.

Under Alternative H, the 1,869-acre Project site would be developed in accordance with the approved Preserve and development boundaries as shown in the Multiple Species Conservation Program (MSCP) County Subarea Plan (Figure 1). The Alternative H site plan includes 692 acres of land proposed for development within the 762-acre area designated for development in the County Subarea Plan. The Alternative H site also includes 1,107 acres of MSCP preserve. The MSCP preserve area is also incorporated as the Otay Ranch Resource Management Plan Preserve (Otay Ranch RMP Preserve). The Otay Ranch RMP Preserve consists of undisturbed lands that are ultimately for dedication to the Otay Ranch RMP Preserve Owner Manager (POM) in satisfaction of Otay Ranch RMP conveyance requirements. No fuel modification zones or privately ~~–~~owned lots are located in the Preserve or on restored areas that are designated as Otay Ranch RMP Preserve. As shown in Figure 2, development of the Project site would consist of 1,881 single-family homes and 57 multi-family homes for a total of 1,938 homes within a total impact area of 692 acres. The residential development footprint itself is approximately 523 acres. In addition, other areas of impacts such as temporary impacts that are not allowable uses within the Preserve, fuel modification, detention basins and ~~offsite~~off-site improvements are included in the total impact analysis. Resort uses would encompass 16.5 acres in the southeast portion of the Project site and includes up to 200 rooms and 20,000 square feet of ancillary retail/commercial uses. A 6-acre community homeowner facility site is proposed near the village core. A total of 25 acres of public parks would be provided, which includes a central park in the village core and five neighborhood parks within convenient walking distance from all homes. A 10-acre elementary school site is proposed adjacent to the central park. While no public safety site was included within Village 13 in the Otay Ranch Subregional Plan (SRP), which located a fire station in Village 15, as with the Proposed Project, Alternative H would include a 2.3-acre Public Safety Site adjacent to the mixed use 20,000 square feet neighborhood ~~–~~serving retail area. Additionally, 76.5 acres would be used for manufactured open space, which consists of homeowner association maintained manufactured slopes, ~~water~~detention basin lots, and fuel management zones ~~however this is~~. However these areas are not considered preserve open space. Other land uses include 32.3 acres for internal circulation. Otay Lakes Road remains in its existing location and would be improved. Alternative H would also include approximately 69.8 acres of Conserved Open Space which will be protected by a biological open space easement or transferred to the Otay Ranch RMP Preserve at a later date. Table 1 shows the summary of land use categories for the Alternative H project site.

Table 1
Summary of Land Uses for Alternative H Project Site

Land Use Categories	Acreage
Development	692
Total Otay Ranch RMP Preserve	1,107
Conserved Open Space*	70
Total Project Area	1,869

*To be protected by a biological open space easement or by transfer to the Preserve

Information contained in the *Otay Ranch Resort Village Biological Resources Technical Report* (March 2015), Appendix C-3 to the Draft EIR, was used to prepare this analysis of Alternative H. A portion of the biological resource information was updated since the March 2015 technical report. This included a revised jurisdictional delineation, an update of the special status plant species, and a more recent focused survey for Quino checkerspot butterfly (*Euphydras editha quino*) including detailed mapping of the larvae host plant based on the density of the populations. Other baseline surveys for biological resources were not updated because the conditions of the site have not changed since the most recent survey effort. The Alternative H~~,~~ surveys conducted after the Draft EIR went out for public review, and updated analysis of offsite impacts are presented in appendices to this report including: Appendix A, 2016 Focused Quino Checkerspot Butterfly Survey Report; Appendix B, Vernal Pool Mitigation Plan, Appendix C, Quino Checkerspot Butterfly Management/Enhancement Plan, Appendix D, Conceptual Upland Restoration Plan, Appendix E, Conceptual Resources Management Plan, and Appendix F, Offsite Impacts – Otay Lakes Road Impact Memorandum.

As noted in the Biological Resources Technical Report (2015), the project area, also referred to as "Village 13," and the "Resort Village," comprises approximately 1,869 acres, and is located in the Proctor Valley Parcel of Otay Ranch General Development Plan (GDP). The information contained within the Biological Resources Technical Report (2015) for the entire 1,869-acre project area was overlain with the proposed development footprint for Alternative H and the resulting analysis is provided below. In addition, Alternative H includes offsite impact areas associated with the required improvements to Otay Lakes Road, some of which is within the City of San Diego jurisdiction. Those approximately 59 acres of offsite improvements are in addition to the 1,869-acre project area and are presented as Appendix F to this document.

Dudek biologists conducted various biological surveys of the property from spring 1998 to summer 2016 including both mapping surveys and focused surveys. The 2016 surveys were conducted subsequent to the public review of the Otay Ranch Resort Village Draft EIR. Information regarding the 2016 surveys is included in this analysis for Alternative H and will also be included in the Final EIR.

Surveys included focused surveys for Quino checkerspot butterfly ~~(*Euphydryas editha quino*),~~ San Diego and Riverside fairy shrimp (*Branchinecta sandiegonensis* and *Streptocephalus woottoni*, respectively), and sensitive plant species. The surveys for Quino checkerspot butterfly were conducted in 1998, 1999, 2000, 2004, 2008, and 2016. The surveys for San Diego and Riverside fairy shrimp were conducted in 1999, 2000, 2003, 2007-2008, and 2014-2015 and also included updates to the vernal pool ~~surveys as needed.~~mapping surveys as needed. In addition, to ensure that surveys covered wetland requiring rare plants, the vernal pool surveys also addressed surveying for rare plants that occur in vernal pool areas. Rare plant surveys were conducted in 1999 (focused on San Diego thornmint [*Acanthomintha ilicifolia]* and Otay tarplant [*Deinandra conjugens]*), 2000, 2002, 2009, and 2015. Vegetation mapping was conducted in 2000 and updated in 2001, 2002 and 2008. The wetland jurisdictional delineation was conducted in 2000, 2013-2014, and 2015 and included mapping of the vernal pool complexes. With the exception of coastal California gnatcatcher (*Polioptila californica californica*) data points which were collected in 1989 by Michael Brandman & Associates and updated in 1992 to be included in the MSCP, all biological information was gathered by Dudek or Dudek's subconsultants. Based on surveys conducted between 1998 and 2016, and that the conditions on the site have not substantially changed, it is not anticipated that the special status species have substantially changed in population size or distribution. The schedule of surveys conducted prior to 2016 is provided in the Biological Resources Technical Report (March 2015). Surveys conducted in 2016 are discussed below.

An updated Quino checkerspot butterfly survey was conducted in 2016 (Appendix A). The entire Alternative H site as well as the Preserve was surveyed in 2016 in accordance with the description in the most recent Quino checkerspot butterfly survey guidelines (December 15, 2014) as modified during discussion with the U.S. Fish and Wildlife Service (USFWS) by a deviation request and approved by the USFWS. The protocol deviation included conducting three weeks of surveys as based on activity of the butterfly, rather than a set start and end date, and providing a detailed mapping of the larval host plant species for the butterfly based on a finer scale mapping of the density of the host plant versus the population count.

To avoid starting the survey effort prior to the onset of the flight of the butterfly, Dudek conducted the 2016 surveys in accordance with the protocol outlined in the negotiated *Proposed 2016 Quino Checkerspot Survey Protocol* (BIA 2016). This proposed protocol was prepared in conjunction with the USFWS. The proposed protocol combines elements of the 2002 and 2014 (early and late) protocols with key modifications to the 2014 FWS Quino survey guidelines (December 15, 2014) including:

- A reference site was surveyed to determine the life stage of Quino and define the flight season.
- Surveys were initiated within one week of observed Quino flight at the reference site(s).

- Host plant were mapped as a separate effort following the methods used in 2014 by Helix Environmental for the Village 14 project with the exception that density was mapped rather than absolute number: host plant species were mapped in patches of low density (11 - 100 plants), medium density (100 – 1,000 plants), and high density (1,000 –10,000 plants) with the addition of a very low category (1-10 plants) which can be collapsed into the low density category per the BIA protocol if warranted. In addition, the units for mapping were based on plants per square meter and *Castilleja exserta* was included. High density patches of host plant were mapped as polygons if they are in areas larger than approximately 250 square feet. If observed, Quino larvae were recorded and a permitted biologist was present to document the observation.

Dudek was approved by USFWS to follow the deviation for the Otay Ranch Resort Site on February 10, 2016. From the 2016 Revised Notification of Survey, Quino surveys at Village 13 were conducted for three weeks following the initial observed Quino flight at the reference site as discussed in the notification. An additional survey was conducted on March 31, 2016 and April 4, 2016 to confirm Quino was no longer in flight.

Surveys were conducted by Quino-permitted biologists Anita Hayworth (TE781084-8), Paul Lemons (TE051248-5), Erin Bergman (TE813545-5), Tricia Wotipka (TE840619-2), Vipul Joshi (TE019949-3), Travis Cooper (TE170389-5), Alicia Hill (TE06145B-0), Garrett Huffman (TE20186A-1), Antonette Gutierrez (TE-50992B-0), Brian Lohstroh (TE-063608-5), Crysta Dickson (TE-067347-5), Darin Busby (TE-115373-3), David King (TE-785148-11), Erika Eidson (TE-051236), Erik LaCoste (TE-027736-5), Greg Chatman (TE-075112-2), Gretchen Cummings (TE-031850-4), Nicole Kimball (TE-053598), Monica Alfaro (TE-051242-2), and Diana Saucedo (TE-811615-6.1). Dudek biologists Patricia Schuyler (TE-27502B-0), Callie Ford (TE-36118B-0), Marshall Paymard, and Janice Wondolleck, and biological consultants, Emily Mastrelli accompanied Quino-permitted biologists during some visits. County Biologist Korey Klutz accompanied Dr. Hayworth for a final visit to the site.

Additionally, Quino Checkerspot butterfly host plant mapping surveys were conducted within a 4-week period from February to March in 2016. Data collected included the surveyor(s), date, species of host plant, and density of the host plant at the point at which the host plant was found. All host plant occurrences were mapped as points. Density was assessed per square meter and was collected using the following classes:

- Very Low: 1-10 plants per square meter
- Low: 11–100 plants per square meter
- Medium: 100–1,000 plants per square meter
- High: 1,000–10,000+ plants per square meter

Points were collected within patches of host plant at least as close as every 3 meters (10 feet). At the conclusion of surveys, a Dudek Geographic Information Systems (GIS) analyst created a GIS coverage for host plants. These surveys were conducted by biologists Andy Thomson, Anita Hayworth, Kathleen Dayton, Danielle Mullen, Kevin Shaw, Janice Wondolleck, Jake Marcon, Marshall Paymard, Erin Bergman, and Kyle Matthews.

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2 ANTICIPATED PROJECT IMPACTS

Vegetation Communities

This section addresses impacts to biological resources that would result from implementation of Alternative H. Both the proposed development and open space areas have been naturally recovering from the 2003 Otay Fire. Therefore, the evaluation of significance and adequacy of mitigation utilizes data from pre-fire conditions with the assumption that these resources will be present within both the impact and mitigation areas.

As noted in the Biological Resources Technical Report (2015), the project area comprises approximately 1,869 acres, and is located in the Proctor Valley Parcel of Otay Ranch. The information contained within the Biological Resources Technical Report (2015) for the entire 1,869-acre project area was overlain with the development footprint for Alternative H and the resulting analysis is provided below. In addition, there are approximately 59 acres of proposed ~~offsite~~off-site impact areas associated with the required improvements to Otay Lakes Road (Appendix F). Those ~~offsite~~off-site improvements are in addition to the 1,869-acre project area. Mitigation for the ~~offsite~~off-site impact areas will be in accordance with the County or cities of San Diego or Chula Vista or the State of California as required by those jurisdictions. Impacts to areas within the County of San Diego, for areas outside of the Otay Ranch, will be mitigated per the County's Biological Mitigation Ordinance. Impacts to areas within the City of San Diego will be mitigated per the Site Development Permit (in preparation) and regulations for the City, including Cornerstone Lands, as required by the City of San Diego MSCP Subarea Plan. Impacts to areas within the City of Chula Vista will be addressed per a Habitat Loss and Incidental Take evaluation and in accordance with the Chula Vista MSCP Subarea Plan.

Table 2 presents the vegetation communities by the land use categories shown in Table 1. Direct ~~onsite~~on-site impacts due to development were quantified by overlaying the anticipated limits of grading and other impacts such as fuel modification and detention basins, etc. on the GIS database of the biological resources. Alternative H would result~~s~~ in impacts to 692 acres within the Project site within the land use category designated as development. This includes grading for the proposed development, fuel modification, detention basins and manufactured slopes within the development. The Otay Ranch RMP Preserve land use category includes 1,107 acres of predominantly native vegetation communities. The Conserved Open Space land use category includes approximately 70 acres located within five areas that were previously designated as development within the Otay Ranch GDP/SRP. These areas include an area within which a large patch of San Diego thornmint is located, vernal pools that are located within the K8 mesa, the realigned Otay Lakes Road, and a development area that currently has no access and is adjacent to the Not a Part parcel. This acreage would be protected via a biological open space easement

or potentially transferred to the Otay Ranch RMP Preserve at a later date. The total acreage within the Otay Ranch RMP Preserve and the Conserved Open Space is 1,177 acres.

Table 2
Vegetation Communities within Alternative H Development, Otay Ranch RMP Preserve, and Conserved Open Space

Vegetation Community	Total Project Site (Acres)	Development	Otay Ranch RMP Preserve and Conserved Open Space		
		Development Impacts (Includes Fuel Modification, Detention Basins, Manufactured slopes) (Acres)*	*Otay Ranch RMP Preserve ~~on site~~On Site (Acres)*	*Conserved Open Space (Includes San Diego Thornmint, Vernal Pools in K8 Mesa, Realigned Otay Lakes Road and Development Area with No Access) (Acres)*	*Total Otay Ranch RMP Preserve and Conserved Open Space (Acres)*
Coastal sage scrub	1,126.83	115.76	981.70	29.37	1,011.07
Disturbed coastal sage scrub	348.69	273.09	51.24	24.36	75.60
Chamise chaparral	143.14	89.95	49.49	3.70	53.19
Disturbed chamise chaparral	15.67	14.09	1.58		1.58
Scrub oak chaparral	22.45	22.10	0.35		0.35
Southern mixed chaparral	4.95	0.00	4.95		4.95
Disturbed Valley needlegrass grassland	110.46	102.94	7.52		7.52
Non-native grassland	79.02	64.49	3.11	11.42	14.53
Cismontane alkali marsh	1.73	0.06	1.67		1.67
Disturbed cismontane alkali marsh	0.37	0.19	0.18		0.18
Mulefat scrub	0.15	0.06	0.09		0.09
Open water	0.17	0.17	0.00		0.00
Southern willow scrub	0.27	0.01	0.26		0.26
Developed Land	0.87	0.79	0.08		0.08
Disturbed Habitat	13.46	7.79	4.72	0.95	5.67
Stock pond	0.79	0.50	0.29		0.29
Total	1,869.02	691.99	1107.23	69.80	1,177.03

* All impacts are considered permanent. Proposed Development impacts listed above do not include the ~~offsite~~off-site road improvements. The offsite impacts are anticipated to be approximately 59 acres and are presented in Appendix F. Offsite impacts include the areas required for the improvements to Otay Lakes Road.

Table 3 provides a summary of the ~~onsite~~on-site impacts within the development area and the Otay Ranch RMP Preserve (Figure 3). There are no impacts anticipated to occur within the Conserved Open Space. All impacts anticipated to occur within the Otay Ranch RMP Preserve are considered allowable uses within a preserve per the MSCP County of San Diego Subarea Plan. Alternative H impacts within the Otay Ranch RMP Preserve include the installation of a water tank within the northern portion of the Preserve; temporary slope grading onsite for Otay Lakes Road ~~onsite~~; the water tank and its access road; temporary impacts for the installation of the water line for the water tank; and temporary impacts for the grading for the natural drainage bypass facilities. All impacts are considered permanent except for the temporary impacts for features required for allowable uses within the Otay Ranch RMP Preserve (Table 3). The slopes for the water tank and its access road, the slope grading for Otay Lakes Road, the water line, and the natural drainage bypass facilities will be temporarily disturbed and will be restored utilizing land-form grading techniques that will simulate and blend with existing adjacent land forms. Vegetation will be reestablished utilizing a planting palette of native restoration plant materials per the Conceptual Upland Restoration Plan~~.~~ (Appendix D). There are two natural drainage bypass facilities that are proposed. These facilities include placement of naturalized graded fills for the purpose of collecting existing natural drainage that occurs upslope from the proposed development. The natural fills direct drainage into a bypass drainage inlet structure located within the Alternative H development area. For all allowable uses requiring grading within the Preserve noted in Table 3, the impact is consistent with Section 3.6. (Land Uses Within the Preserve) of the MSCP County Subarea Plan. The areas that are proposed to be graded within the Preserve are limited in size and area to the extent feasible. The natural drainage bypass facilities areas are "compatible with the need to permanently protect the natural resources" per the MSCP and protect the Preserve from erosion and degradation.

Table 4 identifies vegetation community acreages within the Otay Ranch RMP Preserve. The acreages include impact areas that are allowable uses within the Preserve, as discussed above. The only permanent impacts within the Preserve include the water tank and the road to the water tank. Table 4 provides detail as to the source of the impact that is anticipated within the Otay Ranch RMP Preserve. The Otay Ranch RMP Preserve is a total of 1,107 acres of which 1,092 acres will not be impacted by the Project. The remaining 14.89 acres are for allowable use impacts within the Preserve (see Table 4~~)~~).

The on- and offsite impacts include areas required for improvements to Otay Lakes Road, some of which will require a Site Development Permit from the City of San Diego~~.~~, which may include additional mitigation measures. The total offsite impacts are anticipated to be approximately 59 acres and are presented in Appendix F.

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Table 3
Summary of Impacts to Vegetation Communities within the Project Site

Vegetation Community Type	Existing ~~Onsite~~On-Site* (Acres)	Total ~~Onsite~~On-Site Impacts (Acres)					Total Otay Ranch RMP Preserve Not Impacted	Conserved Open Space Not Impacted
		Outside Preserve	*Allowable Uses Inside Otay Ranch RMP Preserve*					
		*Proposed Development Impacts (Includes Fuel Modification, Detention Basins, Manufactured slopes)**	*Permanent Impacts*	*Temporary Impacts*				
			Water Tank and Road to Water Tank	*Temporary Slopes (along Otay Lakes Road and slopes for water tank)*	*Water Line*	*Natural Drainage Bypass Facilities*		
Coastal Sage Scrub	1,126.83	115.76	2.16	7.94	0.23	0.83	970.64	29.37
Disturbed Coastal Sage Scrub	348.69	273.09	--	3.02	—	—	48.21	24.36
Chamise Chaparral	143.14	89.95	—	0.43	—	—	49,06	3.70
Disturbed Chamise Chaparral	15.67	14.09	—	—	—	—	1.58	—
Scrub Oak Chaparral	22.45	22.10	—	—	—	—	0.35	—
Southern Mixed Chaparral	4.95	0.00	—	—	—	—	4.95	—
Disturbed Valley Needlegrass Grassland	110.46	102.94	--	0.02	—	—	7.50	—
Nonnative Grassland	79.02	64.49	--	—	—	—	3.11	11.42
Cismontane Alkali Marsh	1.73	0.06	—	—	—	—	1.58	—
Disturbed Cismontane Alkali Marsh	0.37	0.19	--		—	—	0.18	—
Mulefat Scrub (CDFW jurisdiction only)	0.15	0.06	—	—	—	—	0.09	—
Open Water	0.17	0.17	—	—	—	—	—	—
Southern Willow Scrub	0.27	0.01	—	—	—	—	0.29	—
Developed Land	0.87	0.79	--	0.08	—	—	—	—
Disturbed Habitat	13.46	7.79	0.02	0.15	—	—	4.55	0.95
Stock Pond	0.79	0.50	—	—	—	—	0.29	—
Totals	1,869.02	691.99	2.18	11.65	0.23	0.83	1092.35	69.80

* All impacts are considered permanent. Proposed Development impacts do not include the ~~offsite~~off-site road improvements. The offsite impacts are anticipated to be approximately 59 acres and are presented in Appendix F and include the areas required for the improvements to Otay Lakes Road.

** These impacts are associated with allowable uses within the Preserve. Total acreage for Otay Ranch RMP Preserve and Conserved Open Space is 1,177 acres.

Table 4
Summary of Impacts to Vegetation Communities within Otay Ranch RMP Preserve ~~Onsite~~On-site

Vegetation Community Type	Total Otay Ranch RMP Preserve Impacted and Not Impacted (Acres)	Allowable Uses within the Otay Ranch RMP Preserve (Impacted Acres)				Otay Ranch RMP Preserve Not Impacted
		Permanent Impacts	*Temporary Impacts*			
		Water Tank and associated road grading for the tank	*Slope grading to be revegetated (for water tank slopes and Otay Lakes Road Slopes)*	*Natural Drainage Bypass Facilities*	*Water line (trench then restore)*	
Coastal Sage Scrub	981.70	2.16	7.94	0.83	0.23	970.64
Disturbed Coastal Sage Scrub	51.24	—	3.02	—	—	48.21
Chamise Chaparral	49.49	—	0.43	—	—	49,06
Disturbed Chamise Chaparral	1.58	—	—	—	—	1.58
Scrub Oak Chaparral	0.35	—	—	—	—	0.35
Southern Mixed Chaparral	4.95	—	—	—	—	4.95
Disturbed Valley Needlegrass Grassland	7.52	—	0.02	—	—	7.50
Nonnative Grassland	3.11	—	—	—	—	3.11
Cismontane Alkali Marsh	1.67	—	—	—	—	1.58
Disturbed Cismontane Alkali Marsh	0.18	—		—	—	0.18
Mulefat Scrub	0.09	—	—	—	—	0.09
Open Water	0.00	—	—	—	—	—
Southern Willow Scrub	0.26	—	—	—	—	0.29
Developed Land	0.08	—	0.08	—	—	—
Disturbed Habitat	4.72	0.02	0.15	—	—	4.55
Stock Pond	0.29	—	—	—	—	0.29
Total	1,107.23	2.18	11.65	0.83	0.23	1092.35

Jurisdictional Waters

Permanent, temporary and fuel modification impacts to 1.02 acre of ephemeral jurisdictional waters of the U.S. Army Corps of Engineers (ACOE), Regional Water Quality Control Board (RWQCB), and (California Department of Fish and Wildlife (CDFW) and 1.16 acre of CDFW wetlands occur on site as a result of Alternative H (Table 5; Figure 4). Linear foot impacts to jurisdictional resources are presented in Table 6. These impacts will be addressed by permitting with the wetland permitting agencies. Impacts shall be mitigated at a 1:1 ratio by creation or purchase of credits for the creation of jurisdictional habitat of similar functions and values and to account for no net loss. A suitable mitigation site shall be selected and approved by the resource agencies during the permitting process. The ratio of wetland mitigation should be 3:1 overall with the 1:1 creation to impact ratio and 2:1 enhancement to impact ratio.

Table 5
Acreage Impacts to Jurisdictional Aquatic Resources within
Otay Ranch Resort Village – Alternative H

Habitat Types/Vegetation Communities	~~Onsite~~On-site Area Total	~~Onsite~~On-site Impacts			~~Onsite~~On-site Preservation
		Perm.	*FMZ*	*Temp.*	
ACOE/RWQCB/CDFW/RPO Wetlands/Riparian Habitat					
Coastal and valley freshwater marsh	--	--	--	--	--
Disturbed wetland	--	--	--	--	--
Mulefat scrub (including disturbed)	0.09	--	--	--	0.09
Southern arroyo willow riparian forest	--	--	--	--	--
Southern willow scrub	0.26	--	--	--	0.26
Subtotal	*0.35*	--	--	--	*0.35*
ACOE/RWQCB/CDFW Non-wetland Waters/Streambed					
Channels	3.84	0.97	0.03	0.02	2.82
Open water	--	--	--	--	--
Subtotal	*3.84*	*0.97*	*0.03*	*0.02*	*2.82*
ACOE/RWQCB/CDFW Subtotal	*4.19*	*0.97*	*0.03*	*0.02*	*3.17*
CDFW/RPO Riparian Habitat					
Arrundo dominated	--	--	--	--	--
Cismontane alkali marsh	2.10	0.19	0.06	--	1.85
Disturbed wetlands	0.17	0.17	--	--	--
Mulefat scrub	0.15	0.06	--	--	0.09
Southern willow scrub	0.27	0.01	--	--	0.26
CDFW Subtotal	*0.85*	*0.07*	*0.06*	--	*0.79*
Total Jurisdictional Resources	5.04	1.05	0.09	0.02	3.96

Table 6
Linear Foot Impacts to Jurisdictional Aquatic Resources within
Otay Ranch Resort Village – Alternative H

Habitat Types/ Vegetation Communities	~~Onsite~~On-Site Area Total	~~Onsite~~On-Site Impacts		Section 404 Wetlands and Waters Avoided and Conserved
		Perm.	*FMZ* [a]	
Non-Wetland Waters of the United States				
Stream channel	72,668	21,433	615	51,235
Open water	—	—	—	—
Non-wetland waters of the United States	*72,668*	*21,433*	*615*	*51,235*
Wetlands				
Coastal and valley freshwater marsh	—	—	—	—
Disturbed wetland	—	—	—	—
Mulefat scrub (including disturbed)	122	—	—	122
Southern arroyo willow riparian forest	—	—	—	—
Southern willow scrub	213	—	—	213
Wetlands	*335*	—	—	*335*
Total	73,003	21,433	615	51,545

Vernal Pools

Alternative H includes development on the K6 mesa and preservation of the vernal pools on the K8 mesa as well as restoration within the K8 mesa to mitigate for the impacts on the K6 mesa. Offsite improvements would avoid impacts to vernal pools or associated sensitive species (see Appendix F). The K8 vernal pool area would be preserved as Conserved Open Space and includes the entire watershed of the pools plus a 100-foot upland buffer surrounding the watershed within which there will be no structures, trails, or infrastructure and thus provides protection of the vernal pools and the watershed. The area would be further protected by fencing and a fire rated wall in areas adjacent to proposed residences. No fuel modification will occur within the buffer area. Restoration is proposed for the vernal pool Conserved Open Space that will result in removal of weedy and non-native species and improvement to the habitat as well as the creation of new basins including watershed for them. Because the K6 vernal pools impacted by the proposed project are characterized as having low ~~to moderate~~ value, the proposed mitigation will use a 2:1 mitigation ratio for the pools not occupied by San Diego fairy shrimp and 5:1 mitigation ratio for the occupied pool. This mitigation provides no net loss of the vernal pools and the watershed for the restored pools will be included in the existing watershed on the K8 mesa. The Conserved Open Space will be protected by fencing, walls, signage and management as described above. The restoration of the Conserved Open Space will provide vernal pool enhancement and establishment, and the

watershed and buffer will be restored to native species. Thus, the K8 vernal pools will continue to function to provide resources for fairy shrimp and vernal pool plants. Impacts to the jurisdictional area of the vernal pools on the K6 mesa would total 4,576 square feet (0.11 acre; Figure 3). As noted above, the K6 vernal pools were studied in 2014-2015, and have been documented to not become inundated even when sampling ~~is~~was conducted in other pools associated with Otay Lakes Road or documented that the K8 pools have filled. Thus, these K6 pools would be considered low quality, however it is likely, based on coordination with wetland permitting agency staff, that the agencies will take jurisdiction of these pools and require the impacts to be mitigated in the wetland permitting for the project. Section 2.2.4 of the Biological Resources Technical Report (March 2015) provides discussion of determining jurisdiction of vernal pools and Section 3.4.2 provides discussion of conditions and acreage of the K6 and K8 mesa vernal pools. Appendix B of this Biological Resources Technical Report Supplemental Analysis provides the conceptual mitigation plan for the mitigation of impacts to vernal pools for the Alternative H footprint.

Sensitive Plant Species

Implementation of Alternative H would result in the loss of the locations and individuals of sensitive plant species identified on Figure 5 and described in the text. A summary of impacts to sensitive plants is presented in Table 7. Offsite impacts to sensitive plant ~~specie~~species are summarized in Appendix F.

Table 7
Alternative H Impacts to Special-Status Plant Species Present on Site

Species Scientific Name	Regulatory Status Federal/State CRPR MSCP Coverage County List	Basis for Impact Evaluation	Number/ Acre(s) Impacted	% Impacted	Number/ Acre(s) On Site Not Impacted
San Diego thornmint (*Acanthomintha ilicifolia*)	FT/SE 1B.1 Covered Narrow Endemic A	A total of 3.4 acres of the species have been mapped on site.	0.1 acre*	3	3.3 acres
California adolphia (*Adolphia californica*)	None/None 2B.1 Not Covered B	A total of <20 individuals present at two locations. For purposes of evaluation, it is assumed that a total of 20 are currently present on site.	20 individuals	100	0

Table 7
Alternative H Impacts to Special-Status Plant Species Present on Site

Species Scientific Name	Regulatory Status Federal/State CRPR MSCP Coverage County List	Basis for Impact Evaluation	Number/ Acre(s) Impacted	% Impacted	Number/ Acre(s) On Site Not Impacted
Small-flowered morning-glory (*Convolvulus simulans*)	None/None 4.2 Not Covered D	A total of 120 individuals observed on site.	0 individuals	0	120 individuals
Western dichondra (*Dichondra occidentalis*)	None/None 4.2 Not Covered D	A total of 0.5 acre occupied by this species on site.	0.4 acre	80	0.23 acre
Variegated dudleya (*Dudleya variegata*)	None/None 1B.2 Covered – Narrow Endemic A	A total of 5,833 individuals observed on site.	2,865 individuals*	49	2,968 individuals
San Diego barrel cactus (*Ferocactus viridescens*)	None/None 2.1 Covered B	A total of 217 individuals observed on site.	62 individuals*	29	155 individuals
Palmer's grapplinghook (*Harpagonella palmeri*)	None/None 4.2 Not Covered D	A total of 298 individuals observed on site.	~~68~~58 individuals	~~23~~19	~~230~~240 individuals
Holocarpha virgata ssp. elongata graceful tarplant	None/ None 4.2 Not Covered D	A total of 824 individuals were recorded.	331 individuals	40	493 individuals
San Diego marsh-elder (*Iva hayesiana*)	None/None 2B.2 Not Covered B	A total of 5.4 acres occupied by this species on site.	2.9 acres**	53	2.5 acres
Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)	None/None 4.2 Not Covered D	A total of 30 individuals observed on site.	1 individuals	3	29 individuals
Small-flowered microseris *(Microseris douglasii* ssp. *platycarpha)*	None/None 4.2 Not Covered D	A total of 1,270 individuals observed on site.	270 individuals	21	1,000 individuals

Table 7
Alternative H Impacts to Special-Status Plant Species Present on Site

Species Scientific Name	Regulatory Status Federal/State CRPR MSCP Coverage County List	Basis for Impact Evaluation	Number/ Acre(s) Impacted	% Impacted	Number/ Acre(s) On Site Not Impacted
San Diego goldenstar (*Bloomeria clevelandii*)	None/None 1B.1 Covered A	A total of 2,546 individuals observed on site.	1,494 individuals*	59	1,052 individuals
Little mousetail (*Myosurus minimus* ssp. *apus*)	None/None 3.1 Not Covered C	Although observed in 1990, this species has not been observed recently.	0	0	0
California adder's-tongue (*Ophioglossum californicum*)	None/None 4.2 Not Covered D	Has not been observed in recent years and ~~likely is not present~~has moderate potential.	~~0~~0 documented but has moderate potential	~~0~~unknown	~~0~~unknown
Golden-rayed pentachaeta (*Pentachaeta aurea* ssp. *aurea*)	None/None 4.2 Not Covered D	A total of 91 individuals observed on site.	51 individuals	56	40 individuals
Nuttall's scrub oak (*Quercus dumosa*)	None/None 1B.1 Not Covered A	A total of 6.2 acres are occupied by this species on site.	6.2 acres	100	2 patches acres
Coulter's matilija poppy (*Romneya coulteri*)	None/None 4.2 Not Covered D	Single location observed.	0	0	1 individual
Munz's sage (*Salvia munzii*)	None/None 2B.2 Not Covered B	A total of 295 acres of areas that are occupied by this species on site.	109 acres of areas that include the species. A total of 6.5 acres dominated by the species within coastal sage scrub will be impacted	37	186 acres

Table 7
Alternative H Impacts to Special-Status Plant Species Present on Site

Species Scientific Name	Regulatory Status Federal/State CRPR MSCP Coverage County List	Basis for Impact Evaluation	Number/ Acre(s) Impacted	% Impacted	Number/ Acre(s) On Site Not Impacted
Selaginella cinerascens ashy spike-moss	None/ None 4.1 Not Covered D	Observed throughout the site but more so within the open space areas where soils have not been affected by past grazing.	Unknown	Unknown	unknown
Texosporium sancti-jacobi woven-spored lichen	None/ None 3 Not Covered	Has not been observed in recent years and has moderate potential.	0 documented but has moderate potential	Unknown	unknown
San Diego County viguiera (*Viguiera laciniata*)	None/None 4.2 Not Covered D	A total of 1,071 acres of areas that include San Diego County viguiera.	174 acres of areas that include the species. A total of 2.5 acres dominated by the species will be impacted.	16	897 acres

* Requires translocation of impacted individuals.per the RMP2. Other species with this requirement in the RMP2 are not present onsite. These include: Otay manzanita, snake cholla, Greene's ground cherry, San Diego needle grass.

** Requires restoration for impacts at 2:1 ratio and will be implemented with the 3:1 mitigation required per CEQA and during wetland permitting process as well as per the RMP2.

Impacts to San Diego thornmint and variegated dudleya, both of which are MSCP narrow endemic species, are addressed through compliance with species-specific mitigation in accordance with the Otay Ranch RMP. The impact to San Diego thornmint is 3% of the ~~onsite~~on-site population, resulting in 97% preservation of the species, including a 100-foot buffer around the population of the plant. The Otay Ranch RMP requires preservation of 95% of San Diego thornmint, which Alternative H achieves. Translocation of the impacted San Diego thornmint plants is also required per the RMP. The impact to variegated dudleya is 49% of the ~~onsite~~on-site population, resulting in 51% preservation of the species. The Otay Ranch RMP requires preservation of 50% of variegated dudleya, which Alternative H achieves. Translocation of the impacted variegated dudleya plants is also required per the RMP.

Sensitive Wildlife Species

Implementation of Alternative H would result in the direct loss of habitat for sensitive animals. Impacts to sensitive wildlife are shown on Figure 6 and summarized in Table 8. Offsite impacts to sensitive wildlife species are summarized in Appendix F and include impacts to least Bell's vireo. In general, the ~~onsite~~on-site populations of most sensitive species observed or determined to have a moderate to high likelihood of occurring on site will be directly affected by this loss of habitat.

Table 8
Alternative H Permanent Impacts to Special-Status Wildlife Species or Their Habitat that are Present On Site or with Moderate to High Potential to Occur

Species Scientific Name	Regulatory Status: Federal; State; MSCP; County Group	Basis for Impact Evaluation	Number/ Acre(s) impacted	Percent Permanently Impacted On Site	Number/ Acre(s) on site not impacted
San Diego fairy shrimp (*Branchinecta sandiegonensis*)	USFWS: FE CDFW: None MSCP: Not Covered County: 1	A total of nine basins on K8 mesa and one basin on K6 mesa are confirmed occupied by this species. For potential occurrence: Based on observation and potential for inundated vernal pools on site; 0.26 acre total.	1 basin/ 0.005 acre	3	Nine basins/ 0.180 acre
Quino checkerspot (*Euphydryas editha quino*)	USFWS: FE CDFW: None MSCP: Not Covered County: 1	Over five years of surveys, a total of 145 quino checkerspot butterfly individuals have been observed; 71 observed in 2008 and 16 observed in 2016. A total of 1,624 acres of critical habitat occurs on site. A total of 1,470 acres of coastal sage scrub and disturbed coastal sage scrub as potential habitat are on site.	32 individuals would be impacted (inclusive over 5 years of surveys); 17 from the 2008 survey and 4 from the 2016 survey). A total of 474.83 acres of critical habitat would be impacted. A total of 389 acres of potential occupied habitat would be impacted.	26% of potential habitat would be impacted	113 individuals (inclusive over 5 years of surveys); 54 from the 2008 survey and 12 from the 2016 survey 1,149.17 acres of critical habitat, 1,081 acres of potential occupied habitat

Table 8
Alternative H Permanent Impacts to Special-Status Wildlife Species or Their Habitat that are Present On Site or with Moderate to High Potential to Occur

Species Scientific Name	Regulatory Status: Federal; State; MSCP; County Group	Basis for Impact Evaluation	Number/ Acre(s) impacted	Percent Permanently Impacted On Site	Number/ Acre(s) on site not impacted
Monarch butterfly *(Danaus plexippus*)	USFWS: None CDFW: None MSCP: Not Covered. County: 2	Incidental observation of single individuals. There are no suitable eucalyptus groves within which the species might overwinter. No larval host plant is present.	0 acre	0	0
Western spadefoot toad (*Spea hammondii*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Based on observation and potential for inundated vernal pools on site; 0.26 acre total.	0 acre	0	0.26 acre
Rosy boa (*Charina trivirgata*)	USFWS: None CDFW: None MSCP: Not Covered County: 2	Incidental observation. Impact based on 1656 acres of suitable habitat.	515 acres	31	1,141 acres
Western pond turtle (*Emys marmorata*)	USFWS: None CDFW: CSC MSCP: Covered County: 1	One observed laying eggs. The species is documented to use riparian habitat as an integral role in the life history. No suitable open water habitat on site.	0	0	1 individual
Orangethroat whiptail (*Aspidoscelis hyperythra*)	USFWS: None CDFW: WL MSCP: Covered County: 2	Incidental observation. Impact based on 1,656 acres of suitable habitat.	515 acres	31	1,141 acres
Coastal whiptail (*Aspidoscelis tigris stejnegeri*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Incidental observation. Impact based on 1,656 acres of suitable habitat.	515 acres	31	1,141 acres

Table 8
Alternative H Permanent Impacts to Special-Status Wildlife Species or Their Habitat that are Present On Site or with Moderate to High Potential to Occur

Species Scientific Name	Regulatory Status: Federal; State; MSCP; County Group	Basis for Impact Evaluation	Number/ Acre(s) impacted	Percent Permanently Impacted On Site	Number/ Acre(s) on site not impacted
San Diego banded gecko (*Coleonyx variegatus abbotti*)	USFWS: None CDFW: None MSCP: Not Covered County: 1	Based on moderate potential to occur. Impact based on 1,656 acres of suitable habitat.	515 acres	31	1,141 acres
San Diego ringneck snake (*Diadophis punctatus similis*)	USFWS: None CDFW: None MSCP: Not Covered County: 2	Incidental observation. Impact based on 8.0 acres of suitable habitat.	0.5 acre	6	7.5 acres
San Diego [coast; Blainville's] horned lizard (*Phrynosoma blainvillii*)	USFWS: None CDFW: CSC MSCP: Covered County: 2	Incidental observation. Impact based on 1,656 acres of suitable habitat.	515 acres	31	1,141 acres
Coast patch-nosed snake *(Salvadora hexalepis virgultea*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Based on moderate potential to occur. Impact based on 190 acres of suitable habitat.	167 acres	88	22 acres
Two-striped garter snake (*Thamnophis hammondi*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 1	Based on moderate to high potential to occur. Impact based on 8.0 acres of suitable habitat.	0.5 acre	6	7.5 acres
Red-diamond rattlesnake (*Crotalus ruber*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Incidental observation. Impact based on 1,656 acres of suitable habitat.	515 acres	31	1,141 acres
Cooper's hawk (*Accipiter cooperii*)	USFWS: None CDFW: WL MSCP: Covered County: 1	Incidental observation. Impact based on 1.2 acres of suitable habitat. Foraging and nesting habitat are assumed to be the same for suitable habitat.	<0.1 acre	3	1.2 acres

Table 8
Alternative H Permanent Impacts to Special-Status Wildlife Species or Their Habitat that are Present On Site or with Moderate to High Potential to Occur

Species Scientific Name	Regulatory Status: Federal; State; MSCP; County Group	Basis for Impact Evaluation	Number/ Acre(s) impacted	Percent Permanently Impacted On Site	Number/ Acre(s) on site not impacted
Sharp-shinned hawk (*Accipiter striatus*)	USFWS: None CDFW: WL MSCP: Not Covered County: 1	Likely to occur on site for winter or migration but would not nest on site. Foraging habitat is assumed to be the same as foraging habitat for Cooper's hawk.	<0.1 acre	<0.1	1.2 acres
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	USFWS: None CDFW: WL MSCP: Covered County: 1	Incidental observation. Impact based on 1,656 acres of suitable habitat.	515 acres	31	1,141 acres
Grasshopper sparrow (*Ammodramus savannarum*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 1	Incidental observation. Impact based on 190 acres of suitable habitat.	167 acres	88	22 acres
Bell's sage sparrow (*Artemisiospiza belli belli*) (taxonomy was changed to Bell's sparrow *Artemisiospiza belli)*	USFWS: None CDFW: WL MSCP: Not Covered County: 1	Incidental observation. Impact based on 1,656 acres of suitable habitat.	515 acres	31	1,141 acres
Golden eagle (*Aquila chrysaetos*)	USFWS: BCC CDFW: P, WL, Golden Eagle Protection Act MSCP: Covered County: 1	No impacts would occur to nesting habitat. Observed flying over site; likely forages on site. Impact based on 1,660 acres of suitable foraging habitat. Nests are recorded in San Diego County Bird Atlas as 3 to 6 miles away.	556 acres	34	1085 acres

Table 8
Alternative H Permanent Impacts to Special-Status Wildlife Species or Their Habitat that are Present On Site or with Moderate to High Potential to Occur

Species Scientific Name	Regulatory Status: Federal; State; MSCP; County Group	Basis for Impact Evaluation	Number/ Acre(s) impacted	Percent Permanently Impacted On Site	Number/ Acre(s) on site not impacted
Red-shouldered hawk (*Buteo lineatus*)	USFWS: None CDFW: None MSCP: Not Covered County: 1	Incidental observation. Impact based on 1.2 acres of suitable nesting and foraging habitat.	<0.1 acre	<0.1	1.2 acres
Ferruginous hawk (*Buteo regalis*)	USFWS: BCC CDFW: WL MSCP: Covered County: 1	Likely to occur on site for winter or migration but would not nest on site. Impact based on 79 acres of suitable foraging habitat.	64 acres	82	15 acres
Turkey vulture *(Cathartes aura)*	USFWS: None CDFW: None MSCP: Not Covered County: 1	No nesting locations observed; foraging may occur but is more dependent on carrion so cannot evaluate based on acreage. Could forage throughout the site however some areas may be too dense.	~~692~~692 acres of foraging habitat	No nest locations will be impacted	Could forage in entire Otay Ranch RMP Preserve and Conserved Open Space
Northern harrier (*Circus cyaneus*)	USFWS: None CDFW: CSC MSCP: Covered County: 1	Could nest on site, but is more likely to occur on site for winter or migration. Impact based on 79 acres of suitable foraging habitat.	64 acres	82	15 acres
White-tailed kite (*Elanus leucurus*)	USFWS: None CDFW: P MSCP: Not Covered County: 1	Observed flying over site; likely forages on site, but may nest in southern willow scrub. Impact based on 1.2 acres of suitable nesting habitat and 1,660 acres of suitable foraging habitat.	Nesting: <0.1 acre; Foraging: 556 acres	Nesting: <0.1; Foraging: 34	Nesting: 1.2 acres; Foraging: 1,085 acres

Table 8
Alternative H Permanent Impacts to Special-Status Wildlife Species or Their Habitat that are Present On Site or with Moderate to High Potential to Occur

Species Scientific Name	Regulatory Status: Federal; State; MSCP; County Group	Basis for Impact Evaluation	Number/ Acre(s) impacted	Percent Permanently Impacted On Site	Number/ Acre(s) on site not impacted
California horned lark (*Eremophila alpestris actia*)	USFWS: None CDFW: WL MSCP: Not Covered County: 2	Incidental observation. Impact based on 190 acres of suitable habitat.	167 acres	88	22 acres
Prairie falcon (*Falco mexicanus*)	USFWS: BCC CDFW: WL MSCP: Not Covered County: 1	Likely to occur on site for winter or migration but would not nest on site. Impact based on 79 acres of suitable foraging habitat.	64 acres	82	15 acres
Loggerhead shrike (*Lanius ludovicianus*)	USFWS: BCC CDFW: CSC MSCP: Not Covered County: 1	Incidental observation. Impact based on 1,656 acres of suitable habitat.	515 acres	31	1,141 acres
Summer tanager (nesting) (*Piranga rubra*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Could occur on site as a winter visitor periodically or during migration but would not nest on site.	—	—	—
Coastal California gnatcatcher (*Polioptila californica californica*)	USFWS: FT CDFW: CSC MSCP: Covered County: 1	Coastal sage scrub, coastal sage scrub–chaparral mix, coastal sage scrub–grassland ecotone, riparian in late summer; 29 locations are recorded on site and 3 additional locations are recorded for Cornerstone Land for a total of 32 locations recorded; 1,470 acres of suitable habitat.	389 acres; 6 locations including the locations that are impacted ~~offsite~~off-site	26% of acreage;	1063 acres; 26 locations

Table 8
Alternative H Permanent Impacts to Special-Status Wildlife Species or Their Habitat that are Present On Site or with Moderate to High Potential to Occur

Species Scientific Name	Regulatory Status: Federal; State; MSCP; County Group	Basis for Impact Evaluation	Number/ Acre(s) impacted	Percent Permanently Impacted On Site	Number/ Acre(s) on site not impacted
Western bluebird (*Sialia mexicana*)	USFWS: None CDFW: None MSCP: Covered County: 2	Likely to occur on site for winter or migration for foraging but would not nest on site due to lack of trees.	—	—	—
Burrowing owl (*Athene cunicularia*)	USFWS: BCC CDFW: CSC MSCP: Covered County: 1	Incidental observation. Impact based on 190 acres of suitable habitat.	167 acres	88	22 acres
Barn owl *(Tyto alba)*	USFWS: None CDFW: None MSCP: Not Covered County: 2	No impacts to nesting habitat; foraging is opportunistic and can forage throughout much of the site where habitat is relatively open. Assuming foraging occurs in open habitat, 190 acres are present on site.	167 acres	88	22 acres
Least Bell's Vireo (*Vireo bellii pusillus*)	USFWS: FE CDFW: FE MSCP: Covered County: 1	Nests in southern willow scrub. A pair was recorded offsite within Jamul Creek in 2006 in Cornerstone Land	No impacts occur onsite; however, 1 pair would be impacted offsite (see Appendix F)	0	No impacts occur onsite
Dulzura California pocket mouse (*Chaetodipus californicus femoralis*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Based on moderate potential to occur. Impact based on 1,656 acres of suitable habitat.	515 acres	31	1,141 acres
Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Based on moderate potential to occur. Impact based on 1,656 acres of suitable habitat.	515 acres	31	1,141 acres

Table 8
Alternative H Permanent Impacts to Special-Status Wildlife Species or Their Habitat that are Present On Site or with Moderate to High Potential to Occur

Species Scientific Name	Regulatory Status: Federal; State; MSCP; County Group	Basis for Impact Evaluation	Number/ Acre(s) impacted	Percent Permanently Impacted On Site	Number/ Acre(s) on site not impacted
Townsend's western big-eared bat (*Corynorhinus townsendii*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Likely to occur on site to forage but no roosting/nursery habitat is present.	—	—	—
Spotted bat (*Euderma maculatum*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Likely to occur on site to forage but no roosting/nursery habitat is present.	—	—	—
Western red bat (*Lasiurus blossevillii*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Likely to occur on site to forage but no roosting/nursery habitat is present.	—	—	—
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Incidental observation. Impact based on 1,660 acres of suitable habitat.	556 acres	34	1,085 acres
San Diego desert woodrat (*Neotoma lepida intermedia*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Based on moderate potential to occur. Impact based on 1,656 acres of suitable habitat.	515 acres	31	1,141 acres
Mountain lion (*Puma concolor*)	USFWS: None CDFW: None MSCP: Covered County: 2	Incidental observation of tracks. No suitable denning locations would be impacted, and movement routes and corridors would be preserved.	—	—	—

After the Otay Ranch RMP and the MSCP County Subarea Plan were adopted, the Quino checkerspot butterfly was listed as a federally endangered species under the Endangered Species Act. The Quino checkerspot butterfly is not presently addressed under the Otay Ranch RMP or the

MSCP County Subarea Plan and no coverage for take of Quino checkerspot butterflies or their habitat is provided through the MSCP County Subarea Plan. The Resort Village Project site supports Quino checkerspot butterfly and its habitat as described below. Impacts to Quino checkerspot butterfly under Alternative H are shown on Figures 7a and 7b and discussed below. The management plan for the Quino checkerspot has been prepared for Alternative H (Appendix C) and the restoration areas proposed for management are shown on Figure 8. In addition, San Diego fairy shrimp is also not considered a covered species by the County. Both species would need to be addressed by take authorization under Section 7 or Section 10~~.~~(A).

Of a total of 145 observation locations of individuals of Quino checkerspot butterfly from all survey years in the project area (obvious duplicate observations that included butterflies with the same wing wear at the same locations were removed[1]), 32 observation locations will be directly impacted by Alternative H. Based on the overall surveys and the evaluation of the suitable habitat present on the site, approximately 26% of the suitable habitat will be impacted based on 1,470 total ~~onsite~~on-site acres of suitable habitat and 389 acres of impacted suitable habitat. Offsite areas were determined during surveys to not be occupied by Quino checkerspot butterfly. In general, the ridgelines and hilltops in the northern and eastern portion of the site and the hilltop in the western portion (occupied by San Diego thornmint) where the Quino checkerspot butterfly has been observed most frequently will be preserved. The total acreage of critical Quino checkerspot butterfly habitat impacted is 474.83 acres within the Otay Unit, which is composed of a total of ~~is~~ 34,941 acres.

As noted above in Section 1, detailed mapping of the host plant for the Quino checkerspot butterfly was conducted and reported in the protocol survey in 2016. This survey included conducting mapping of the density of the host plant dot seed plantain (*Plantago erecta).* Table 9 displays the results of the overall mapping conducted based on the impact and preserve land use categories, and a summary of just medium and high density of the host plant is provided in Table 10.

Table 9 shows all of the densities recorded by points including very low, low, medium, and high. The mapping of host plant reports the percentage of points in the various land use designations and shows that about 58 percent of the host plant is found within the Village 13 RMP preserve or the conserved open space areas.

[1] A number of the 2008 observations took place in the same location from one week to the next, thus it is likely these observations were of the same individual and could be considered duplicate counts. Duplicate observations were identified through a review of mapping, wing wear, notes, and photographs and population counts were adjusted by removing the duplicate observation.

Table 9
Percentage of Each Density Category Recorded for *Plantago erecta* in 2016 for Village 13

Land Use	*Plantago erecta* Density Categories				
	Very_low (%)	*Low (%)*	*Medium (%)*	*High (%)*	*Total (%)*
Allowable Use (Roads and Water Tank)	0.0	0.5	0.1		0.6
Development Footprint	6.4	23.6	9.2	2.0	41.2
Potential Conserved Open Space	0.6	6.4	3.1	0.3	10.4
RMP Preserve	8.1	20.6	13.6	5.5	47.8
Grand Total	15.1	51.1	26.0	7.8	100

Table 10 documents the medium and high-density populations only and shows that about 22 percent of the total population of the host plant is within the preserved areas (RMP Preserve and Conserved Open Space) versus about 11 percent within the designated development area of Alternative H.

Table 10
Percentage of Medium and High Density Categories Recorded for *Plantago erecta* in 2016 for Village 13

Land Use	*Plantago erecta* Density Categories		
	Medium Density (%)	*High Density (%)*	*Total (%)*
Allowable Use (Roads and Water Tank)	0.1		0.1
Development Footprint	9.2	2.0	11.2
Potential Conserved Open Space	3.1	0.3	3.4
RMP Preserve	13.6	5.5	19.1
Grand Total	26.0	7.8	33.8

A biological open space easement would be placed over the Otay Ranch RMP Preserve and Conserved Open Space on site, for a total of 1,177.03 acres (Table 2). In order to mitigate for impacts to occupied Quino checkerspot butterfly habitat specifically, Alternative H proposes to conserve approximately 1,107.72 acres of suitable, restored, or occupied coastal sage scrub for Quino checkerspot butterfly on site, all of which is located within the existing Otay Ranch RMP Preserve and Conserved Open Space areas. The 1,107.72 acres includes coastal sage scrub and disturbed coastal sage scrub within the Otay Ranch RMP Preserve including the temporary allowable impact areas which will be restored (totals 1,030.87 acres), Conserved Open Space

including the area of thornmint that is regularly used by Quino checkerspot butterfly (65.15 acres) and restored or enhanced areas that are currently not suitable (11.70 acres). For the purposes of protecting Quino Checkerspot butterfly habitat, the 1,107.72 acres would be protected through the biological open space easement discussed above. Thus, impacts (389 acres) would be mitigated at a mitigation ratio of at least 2.85:1. Additional mitigation may be required as determined by the wildlife agencies during the take authorization process for Quino checkerspot butterfly.

Implementation of Alternative H would significantly impact other sensitive wildlife species, including San Diego fairy shrimp within one vernal pool on the K6 mesa, rosy boa (*Charina trivirgata*), orangethroat whiptail (*Aspidoscelis hyperythra*), coastal whiptail (*Aspidoscelis tigris stejnegeri*), San Diego banded gecko (*Coleonyx variegatus*), San Diego [coast or Blainville's] horned lizard, coast patch-nosed snake (*Salvadora hexalepis virgultea*), red-diamond rattlesnake, Southern California rufous-crowned sparrow, grasshopper sparrow (*Ammodramus savannarum*), Bell's sparrow, California horned lark, loggerhead shrike (*Lanius ludovicianus*), coastal California gnatcatcher (8 of 32 on and ~~offsite~~off-site historically mapped locations will be impacted by the project), burrowing owl, nesting bird species that are covered under the Migratory Bird Treaty Act and the California Fish and Game Code, Dulzura California pocket mouse (*Chaetodipus californicus femoralis*), San Diego black-tailed jackrabbit, northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*), and San Diego desert woodrat (*Neotoma lepida intermedia*).

A total of 10 vernal pools are occupied by San Diego fairy shrimp. The total acreage of the vernal pools that are occupied on site is 0.185 acre. Alternative H results in the potential impact to 0.005 acre of occupied vernal pool within the K6 mesa. Alternative H would preserve the K8 mesa which includes 0.180 acre of occupied vernal pools. Thus, 3% of the occupied vernal pools on site would be impacted. While it should be noted that 97% of the San Diego fairy shrimp occupied vernal pools within the ranch will be preserved, which exceeds the requirements of the Otay Ranch RMP to preserve 95%, impacts to San Diego fairy shrimp would be considered significant absent mitigation because the County does not consider San Diego fairy shrimp as covered under the MSCP County Subarea Plan. Vernal pool restoration, which includes translocation of cysts from the impacted pool, will be included in the K8 mesa to mitigate for impacts to vernal pools and San Diego fairy shrimp. The mitigation ratio for the occupied pool is proposed to be 5:1. Take of San Diego fairy shrimp will be addressed by Section 7 or Section 10~~.~~(A). Currently, the wetland permitting agencies are assumed to be taking jurisdiction of the pools.

Conservation provided in conformance with the Otay Ranch RMP (Appendix G of that document) and the MSCP County Subarea Plan would provide mitigation for direct impacts to covered sensitive species to a less-than-significant level. These species include ~~orange-throated~~orangethroat whiptail, San Diego [coast; Blainville's] horned lizard, Southern California rufous-crowned sparrow, coastal California gnatcatcher (8 of 32 locations) and burrowing owl.

Several sensitive species listed as "detected" or "likely to occur" in the project area are not classified as "covered species" by the MSCP County Subarea Plan but are addressed by the Otay Ranch RMP and include ranch-wide preservation goals. These species include: rosy boa, coastal whiptail, San Diego banded gecko, coast patch-nosed snake, red-diamond rattlesnake, grasshopper sparrow, Bell's sparrow, California horned lark, loggerhead shrike, Dulzura California pocket mouse, northwestern San Diego pocket mouse, San Diego black-tailed jackrabbit, and San Diego desert woodrat. In addition, none of these species is state- or federally listed, and all have a relatively low level of sensitivity. Therefore, Alternative H's contribution to the MSCP/ Otay Ranch RMP Preserve would mitigate impacts by providing suitable habitat in a configuration that preserves genetic exchange and species viability.

Habitat Linkages/Movement Corridors

Currently the overall project area functions as part of a large habitat block and would not be considered a habitat linkage or wildlife corridor. However, a portion of the project site was previously identified (Ogden 1992; *Baldwin Otay Ranch Wildlife Corridors Studies: Phase 1 Report.* Prepared for the Otay Ranch Project Team. December) as a habitat linkage or movement corridor. This linkage is situated north–south through the eastern portion of the project site and is identified as the R2 linkage (Figure 9). The Alternative H Project Site is surrounded by a variety of public lands: at least 22,000 acres of the Otay Ranch RMP Preserve, BLM, and USFWS lands to the north; at least 9,000 acres of the Otay Ranch RMP Preserve, USFWS, MSCP Preserve, BLM, and CDFW lands to the east; and, at least 31,000 acres of the Otay Ranch RMP Preserve, MSCP Preserve, CDFW, and BLM lands to the south. Combined, this is a total of 62,000 acres of open space. Alternative H is consistent with the approved Preserve boundary for Village 13 per the MSCP County Subarea Plan, and is therefore consistent with the previous wildlife movement study. While other land use changes have occurred within the Otay Ranch, within the vicinity of the Otay Ranch Resort site and the corridors outlined for the Proctor Valley Parcel, no changes in wildlife corridors have occurred. Although landscapes in San Diego County have changed significantly in recent decades, the corridors identified in the Ogden Wildlife Corridor Study (1992) study are still viable and currently traverse between large areas of open lands.

Several wildlife corridor and crossing studies have been conducted since 2010, either statewide or in the general Project vicinity (i.e., coastal San Diego County), including (i) the California Essential Habitat Connectivity Project (CEHC; Spencer et al. 2010), (ii) Connectivity Project Studies as part of the San Diego Management & Monitoring Program (SDMMP; (https://sdmmp.com/upload/SDMMP_Repository/0/cqn246dfsr0ybw9p8hv7mt5k1j3xgz.pdf), (iii) the Comprehensive Multi-Species Connectivity Assessment and Planning for the Highway 67 Region of San Diego County (Jennings and Zeller 2017), and (iv) the Wildlife Infrastructure Plan for State Route 94, San Diego County Post Miles 15.27 to 30.00 (Conservation Biology Institute

(CBI) 2016). Based on the review of the literature, it is concluded that (1) none of the recent wildlife corridor studies covers Alternative H or the area surrounding it; (2) none of the conclusions drawn in the recent studies is inconsistent with or undermines the validity of the Ogden Wildlife Corridor Study (1992); and (3) none of the recent studies recommends measures materially different from those recommended in the Ogden Wildlife Corridor Study (1992). It has also been determined, through fieldwork and surveys for Alternative H, that conditions within and surrounding the site have not materially changed since the Ogden Wildlife Corridor Study was prepared in 1992. Thus, the study, including its empirical findings, remains valid.

Wildlife crossing project design features would be implemented as conditions of approval for Alternative H, similar to what is required for the Proposed Project. Alternative H includes a modification of Otay Lakes Road to accommodate a wildlife under-crossing toward the eastern end of Lower Otay Reservoir (Figure 10). The under-crossing is designed to provide sufficient light to encourage use.

The analysis of the wildlife crossing for Otay Lakes Road identified as Crossing #1 (formerly #2 in the Draft EIR) is provided in detail in Section 4.3 of the Biological Resources Technical Report (Appendix C-3 of the Draft EIR) and depicted in Figure 10. This figure illustrates the location of the crossing and the dimensions. In addition, a cross section of the opening is provided to illustrate the size and shape of the crossing. The detailed analysis of this wildlife crossing is discussed below.

The size of the Otay Lakes Road Wildlife Crossing #1 is 58 feet long × 20.75 feet wide × 12.08 feet tall and thus has an openness ratio of 1.12. The crossing achieves a higher openness than the 0.6 openness suggested by Foster and Humphrey (1995. *Use of highway underpasses by Florida panthers and other wildlife*. Wildlife Society Bulletin 23:95-100.). Studies from Donaldson (2005. *Final Report: The Use of Highway Underpasses by Large Mammals in Virginia and Factors Influencing their Effectiveness*. Virginia Transportation Research Council) indicate that for deer, the critical feature for using a culvert is the height of the culvert. According to that study, culverts must be 12 feet to be used by deer. The Otay Lakes Road Crossing has been designed at the suitable height for deer. This structure is located under Otay Lakes Road and is below the grade of Otay Lakes Road to prevent wildlife from gaining access to the surface of the roadway. Fencing is proposed along Otay Lakes Road to guide wildlife to the opening versus crossing the roadway. Within the wildlife crossing, there is also a six foot wide raised dirt wildlife path with a natural dirt surface within the rest of the wildlife crossing and to allow for wildlife movement.

The proposed wildlife crossing has an adequate configuration, bottom surface, size, and openness ratio to accommodate the movement of focal wildlife species. This crossing is especially important since it is located in the previously identified R2 wildlife corridor and provides a direct connection to high quality riparian habitat, to Lower Otay Reservoir, and to large areas of Preserve lands to the south.

The habitat at the wildlife crossing is connected to suitable open space areas to the south, and there is viable movement potential to the east to provide connection of the ~~onsite~~on-site wildlife

population with other populations within the region. These linkages will provide adequate movement for medium and large mammals, birds, and butterflies and supports the linkages designated by Ogden (1992). As shown on Figure 9, there is abundant wildlife movement potential east of the project area, centered on the eastern ~~offsite~~off-site movement corridor. This approximately 4-mile-wide area of onsite Preserve, and protected USFWS, and BLM land, could function as a live-in habitat block for many species and would not preclude usage by larger mammals such as mountain lion or mule deer. Therefore, in conjunction with the wildlife crossing which is incorporated as a project design feature in Alternative H, Alternative H is not anticipated to impact long-term wildlife movement between the Jamul Mountains and the San Ysidro Mountains.

The improvements to the wildlife movement across Otay Lakes Road were not considered under the MSCP. As described in detail above, Alternative H proposes a wildlife movement under crossing in order to reduce roadkill and provide for a permanent movement for small to large mammal species. The crossing, located at the more eastern drainage, provides connections to other preserve lands and allows large mammal movement.

Regional Plan Compliance

MSCP Plan and MSCP County Subarea Plan

The Alternative H Project Site is located within the boundaries of the MSCP Plan and the MSCP County Subarea Plan. The MSCP County Subarea Plan designated approximately 1,107 acres as Preserve within the Project Site, with the remaining approximately 762 acres designated for development. Alternative H would require the conveyance of approximately 787 acres of Preserve as required by the Otay Ranch RMP. Alternative H is consistent with the MSCP Preserve and development hardline, and therefore does not require an MSCP Boundary Adjustment. In addition to maintaining existing Preserve ~~onsite~~on-site, Alternative H proposes to conserve roughly 70 acres of land designated for development as Conserved Open Space that would be protected by a biological open space easement or transferred to the Otay Ranch RMP Preserve.

Otay Ranch Resource Management Plan

The Otay Ranch Resource Management Plan (Phase 1 RMP) and the Otay Ranch RMP Preserve serve as the basis for CEQA mitigation of biological impacts identified in the Otay Ranch GDP/SRP Program EIR. The Otay Ranch RMP includes conveyance procedures for dedicating parcels of land to the Otay Ranch RMP Preserve. The RMP establishes an obligation for each new development to convey its fair share of the Otay Ranch RMP Preserve. Fair share contribution requirements are established in the Otay Ranch RMP as a proportion of ranch-wide development to ranch-wide preserve land. The Otay Ranch RMP established a fair share contribution to the

creation of the Preserve as a ratio of 1.188 acres of preserve conveyance required for every one (1.000) acre of development. Accordingly, the conveyance ratio for all development is 1.188 acres for each acre of project development area, excluding development areas that include "common uses," such as schools, parks, and arterial roadways. These "common use" areas are excluded from the required mitigation/conveyance. The Otay Ranch RMP was incorporated into the MSCP County Subarea Plan.

The Phase 2 Resource Management Plan (RMP 2) is a requirement of the Otay Ranch GDP/SRP and Phase 1 RMP, with the purpose of establishing an implementation framework for the resource protection objectives of both documents. The document, termed the Phase 2 RMP Update, provides updated management and monitoring standards for resource protection and conservation within Otay Ranch consistent with regional practices and standards.

The Otay Ranch GDP/SRP establishes preservation standards that include conveyance of Preserve land at a 1.188 to 1 mitigation ratio. However, in addition to the 1.188-mitigation ratio, additional habitat or species-based restoration and translocation is required for impacts to selected vegetation communities and species. This additional requirement is identified by the Otay Ranch GDP/SRP CEQA Findings of Fact and Statement of Overriding Considerations. A summary of these mitigation requirements is presented in Table 9 below. While Table ~~9~~11 does not include all of the requirements listed within the Final CEQA Findings and Statement of Overriding Considerations, this table indicates clarifications to rectify discrepancies between the Otay Ranch GDP/SRP and the Final CEQA Findings and Statement of Overriding Considerations. The requirements listed in Table ~~9~~11 represent the most stringent requirements of the documents.

Table ~~9~~11
Requirements for Species and Habitat Mitigation per the RMP 2

Resource	Mitigation Standard	Resort Site Existing Conditions	Alternative H Compliance
Sensitive Vegetation Communities			
Alkali Meadow	Restoration for impacts at 1:1 ratio[1,2]	There is no Alkali Meadow present within the site. Alkali meadows and seeps are categorized under Holland code 45300. Cismontane alkali marsh (CAM; 52130) is present and, per Holland, is defined as: "Standing water or saturated soil present during most or all of year. High evaporation and low input of fresh water render these	For Alternative H, areas of CAM will be mitigated in accordance with wetland resource agency permitting. Mitigation to occur at a minimum of 3:1 for permanent impacts and restoration of temporarily impacted areas. There will be no net loss of CAM since it is considered a wetland.

Table ~~9~~11
Requirements for Species and Habitat Mitigation per the RMP 2

Resource	Mitigation Standard	Resort Site Existing Conditions	Alternative H Compliance
		marshes somewhat salty, especially during the summer.	
Coastal sage scrub (San Diego viguiera dominated)[3]	Restoration for impacts at 2:1 ratio	2.5 acres of San Diego viguiera dominated Coastal sage scrub will be impacted by Alternative H.	5.0 acres will be restored.
Coastal sage scrub (Munz's sage dominated)[3]	Restoration for impacts at 2:1 ratio	6.5 acres of Munz's sage dominated Coastal sage scrub will be impacted by Alternative H.	13.0 acres will be restored.
Maritime Succulent Scrub (MSS)	Restoration for impacts at 1:1 ratio	Not present on the site	Alternative H does not impact MSS since none is present.
Maritime Succulent Scrub (Coastal cactus wren occupied habitat)	Habitat restoration, creation, and enhancement for unavoidable impacts2	MSS occupied by cactus wren is not present on the site	Alternative H does not impact MSS occupied by cactus wren since none is present.
Native Grassland	Restoration for impacts at 1:1 to 3:1 ratio	Present onsite (110.46 acres of disturbed native grassland)	102.94 acres of disturbed native grassland are proposed to be impacted. The focus of the RMP restoration requirement is on that acreage that is contiguous to the vernal pools within the K6 mesa or within the thornmint preserve. A total of 73 acres is present within the K6 mesa and there is no native grassland present within the thornmint preserve. Pre-construction surveys will be conducted to determine the proposed impact acreage of disturbed perennial grassland contiguous within the K6 vernal pool complex. Due to the disturbed nature of the vegetation, which includes a large component of non-native species, restoration is proposed at a 1:1 ratio for the total restoration of 73 acres of native grassland or the acreage that is determined to be present at the time of project implementation.
Vernal Pools	No-net-loss[2]	Present onsite	Alternative H will impact 0.11 acre of vernal pools on the K6 mesa. Mitigation is proposed within the K8 mesa to include full restoration and enhancement including no net loss.

Table ~~9~~11
Requirements for Species and Habitat Mitigation per the RMP 2

Resource	Mitigation Standard	Resort Site Existing Conditions	Alternative H Compliance
Wetlands	No-net-loss[2]	Present onsite	Jurisdiction resources within Alternative H will be mitigated in accordance with resource agency permitting. No net loss will be addressed by a minimum of 1:1 creation.
Sensitive Plant Species			
Acanthomintha ilicifolia San Diego thornmint	Translocation of impacted individuals	Present onsite (3.4 acres)	Alternative H will impact 0.1 acre and will provide translocation.
Arctostaphylos otayensis Otay manzanita	Translocation of impacted individuals	Not present onsite	Alternative H does not impact this species because it is not present onsite.
Bloomeria clevelandii San Diego goldenstar	Translocation of impacted individuals	Present onsite (2,546 individuals). This is a MSCP covered species and therefore this mitigation standard does not apply.	Alternative H will impact 1,494 individuals and will provide translocation.
Cylindropuntia californica var. *californica* snake cholla	Translocation of impacted individuals	Not present onsite	Alternative H does not impact this species because it is not present onsite.
Dudleya variegata variegated dudleya	Translocation of impacted individuals	Present onsite (5,833 individuals). This is a MSCP covered species.	Alternative H will impact 2,865 individuals and will provide translocation.
Ferocactus viridescens San Diego barrel cactus	Translocation of impacted individuals	Present onsite (217 individuals). This is a MSCP covered species.	Alternative H will impact 62 individuals and will provide translocation.
Iva hayesiana San Diego marsh-elder	Restoration for impacts at 2:1 ratio	Present onsite (5.2 acres).	Alternative H will impact 2.9 acres. Any temporarily impacted areas suitable for revegetation with this species will be included within the Wetland Mitigation Plan. This species occurs within jurisdictional aquatic resources (stream channels and wetlands). Therefore, mitigation for impacts to jurisdictional resources will include restoration at a 2:1 ratio to address impacts to this species.
Physalis greenei Greene's Ground-cherry	Translocation of impacted individuals	Not present onsite	Alternative H does not impact this species because it is not present onsite.
Stipa diegoensis San Diego needle grass	Translocation of impacted individuals	Not present onsite	Alternative H does not impact this species because it is not present onsite.

Table ~~9~~11
Requirements for Species and Habitat Mitigation per the RMP 2

Resource	Mitigation Standard	Resort Site Existing Conditions	Alternative H Compliance
Solanum xanti chaparral nightshade	Translocation of impacted individuals	This is no longer a sensitive species and therefore no CEQA mitigation is required.	This is no longer a sensitive species and therefore no CEQA mitigation is required.

1 Minimum ratio for impacts.
2 Mitigation ratios shall be determined by the appropriate agency at the time of impacts.
3 Restoration for impacts is required for coastal sage scrub with San Diego viguiera or Munz's sage present at 50% or greater relative shrub cover.

3 COMPARISON OF ALTERNATIVE H TO PROPOSED PROJECT

Alternative H is consistent with the MSCP Preserve and development hardline, and therefore does not require an MSCP Boundary Adjustment. In addition, Alternative H includes conservation of vernal pools, San Diego thornmint, the allowable uses of the realigned Otay Lakes Road and some additional habitat that was originally designated as development within Conserved Open Space (Table ~~10~~12). All impact areas are within the areas designated by the MSCP County Subarea Plan as development. The impact areas within the Preserve are all associated with allowable uses for infrastructure. As such, Alternative H is consistent with the MSCP.

Table ~~10~~12
Summary of Impacts and Mitigation Measures.

Impact	Source or Detail	Significance Determination	Mitigation Measure	Summary
Vegetation Community ~~direct impacts~~Direct Impacts	692 acres of development	Significant	M-BI-1a	Convey acreage within the Otay Ranch RMP Preserve at the ratio of 1.188:1
Habitat ~~indirect impacts~~Indirect Impacts	Adjacency or Preserve protection	Significant	M-BI-1b M-BI-1c M-BI-1e M-BI-1f M-BI-14	Biological Monitoring Temporary fencing LBZ Easement Fencing and signage Adjacency protection measures
Habitat Temporary Impacts ~~within~~Within Preserve	Areas within slopes for water tank, Otay Lakes Road widening, and natural drainage bypass facility	Significant	M-BI-1d	Conceptual Upland Restoration plan
Offsite Cornerstone Lands ~~impacts~~Impacts	Widening of Otay Lakes Road	Significant	M-BI-2	City of San Diego SDP and MHPA boundary line adjustment
Offsite Chula Vista Impacts	Widening of Otay Lakes Road	Significant	M-BI-3	HLIT Permit
Jurisdictional ~~wetlands~~Wetlands and ~~waters impacts~~Waters Impacts	Areas within Alternative H	Significant	M-BI-4	Obtain required permits and mitigation.
Offsite State of California Impacts	Widening of Otay Lakes Road	Significant	M-BI-4	Obtain required permits and mitigation.
Offsite Cornerstone Lands Jurisdictional ~~wetlands~~Wetlands and ~~waters impacts~~Waters Impacts	Widening of Otay Lakes Road	Significant	M-BI-5	Obtain required permits and mitigation.
Offsite County of San Diego Jurisdictional	Widening of Otay Lakes Road	Significant	M-BI-6	Obtain required permits and mitigation.

Table ~~10~~12
Summary of Impacts and Mitigation Measures.

Impact	Source or Detail	Significance Determination	Mitigation Measure	Summary
~~wetlands~~Wetlands and ~~waters impacts~~Waters Impacts				
Vernal Pool Impacts	K6 mesa	Significant	M-BI-7	Restoration or purchase in mitigation bank
Sensitive Plants and ~~habitats~~Habitats per the RMP2	Plant species that are addressed with specific requirements per the RMP2; native grassland impacts.	Significant	M-BI-8	Resource Salvage Plan/translocation of California adolphia, San Diego thornmint, San Diego goldenstar, variegated dudleya, San Diego barrel cactus, San Diego marsh-elder, San Diego County Viguiera and Munz's sage dominated coastal sage scrub. Restore impacts to native grassland.
Quino checkerspot ~~butterfly impacts~~Butterfly Impacts	Areas of suitable or occupied habitat within Alternative H	Significant	M-BI-9a M-BI-9b	Preservation of suitable, occupied, or restored habitat per the Wildlife Agencies. Preparation of a Quino Management/Enhancement Plan.
San Diego ~~fairy shrimp impacts~~Fairy Shrimp Impacts	K6 mesa vernal pool	Significant	M-BI-10 M-BI-7	Take Permit for San Diego fairy shrimp within the K6 mesa vernal pool. Restoration within K8 mesa per Wildlife Agencies
Nesting birds	Impacts during the breeding season	Significant	M-BI-11	Avoidance of the breeding season or pre-construction surveys
Wildlife Movement	Crossing Otay Lakes Road	Significant	M-BI-12	Installation of wildlife culvert
Water Quality	Within Alternative H development	Significant	M-BI-13	SWPPP
California gnatcatcher	Within Alternative H development or adjacent	Significant	M-BI-15	Avoid breeding season, address noise and lighting, provide buffer for nesting
Burrowing Owl	Within Alternative H development	Significant	M-BI-16	Pre-construction surveys during breeding or non-breeding season. If burrowing owl is present within impact area, prepare mitigation plan.
Conserved Open Space Areas	Within Alternative H development ~~areas~~	Significant	M-BI-17	Prepare biological open space easement for the Conserved Open Space areas.

Table ~~10~~12
Summary of Impacts and Mitigation Measures.

Impact	Source or Detail	Significance Determination	Mitigation Measure	Summary
Least Bell's Vireo	Within offsite development areas for Otay Lakes Road improvements	Significant	M-BI-18	Avoid breeding season, address noise and lighting and other indirect effects

The mitigation measures required for Alternative H are similar to those required for the Proposed Project. The mitigation measures are listed below and comparisons in the measures between Alternative H and the Proposed Project are noted in **bold**.

M-BI-1a **Conveyance.** On or before the recordation of the first Final Map for the project, the Project ~~Applicant~~applicant shall coordinate with the County of San Diego to establish and annex the project area into a County-administered Community Facilities District to fund the ~~on-going~~ongoing management and maintenance of the Otay Ranch RMP Preserve. Prior to the recordation of each Final Map within each Tentative Map, the ~~project applicants~~Project applicant shall convey land within the Otay Ranch RMP Preserve to the Otay Ranch RMP POM or its designee at a ratio of 1.188 acre for each "Developable Acre" impacted per the Final Map as defined by the Otay Ranch RMP. Based on analysis in this document, the total required conveyance for this project is approximately ~~786.7~~790.3 acres with the final acreage determined based on the Final Map for the project. The conveyance may be, but is not required to be, located within Village 13 per the Otay Ranch RMP.

While the conveyance acreage amount has changed for Alternative H (as shown above), the mitigation measure requirement for conveyance is the same.

M-BI-1b **Biological Monitoring.** Prior to issuance of land development permits, including clearing, grubbing, grading, and/or construction permits for any areas adjacent to the ~~preserve~~Preserve and the ~~offsite~~off-site facilities located within the ~~preserve~~Preserve, the Project ~~Applicant~~applicant shall provide written confirmation that a County-approved biological monitor has been retained and will be on~~-~~site during clearing, grubbing, and/or grading activities. The biological monitor shall attend all pre-construction meetings and be present during the removal of any vegetation to ensure that the approved limits of disturbance are not exceeded and

provide periodic monitoring of the impact area including, but not limited to, trenches, stockpiles, storage areas, and protective fencing. The biological monitor shall also be responsible for implementing the monitoring as required and specified in the restoration plans. The biological monitor shall be authorized to halt all associated project activities that may be in violation of the County's MSCP Subarea Plan and/or permits issued by any other agencies having jurisdictional authority over the project.

Before construction activities occur in areas adjacent to ~~preserve~~Preserve areas containing sensitive biological resources, all workers shall be educated by a County-approved biologist to recognize and avoid those areas that have been marked as sensitive biological resources.

No change in this mitigation measure from the Proposed Project to Alternative H.

M-BI-1c **Temporary Fencing.** Prior to issuance of land development permits, including clearing, grubbing, grading and/or construction permits, the Project Applicant shall install prominently colored, fencing and signage wherever the limits of grading are adjacent to sensitive vegetation communities or other biological resources, as identified by the qualified monitoring biologist. Fencing shall remain in place during all construction activities. All temporary fencing shall be shown on grading plans for areas adjacent to the ~~preserve~~Preserve and for all ~~offsite~~off-site facilities constructed within the preserve. Prior to release of grading and/or improvement bonds, a qualified biologist shall provide evidence to the satisfaction of the Director of Planning and Development Services (or ~~their~~her/his designee~~)))~~ and the Director of Parks and Recreation, that work was conducted as authorized under the approved land development permit and associated plans.

No change in this mitigation measure from the Proposed Project to Alternative H.

M-BI-1d **Upland Restoration.** Restoration areas include those areas within the Preserve that will be impacted as allowable uses for infrastructure. These areas include the temporary graded slopes for the road to the water tank, for slopes along Otay Lakes Road, and for the natural drainage bypass facility areas. These restoration areas may incorporate salvaged materials, such as seed collection and translocation of plant materials as determined ~~to be~~ appropriate. The project biologist shall review the plant materials prior to grading and will determine if salvage is not appropriate due to site conditions, plant conditions, or reproductive stage of the plants, a letter indicating that will be prepared and submitted for approval to the Director of Planning ~~and~~& Development Services and the Director of Parks and Recreation. Prior to grading

the project, a Conceptual Upland Restoration Plan will be submitted to and receive approval from the Director of Planning ~~and~~& Development Services (~~of their~~or her/his designee), the Director of Parks and Recreation, and the POM (see Appendix D of the Biological Resources Technical Report Supplemental Analysis, **Appendix D-3**).

The plan shall include, at a minimum, an implementation plan, maintenance and monitoring program, estimated completion time, and any relevant contingency measures. The Conceptual Upland Restoration Plan shall include, but not be limited to, the following to ensure the establishment of the restoration objectives: a 24- by 36-inch map showing the restoration areas, site preparation information, type of planting materials (species ratios, source, size of container, etc.), planting program, 80% success criteria, 5-year monitoring plan, and detailed cost estimate. The cost estimate shall include planting, plant materials, irrigation, maintenance, monitoring, and report preparation. The report shall be prepared by a County of San Diego-approved biologist and a state of California-licensed landscape architect.

This mitigation measure has been revised from the Proposed Project and M-BI-8 was revised to include salvage of species included in the RMP2 and to include restoration of coastal sage scrub dominated by Munz's sage and San Diego Viguiera for Alternative H.

M-BI-1e **Limited Building Zone (LBZ) Easement**. In order to protect sensitive biological resources in the adjacent Preserve and Conserved Open Space, a Limited Building Zone (LBZ) easement will be granted to the County on HOA manufactured open space along the perimeter of the development footprint, as well as the Conserved Open Space, to be confirmed at the time of the Final Map. The purpose of this easement is to limit the need to clear or modify vegetation for fire protection purposes within the Preserve, restrict unauthorized access, prohibit landscaping with exotic pest plants that may invade the Preserve, and prohibit artificial lighting and focal use areas that would alter wildlife behavior in the Preserve. This easement requires the landowner to maintain permanent fencing and signage. The easement precludes 1) placement, installation, or construction of habitable structures, including garages or accessory structures designed or intended for occupancy by humans or animals; 2) landscaping with exotic pest plants; 3) artificial lighting except low-pressure sodium fixtures shielded and directed away from the preserve; and 4) focal use areas including arenas, pools, and patios.

No change in this mitigation measure from the Proposed Project to Alternative H.

M-BI-1f **Fencing and Signage**. ~~In order to~~To protect the Preserve from entry upon completion of construction, an open space fence or wall will be installed along all open space edges where open space is adjacent to residential uses, along internal streets, and as indicated in the Otay Ranch Resort Village Alternative H Preserve Edge Plan, Proposed Fencing, Preserve ~~signage~~Signage, and Fuel Modification Zones (see map pocket). The barrier must be a minimum construction of vertical metal fencing, but may be other suitable construction material, as approved by the Director of Planning ~~and~~& Development Services and the Director of Parks and Recreation. ~~In order to~~To protect the Preserve from entry, informational signs will be installed, where appropriate, along all open space edges where open space is adjacent to residential uses, along internal streets, and as indicated in the Otay Ranch Resort Village Alternative H Preserve Edge Plan. The signs must be corrosion resistant, a minimum of 6 inches by 9 inches in size, on posts not less than ~~three (~~3~~)~~ feet in height from the ground surface, and state the following (or similar if approved by the Otay Ranch RMP POM/DPR):

Sensitive Environmental Resources
Area Restricted by Easement
Entry without express written permission from the County of San Diego
is prohibited. To report a violation or for more information about easement
restrictions and exceptions contact the County of San Diego,
Planning & Development Services
Reference: (ER-04-19-005)

No change in this mitigation measure from the Proposed Project to Alternative H.

M-BI-1g **Because there is no Boundary Line Adjustment, there is no need for the purchase of the ~~offsite~~off-site 10.2-acre parcel, thus Mitigation Measure M-BI-g included for the proposed Project for long-term management of the parcel is not required.**

M-BI-2 **Cornerstone Lands.** Prior to widening Otay Lakes Road, the ~~project applicants~~Project applicant shall mitigate for the impact to Cornerstone Lands and complete an MHPA Boundary Adjustment to the satisfaction of the City of San Diego Director of Planning & Development Services ~~Director~~ (or ~~their~~her/his designee). Replacement of MHPA lands within Cornerstone Lands is proposed ~~to be~~ at a ~~1~~4:1 ratio for lands replaced inside the MSCP Preserve. For replacement lands that are located outside of the MSCP Preserve, the mitigation is at a ~~4~~1:1

ratio. Mitigation for impacts to the various vegetation communities shall be based on the tier of the impacted lands in accordance with the mitigation ratios provided by the MSCP. The mitigation and MHPA Boundary Adjustment may be implemented within the Otay Ranch ~~RMP~~ Preserve on property surrounding the existing Cornerstone Lands, north of Otay Lakes Road, or may be ~~offsite~~off-site at a location determined ~~to be~~ acceptable by the City of San Diego.

While the impact acreage amount might change with final design for Alternative H, the mitigation measure requirement is the same.

M-BI-3 **City of Chula Vista.** Prior to issuance of any land development permits, including clearing or grubbing and grading and/or construction permits, the project will be required to obtain a Habitat Loss and Incidental Take (HLIT) Permit pursuant to Section 17.35 of the Chula Vista Municipal Code for impacts to Chula Vista MSCP Tier I, II, and III vegetation communities in accordance with Table 5-3 of the Chula Vista MSCP Subarea Plan. Mitigation for offsite impacts outside of Otay Ranch will be in accordance with the Chula Vista MSCP Subarea Plan and the Chula Vista ~~Habitat Loss and Incidental Take (HLIT)~~HLIT Ordinance.

Prior to issuance of any land development permits, the Project ~~applicants~~applicant shall mitigate for direct impacts pursuant to Section 5.2.2 of the City of Chula Vista MSCP Subarea Plan. In compliance with the Subarea Plan, the ~~applicant~~Project Applicant shall secure mitigation credits within a City- and wildlife agency-approved Conservation Bank or other approved location offering mitigation credits consistent with the ratios specified by MSCP.

The ~~applicants~~Project applicant shall be required to provide verification of purchase to the City prior to issuance of any land development permits.

In the event that a Project Applicant is unable to secure mitigation through an established mitigation bank approved by the City of Chula Vista and wildlife agencies, the Project Applicant shall secure the required mitigation through the conservation of an area containing in-kind habitat within the City's MSCP Subarea Plan or MSCP Planning Area in accordance with the mitigation ratios contained in Table 5-3 of the City of Chula Vista MSCP Subarea Plan and subject to wildlife agency concurrence.

Prior to issuance of any land development permit for the widening of Otay Lakes Road, and to the satisfaction and oversight of the City's Development Services Director (or ~~their~~her/his designee), the Project Applicant shall secure the parcel(s)

that will be permanently preserved for in-kind habitat impact mitigation~~, if~~. If a mitigation bank purchase is unavailable, the Project Applicant shall prepare a long-term management and monitoring plan for the mitigation area, secure an appropriate management entity to ensure that long-term biological resource management and monitoring of the mitigation area is implemented in perpetuity, and establish a long-term funding mechanism for the management and monitoring of the mitigation area in perpetuity.

The long-term management and monitoring plan shall provide management measures to be implemented to sustain the viability of the preserved habitat and identify timing for implementing the measures prescribed in the management and monitoring plan. The mitigation parcel shall be restricted from future development and permanently preserved through the recordation of a biological open space easement or other mechanism approved by the wildlife agencies as being sufficient to ~~insure~~ensure that the lands are protected in perpetuity. The biological open space easement or other mechanism approved by the wildlife agencies shall be recorded prior to issuance of any land development permits.

No change in this mitigation measure from the Proposed Project to Alternative H.

M-BI-4 **Jurisdictional Resources.** Prior to impacts occurring to waters and wetlands under the jurisdiction of ACOE, CDFW, and RWQCB, the ~~Applicant~~Project Applicants shall obtain the following permits: ACOE 404 permit, RWQCB 401 Water Quality Certification, and a CDFW Code 1600 Streambed Alteration Agreement. Impacts shall be mitigated at a minimum 1:1 ratio by creation or purchase of credits for the creation of jurisdictional habitat of similar functions and values. A suitable mitigation site shall be selected and approved by the resource agencies during the permitting process. The ratio of wetland mitigation shall be determined by the permitting agencies varying from 2:1 to 5:1 overall. Mitigation for impacts to wetlands and non-wetland waters could occur offsite within the Otay River Valley as a part of or adjacent to the Otay River Restoration Project or other appropriate mitigation site as approved by the County and Wildlife Agencies. Mitigation would be provided to meet the mitigation ratios outlined in the wetland permit applications. The wetland creation should include at least a 1:1 ratio of each of the wetland vegetation communities impacted. The remainder of the creation/enhancement obligation may be fulfilled with any wetlands type as defined by the wetland permitting agencies.

While the impact acreage amount has changed for Alternative H, the mitigation measure requirement is the same. However, the conceptual plan is no longer required because the mitigation will include the coordination with the Otay River Restoration Project.

M-BI-5 **Cornerstone Jurisdictional Resources.** Prior to impacts occurring to waters and wetlands within the City of San Diego Cornerstone Lands, under the jurisdiction of ACOE, CDFW, and RWQCB, the Project ~~applicants~~Applicants shall obtain the following permits: ACOE 404 permit, RWQCB 401 Water Quality Certification, and a CDFW Code 1600 Streambed Alteration Agreement. Impacts shall be mitigated at a 1:1 ratio by creation or purchase of credits for the creation of jurisdictional habitat of similar functions and values in order to account for no net loss of wetlands. A suitable mitigation site shall be selected and approved by the resource agencies during the permitting process. The ratio of wetland mitigation shall be 3:1 overall with 1:1 of creation (establishment) and 2:1 proposed to be enhancement. Mitigation for impacts to wetlands and non-wetland waters would occur within the Otay River Valley as a part of or adjacent to the Otay River Restoration Project. The Project applicant is currently discussing the ~~exactly~~exact location of the mitigation parcel; however, mitigation would be provided to meet the mitigation ratios outlined in the wetland permit applications. The wetland creation shall include at least a 1:1 ratio of each of the wetland vegetation communities impacted. The remainder of the creation/enhancement obligation may be fulfilled with any wetlands type.

The temporary impacts to ephemeral and intermittent waters shall be mitigated by restoring them to original conditions immediately upon completion of the Project, and shall be subject to all of the success criteria and monitoring as the permanent impacted wetlands**.**

While the impact acreage amount has changed for Alternative H, the mitigation measure requirement ~~for~~ is the same. However, the conceptual plan is no longer required because the mitigation will include the purchase into the Otay River Restoration Project.

M-BI-6 **Chula Vista Jurisdictional Resources.** Prior to any project-related impact to waters within the City of Chula Vista under the jurisdiction of ACOE, CDFW, and RWQCB, the Project ~~applicants~~Applicants shall obtain the following permits: ACOE 404 permit, RWQCB 401 Water Quality Certification, and a CDFW Code 1600 Streambed Alteration Agreement. Such impacts shall be mitigated at a 1:1 ratio by creation or purchase of credits for the creation of jurisdictional habitat of similar functions and

values. A suitable mitigation site shall be selected and approved by the resource agencies during the permitting process. Mitigation for impacts to wetlands and non-wetland waters would occur within the Otay River Valley as a part of or adjacent to the Otay River Restoration Project. The ~~applicant is~~Project Applicant are currently discussing the ~~exactly~~exact location of the mitigation parcel; however, mitigation would be provided to meet the mitigation ratios outlined in the wetland permit applications. The ratio of wetlands mitigation shall be 3:1 overall with 1:1 to be creation (establishment) and 2:1 to be enhancement. The wetland creation shall include at least a 1:1 ratio of each of the wetland vegetation communities impacted. The remainder of the creation/enhancement obligation may be fulfilled with any wetlands type.

The temporary impacts to ephemeral and intermittent waters shall be mitigated by restoring them to their original conditions immediately upon completion of the Project, and shall be subject to all of the success criteria and monitoring as the permanently impacted wetlands. The mitigation will include planting of San Diego marsh-elder at a 2:1 ratio within areas that are temporarily ~~impact~~impacted and will include additional planting of this species to comply with the 2:1 ratio required by the RMP2.

While the impact acreage amount has changed for Alternative H, the mitigation measure requirement ~~for~~ is the same. However, the conceptual plan is no longer required because the mitigation will include the purchase into the Otay River Restoration Project or other mitigation bank or restoration area.

M-BI-7 **Vernal Pools.** This mitigation measure identifies two options for addressing the ~~Proposed~~proposed Project's potential impacts on vernal pools.

Option No. 1: Under this option, the ~~applicant~~Project Applicants shall restore and reconfigure the K8 vernal pool group~~,~~ and provide a 100-foot minimum buffer around the pools and their watershed. No activities, including fuel modification, would be permitted within the buffer. The required restoration and reconfiguration shall involve reconstruction of the mima mounds and basins, removal of weedy vegetation, revegetation of the mounds with upland sage scrub species, and inoculation of the pools with vernal pool species. A Conceptual Vernal Pool Mitigation Plan shall be prepared that outlines the location and activities of the restoration (Appendix B of ~~this report).~~the Biological Resources Technical Report Supplemental Analysis, **Appendix D-3**). The plan will be submitted to, and be to the satisfaction of, ~~both~~ the ~~Directors~~Director of Planning & Development Services, Director of Parks and Recreation, and USFWS.

The plan will include performance measures that may include but are not limited to target functions and values that are guidelines to assess the success of the restored vernal pool and mima mound habitat. The mitigation program intends to restore habitat with appropriate topography and vernal pool hydrology to support the intended vernal pool target species including San Diego fairy shrimp.

A ratio of at least 1:1 restoration shall include the establishment of new vernal pool basins within the K8 vernal pool group. The balance of the mitigation ratio shall include enhancement of the existing pools. ~~There is a~~A total of 0.26 acre is available for enhancement within the existing pools. The additional restoration mitigation requirement (a total of 0.112 acre) shall be directed toward establishing new basins within the K8 vernal pool group.

Based on the inundation records, fairy shrimp surveys, and floral inventory, the following potential vernal pools meet the previously applied ACOE jurisdictional criteria:

Assuming all of K6 (approximately 0.11 acre of vernal pool basin) is impacted and the mitigation requirement is a combination of 2:1 (pools not occupied by San Diego fairy shrimp – 0.107 acre) and 5:1 (for one pool occupied by San Diego fairy shrimp – 0.005-acre), as outlined above, a total mitigation of 0.239 acre shall be required. This is typically satisfied by providing at least 1:1 as restoration and the balance as enhancement. Enhancement within the K8 pools will likely be restricted by the resource agencies to those pools not containing fairy shrimp. **Table 2.3-12** of the Draft EIR (2015) summarizes the existing conditions of the pools within the K8 mesa.

The Conceptual Vernal Pool Mitigation Plan provides for the short-term management and monitoring of the restoration area. Long-term management will be provided by the POM or included with the requirements of the Conserved Open Space (~~See~~see M-BI-17).

Option No. 2: Under this option, the ~~applicants~~Project applicant would mitigate the Project's vernal pool impacts by purchasing vernal pool mitigation bank credits for a total of 0.239 acre at a combined 2:1 (for pools **not** occupied by San Diego fairy shrimp) and 5:1 mitigation ratio (for pools that **are** occupied by San Diego fairy shrimp).

No change in this mitigation measure from the Proposed Project to Alternative H.

M-BI-8 **Resource Salvage.** Prior to the issuance of land development permits, including clearing or grubbing and grading permits, for areas with salvageable California adolphia and plant species identified as requiring salvage in the RMP2 (San Diego thornmint, San Diego goldenstar, variegated dudleya, ~~and~~ San Diego barrel cactus, and San Diego marsh-elder), the Project ~~applicants~~Applicants shall prepare a Resource Salvage and Restoration Plan to address the requirements of the RMP2. Impacted individuals of these species shall be translocated per the RMP2 requirements. The Resource Salvage and Restoration Plan shall be prepared by a ~~county~~County-approved biologist to the satisfaction of the Director of Planning & Development Services ~~Directors~~ (or her/his designee) and in conjunction with the POM.

The Resource Salvage and Restoration Plan will also include compliance with the mitigation standards set forth in the RMP2, including those related to restoration and translocation for San Diego thornmint, San Diego goldenstar, variegated dudleya, San Diego barrel cactus, and San Diego marsh-elder in drainages.

The Resource Salvage and Restoration Plan shall, at a minimum, evaluate options for seed collection and plant salvage and relocation, including individual plant salvage, native plant mulching, selective soil salvaging, application of plant materials on manufactured slopes, and application/ relocation of resources within the Otay Ranch Resource Management Plan Preserve. The Resource Salvage and Restoration Plan shall include incorporation of relocation and restoration efforts for San Diego goldenstar, San Diego thornmint, variegated dudleya, and San Diego barrel cactus, and include San Diego marsh-elder (within this plan or as part of the wetland mitigation~~),~~) and California adolphia. Relocation efforts may include seed collection and/or transplantation to a suitable receptor site~~,~~ and shall be based on the most reliable methods of successful relocation. The plan shall also include a recommendation for method of salvage and relocation/application based on feasibility of implementation and likelihood of success. The plan shall include, at a minimum, an implementation plan, maintenance and monitoring program, estimated completion time, success criteria, and any relevant contingency measures to ensure that no-net-loss is achieved. The plan shall also be subject to the oversight of the Director of Planning ~~and~~& Development Services (or her/his designee).

As required per RMP Policy 3.2, the Project ~~Applicant~~Applicants will coordinate with the POM to meet the RMP2's restoration requirements for habitat restoration including Munz's sage and San Diego viguiera~~-~~-dominated coastal sage scrub and native grassland. This restoration will be incorporated into the Biological Resource Salvage and Restoration Plan.

This mitigation measure has been revised: the impact acreage amount has been revised for Alternative H and additional species and requirements are included.

M-BI-9a~~.~~ Quino Checkerspot Butterfly Take Authorization: On or before the recordation of the first Final Map that affects Quino checkerspot butterfly ~~(QCB)~~ or its habitat, the Project ~~applicants~~applicant shall demonstrate to the satisfaction of the Director of Planning ~~and~~& Development Services (or her/his~~/her~~ designee) that it has secured the necessary take authorization for ~~QCB~~Quino checkerspot butterfly through one of the following: (a) Section 7 Consultation, (b) Section 10 incidental take permit, or (c) the County's MSCP Subarea Plan ~~QCB~~Quino checkerspot butterfly Addition ~~(QCB Addition),~~ if and when approved. If the project receives take authorization through the County's ~~QCB~~Quino Checkerspot Butterfly Addition, the project will thereby satisfy any and all ~~QCB~~Quino checkerspot butterfly mitigation requirements of the County. If the project receives take authorization through the federal Endangered Species Act (FESA) Section 7 or Section 10 processes, the Project ~~applicants~~Applicants will comply with any and all conditions, including preconstruction surveys that the USFWS may require for take of ~~QCB~~Quino checkerspot butterfly pursuant to FESA. The Project shall conserve through a biological open space easement the amount of suitable or occupied ~~QCB~~Quino checkerspot butterfly habitat required by the USFWS in the relevant Biological Opinion (Section 7) or Habitat Conservation Plan (Section 10).

This biological open space easement shall be for the protection of biological resources, and all of the following shall be prohibited on any portion of the land subject to said easement: grading; excavating; placing soil, sand, rock, gravel, or other material; clearing vegetation; constructing, erecting, or placing any building or structure; vehicular activities; dumping trash; or using the area for any purpose other than as open space. The only exceptions to this prohibition are for activities conducted pursuant to a revegetation or habitat management plan approved by the Director of Planning & Development Services. This biological open space easement shall authorize the County and its agents to periodically access the land to perform management and monitoring activities for species and habitat conservation.

The ~~applicant~~Project Applicants shall show the ~~onsite~~on-site biological open space easement on the Final Map and biological open space easement exhibit with the appropriate granting language on the title sheet concurrent with Final Map Review. The ~~applicant~~Project Applicants then shall submit these documents for preparation and recordation with the Department of General Services, and pay all applicable fees associated with preparation of the documents.

While the take authorization mitigation measure for the species has not changed, the mitigation language has been clarified.

M-BI-9b **Quino Checkerspot Butterfly Management/Enhancement Plan**: Prior to the issuance of the first grading permit that impacts Quino checkerspot butterfly, the Project ~~applicants~~applicant shall prepare a long-term Quino Checkerspot Butterfly Management/Enhancement Plan that shall, at a minimum, include a survey methodology for ~~onsite preserve~~on-site Preserve areas pre- and post-construction to monitor effects on Quino checkerspot butterfly population health (see Appendix C~~).~~ – Quino Checkerspot Butterfly Management/Enhancement Plan Appendix D-3 - Biological Resources Technical Report Supplemental Analysis – Alternative H). This plan will be submitted to, and be to the satisfaction of, ~~both~~ the ~~Directors~~Director of Planning & Development Services, Director of Parks ~~& Recreation, USFWS, CDFW,~~ and the POM. The ~~Quino Checkerspot Butterfly Management/~~ QCB Management Plan, including the performance criteria set forth below, was prepared to comply with and further the recovery goals described in the Quino Checkerspot Butterfly Recovery Plan (2003) and 5-Year Review (2009) issued by the United States Fish and Wildlife Service. The Quino Checkerspot Butterfly Management/Enhancement Plan may be superseded or unnecessary upon completion and adoption of the County of San Diego Quino Checkerspot Butterfly MSCP Addition. The plan will include performance measures that may include but are not limited to:

- Annual restoration and enhancement of 15 acres per year with quantitative and qualitative requirements that outline the percent native cover, percent survival, and percent nonnative cover as well as reviewing the health and vigor of the host plants;
- Quantifiable adaptive management triggers that rely on yearly as needed population monitoring and statistical changes in the population size to then require restoration as noted above;
- Reintroduction of the species in the case of a population decline that is not related to habitat quality and continued restoration of unoccupied areas when population declines are not noted in order to create new habitat after any decline in existing habitat has been addressed;

- Establishment of a permanent funding mechanism to work in concert with the funding requirements of Preserve lands conveyed to the POM;
- Monitoring and management requirements to ensure the project results in no change in hydrological conditions, including moisture gradients, that would adversely affect Quino checkerspot butterfly habitat in the Preserve;
- Monitoring and management of all plantings to ensure no non-native insects are introduced into the Preserve where they might adversely affect Quino checkerspot butterfly habitat.

The project will comply with all mitigation requirements associated with the Quino Checkerspot Butterfly MSCP Addition. Adaptive management techniques shall be developed within the plan with contingency methods for changed circumstances. These measures shall ensure that the potential loss of individuals and the loss of habitat for the species related to the proposed development are adequately offset by measures that will enhance the existing preserved population, and shall provide data that will help the species recover throughout its range.

No change in this mitigation measure from the Proposed Project to Alternative H.

M-BI-10 **San Diego Fairy Shrimp.** Prior to the issuance of the first grading permit that impacts the K6 vernal pool complex, the Project ~~applicants~~applicant shall demonstrate to the satisfaction of the Director of Planning and Development Services (or his/her designee) that the Project has secured take authorization of San Diego fairy shrimp through Section 7 Consultation, a Section 10 incidental take permit, or as may be incorporated into the provisions of the MSCP Subarea Plan Quino Checkerspot Butterfly Addition to achieve the best results toward the survival and recovery of the species. If the project receives take authorization through the federal Endangered Species Act (FESA) Section 7 or Section 10 processes, the Project Applicants will comply with any and all conditions, including preconstruction surveys that the USFWS may require for take of Fairy shrimp pursuant to FESA.

No change in this mitigation measure from the Proposed Project to Alternative H.

M-BI-11 **Raptors and Migratory Birds.** To avoid any direct impacts to raptors and/or any migratory birds protected under the MBTA, removal of habitat that supports active nests on the proposed area of disturbance shall occur outside of the breeding season for these species (January 15 through August 15, annually). If removal of habitat on the proposed area of disturbance must occur during the breeding season, the Project applicants shall retain a County-of-San-Diego-approved biologist to conduct a pre-construction survey to determine the presence or absence of nesting birds ~~including burrowing owl~~ on the proposed area of disturbance. The pre-construction survey shall be conducted within 3 calendar days prior to the start of construction, and the results shall be submitted to the County of San Diego for review and approval prior to initiating any construction activities. If nesting birds are detected, a letter report or mitigation plan, as deemed appropriate by the County of San Diego, shall be prepared and include proposed measures to be implemented to ensure that disturbance of breeding activities ~~are~~is avoided. The report or mitigation plan shall be submitted to the County of San Diego for review and approval, and implemented to the satisfaction of the Director of Planning ~~and~~& Development Services (or her/his~~/her~~ designee~~).~~)..
The County of San Diego's mitigation monitor shall verify and approve that all measures identified in the report or mitigation plan are in place prior to and/or during construction.

No change in this mitigation measure from the Proposed Project to Alternative H.

M-BI-12 **Wildlife Movement.** One wildlife culvert shall be constructed to provide and improve habitat linkages and movement corridors. In general, the design of the wildlife culvert has been developed to be consistent with the MSCP Subarea Plan, where feasible. The wildlife culverts~~s~~ shall have fencing to funnel wildlife movement, shall have a natural bottom with native vegetation at either end, and shall be of size and height of opening so there is direct line of site from one end to the other. Because there is natural light within the ~~culverts~~culvert, low level illumination is not included. The detail of the wildlife culvert or crossing that shall be provided is presented below.

- Otay Lakes Road Wildlife Crossing (Identified as No. 1) (58 feet long × 20.75 feet wide × 12.08 feet tall = openness ratio of 1.12)

  This structure shall be located under Otay Lakes Road. This crossing is also located below the grade of Otay Lakes Road to prevent wildlife from gaining access to the surface of the roadway. There is also a six foot wildlife path with a soft surface along this crossing to allow for wildlife movement.

This mitigation measure has been revised: Based on the design of Alternative H, there is no need to construct any wildlife crossing other than the Otay Lakes Road Wildlife Crossing No. 1. The configuration of the wildlife crossing remains the same as for the Proposed Project.

M-BI-13 **SWPPP.** Prior to issuance of grading permits for development areas adjacent to the Preserve, the Project applicants shall develop a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall be developed, approved, and implemented during construction to control storm water runoff such that erosion, sedimentation, pollution, and other adverse effects are minimized. The following performance measures contained in the Project's Preserve Edge Plan (**Appendix C-23**) shall be implemented to avoid the release of toxic substances associated with urban runoff:

- Sediment shall be retained ~~onsite~~on-site by a system of sediment basins, traps, or other appropriate measures.
- Where deemed necessary, storm drains shall be equipped with silt and oil traps to remove oils, debris, and other pollutants. Storm drain inlets shall be labeled "No Dumping–Drains to Ocean." Storm drains shall be regularly maintained to ensure their effectiveness.
- Parking lots shall be designed to allow storm water runoff to be directed to vegetative filter strips and/or oil-water separators to control sediment, oil, and other contaminants.
- Permanent energy dissipaters shall be included for drainage outlets.

The BMPs contained in the SWPPP shall include silt fences, fiber rolls, gravel bags, and soil stabilization measures such as erosion control mats and hydro-seeding.

No change in this mitigation measure from the Proposed Project to Alternative H.

M-BI-14 During construction, material stockpiles shall be covered when not in use. This will prevent fly-off that could damage nearby sensitive plant communities. During grading and construction, graded areas shall be periodically watered to minimize dust affecting adjacent vegetation.

During Project operation, all recreational areas that use chemicals or animal by-products, such as manure, that are potentially toxic or impactive to sensitive habitats or plants shall incorporate methods ~~onsite~~on-site to reduce impacts caused by the application and/or drainage of such materials into Preserve areas.

No invasive nonnative plant species shall be introduced into areas immediately adjacent to the Preserve. All slopes immediately adjacent to the Preserve shall be planted with native species that reflect the adjacent native habitat.

During construction, material stockpiles shall be placed such that they cause minimal interference with ~~onsite~~on-site drainage patterns. This will protect sensitive vegetation from being inundated with sediment-laden runoff.

Dewatering shall be conducted in accordance with standard regulations of RWQCB. A National Pollutant Discharge Elimination System (NPDES) permit, issued by RWQCB to discharge water from dewatering activities, shall be required prior to start of construction. This will minimize erosion, siltation, and pollution within sensitive communities.

Design of drainage facilities shall incorporate long-term control of pollutants and storm water flow to minimize pollution and hydrologic changes. An Urban Runoff Plan and operational BMPs shall be approved by the Director of Planning and Development Services prior to construction.

Grading and/or improvement plans shall include the requirement that a fencing and signage plan be prepared and that permanent fences or walls be placed along the open space boundaries. Placement of permanent fencing or walls is required at the conclusion of the grading activity and prior to Record Plan approval.

A hydroseed mix that incorporates native species, is appropriate to the area, and is without invasive species shall be used for slope stabilization in transitional areas.

Peruvian pepper trees and other invasive vegetation would not be planted in streetscapes, or within 50 feet of the Preserve, where they could impact native habitat.

No change in this mitigation measure from the Proposed Project to Alternative H.

M-BI-15 **California Gnatcatcher.** No clearing, grading, or grubbing activities may occur within occupied gnatcatcher habitat during the breeding season for coastal California gnatcatcher (February 15 to August 15, annually). If construction occurs during the breeding season, a nesting survey for California gnatcatcher shall be conducted prior to the onset of construction and construction may occur if active nests can be avoided and provided an adequate buffer or noise levels are documented to be below 60 dBA L_{eq} at the nest site.

When clearing, grading, or grubbing activities occur during the breeding season for raptors (January 15 to July 31, annually), nesting bird surveys shall be conducted by a qualified biologist for the Director of Planning and Development Services to identify active nest locations. Construction activities shall be restricted or modified such that noise levels related to those activities are below 60 dBA L_{eq}, or other Wildlife Agency approved restrictions, in the vicinity of the active nest site.

Lighting of all developed areas adjacent to the preserve shall be directed away from the preserve, wherever feasible and consistent with public safety. Where necessary, development shall provide adequate shielding with non-invasive plant materials (preferably native), berming, and/or other methods to protect the preserve and sensitive species from night lighting.

Uses in or adjacent to the preserve shall be designed to minimize noise impacts. Berms or walls shall be constructed adjacent to commercial areas and any other use that may introduce noises that could impact or interfere with wildlife utilization of the preserve. Excessively noisy uses or activities adjacent to breeding areas must incorporate noise-reduction measures or be curtailed during the breeding season of sensitive bird species.

~~Lighting of all developed areas adjacent to the preserve shall be directed away from the preserve, wherever feasible and consistent with public safety. Where necessary, development shall provide adequate shielding with non-invasive plant materials (preferably native), berming, and/or other methods to protect the preserve and sensitive species from night lighting.~~

Grading and/or improvement plans shall include the requirement that a fencing and signage plan be prepared and that permanent fences or walls be placed along the open space boundaries. Placement of permanent fencing or walls is required at the conclusion of the grading activity and prior to Record Plan approval**.**

No change in this mitigation measure from the Proposed Project to Alternative H.

The following are new Mitigation Measures are directly related to the implementation of Alternative H.

M-BI-16 **Burrowing Owl Preconstruction Survey for Alternative H.** Prior to issuance of any land development permits, including clearing, grubbing, and grading permits, the Project applicant or its designee shall retain a County of San Diego ~~(County)~~ - approved biologist to conduct focused preconstruction surveys for burrowing owl

during breeding or non-breeding season. The surveys shall be performed no earlier than 7 days prior to the commencement of any clearing, grubbing, or grading activities and will be repeated if there is a lapse of construction activity longer than 7 days. If occupied burrows are detected, the County-approved biologist shall prepare a plan that is consistent with the County of San Diego *Strategy for Mitigating Impacts to Burrowing Owls in the Unincorporated County*. This strategy states that burrowing owls must be relocated out of the impact area using passive or active methodologies subject to review and approval by the ~~Wildlife Agencies~~wildlife agencies (i.e., California Department of Fish and Wildlife and U.S. Fish and Wildlife Service) and the County. The plan includes burrowing owl relocation plans to avoid impacts from construction-related activities and may include construction of artificial burrows.

Added mitigation measure for Alternative H.

M-BI-17 **Biological Open Space Easement for Conserved Open Space.** On or before the recordation of the first Final Map that affects the lots listed below, the Project applicant will protect the Conserved Open Space areas: Lots E, F, G, H, and I. Specifically, these five lots shall be preserved on-site and shall be (a) added to the Otay Ranch RMP Preserve, and conveyed to the Otay Ranch RMP POM, or (b) managed under a County of San Diego (County) approved site-specific Resource Management Plan (RMP) through a County biological open space easement (~~Appendix E).~~see Appendix E of the Biological Resources Technical Report Supplemental Analysis, **Appendix D-3**).. If the Project applicant pursues option (b) and secures a biological open space easement, the Conserved Open Space may be transferred to the Otay Ranch RMP at a later date in accordance with requirements of the County. This biological open space easement shall be for the protection of biological resources, and all of the following shall be prohibited on any portion of the land subject to said biological open space easement: grading; excavating; placing soil, sand, rock, gravel, or other material; clearing vegetation; constructing, erecting, or placing any building or structure; vehicular activities; dumping trash; or using the area for any purpose other than as open space. The only exceptions to this prohibition are for activities conducted pursuant to a revegetation or habitat management plan approved by the Director of Planning & Development Services. This biological open space easement shall authorize the County and its agents to periodically access the land to perform management and monitoring activities for species and habitat conservation.

The ~~applicant~~Project Applicants shall show the ~~onsite~~on-site biological open space easement on the Final Map and biological open space easement exhibit with the appropriate granting language on the title sheet concurrent with Final Map Review.

The ~~applicant~~Project Applicants then shall submit these documents for preparation and recordation with the Department of General Services, and pay all applicable fees associated with preparation of the documents.

If areas of Conserved Open Space are managed through the biological open space easement, the ~~applicant~~Project Applicants shall prepare and implement a site-specific RMP prior to the approval of the first Final Map. The site-specific RMP shall be submitted to the County and agencies for approval as required.

In addition, the County-approved site-specific RMP funding costs shall be identified and fully funded to ensure that the funding source remains adequate in perpetuity. One site-specific RMP should be developed to cumulatively manage all Conserved Open Space lands managed under this condition. If more than one biological open space easement is recorded, the site-specific RMPs may be phased to incorporate lands as they are dedicated to the County. This condition may be waived with written approval by the Director of ~~PDS~~Planning & Development Services to the extent that any of the areas of Conserved Open Space (69.~~8~~3 acres) described are added to the Otay Ranch RMP Preserve for active monitoring and management by the POM.

This is a new mitigation measure due to the inclusion of areas that are designated as Conserved Open Space within the development hardline boundary.

M-BI-18 **Least Bell's Vireo.** No clearing, grading, or grubbing activities may occur within occupied least Bell's vireo habitat during the breeding season (March 15 to September 15, annually). If construction is proposed to occur during the breeding season, a nesting survey for least Bell's vireo shall be conducted prior to the onset of construction. The nesting bird surveys, if required due to construction timing, shall be conducted by a qualified biologist for the Director of Planning and Development Services to identify active nest locations. Construction may occur if active nests can be avoided and construction can be modified by methods such as construction of berms or walls to provide an adequate buffer, or to maintain noise levels below 60 dBA L_{eq}, or other Wildlife Agency approved restrictions at the nest site.

Lighting of preserve lands including areas occupied by least Bell's vireo shall be avoided or directed away from the preserve, wherever feasible and consistent with public safety. Where necessary, construction activities shall provide adequate

shielding with native plants, berming, and/or other methods to protect the preserve and sensitive species from night lighting.

Grading and/or improvement plans shall include the requirement that protective fencing be placed along the open space boundaries and construction areas to prevent human access to occupied habitat. For areas temporarily impacted for construction of Otay Lakes Road, landscaping shall be limited to native vegetation and use of invasive plant species within the preserve area shall be prohibited. Temporary impacts shall be restored to suitable habitat for least Bell's vireo and/or suitable native successional habitat.Any permanent impacts to suitable habitat will be addressed per mitigation measure M-BI-4 as described above.

New Mitigation Measure related directly to the implementation of Alternative H and the required offsite impacts for improvements for Otay Lakes Road (Appendix F).

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ATTACHMENT A

Figures 1–10

Existing Hardline Preserve

Existing Take Authorized Area

Conserved Open Space

Project Site

Not A Part

0 1,000 2,000 Feet

SOURCE: BASEMAP - USGS; DESIGN - HUNSAKER AND ASSOCIATES 2018

DUDEK

FIGURE 1

MSCP Designations

Otay Ranch Resort Village Project

Project Site
Conserved Open Space
Allowable Use
Development Footprint
Fuel Modification

Not A Part

Otay Lakes Rd. Wildlife Crossing

0 1,000 2,000 Feet

SOURCE: BASEMAP - USGS; DESIGN - HUNSAKER AND ASSOCIATES 2018

DUDEK

FIGURE 2
Project Site
Otay Ranch Resort Village Project

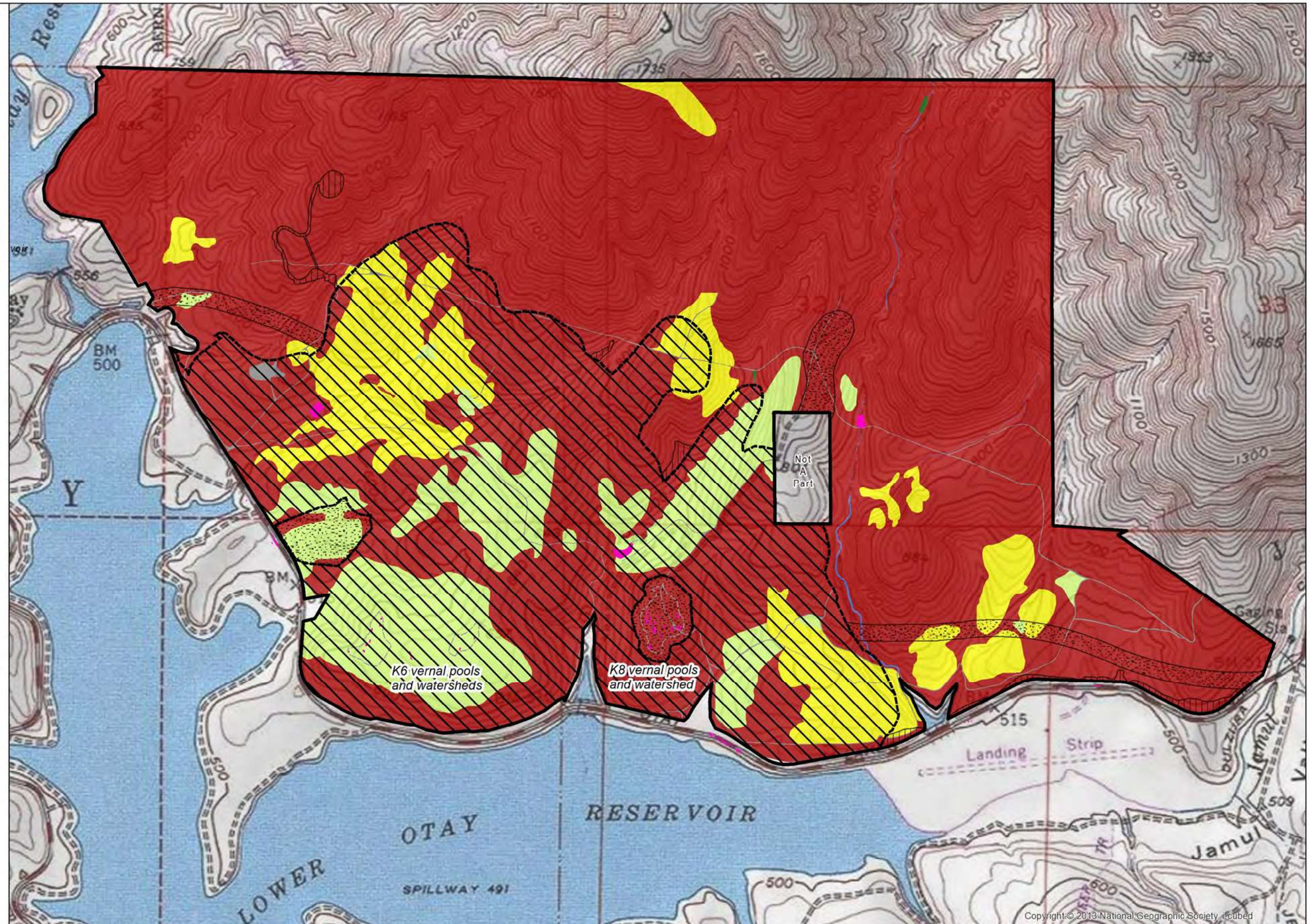
Project Boundary
Proposed Development
Conserved Open Space
Allowable Use

Dudek Vegetation

- Coastal Sage Scrub
- Chaparral
- Grassland
- Freshwater Marsh
- Riparian Forest
- Riparian Scrub
- Eucalyptus Woodland
- Open Water
- Disturbed Wetland
- Natural Floodchannel
- Disturbed Land
- Urban/Developed
- Vernal Pool Complex

VEGETATION SOURCE:
DUDEK 2002/2005/2008/2010/2014/2015
AND SANGIS 1995/2008

N
0 Feet 1,000



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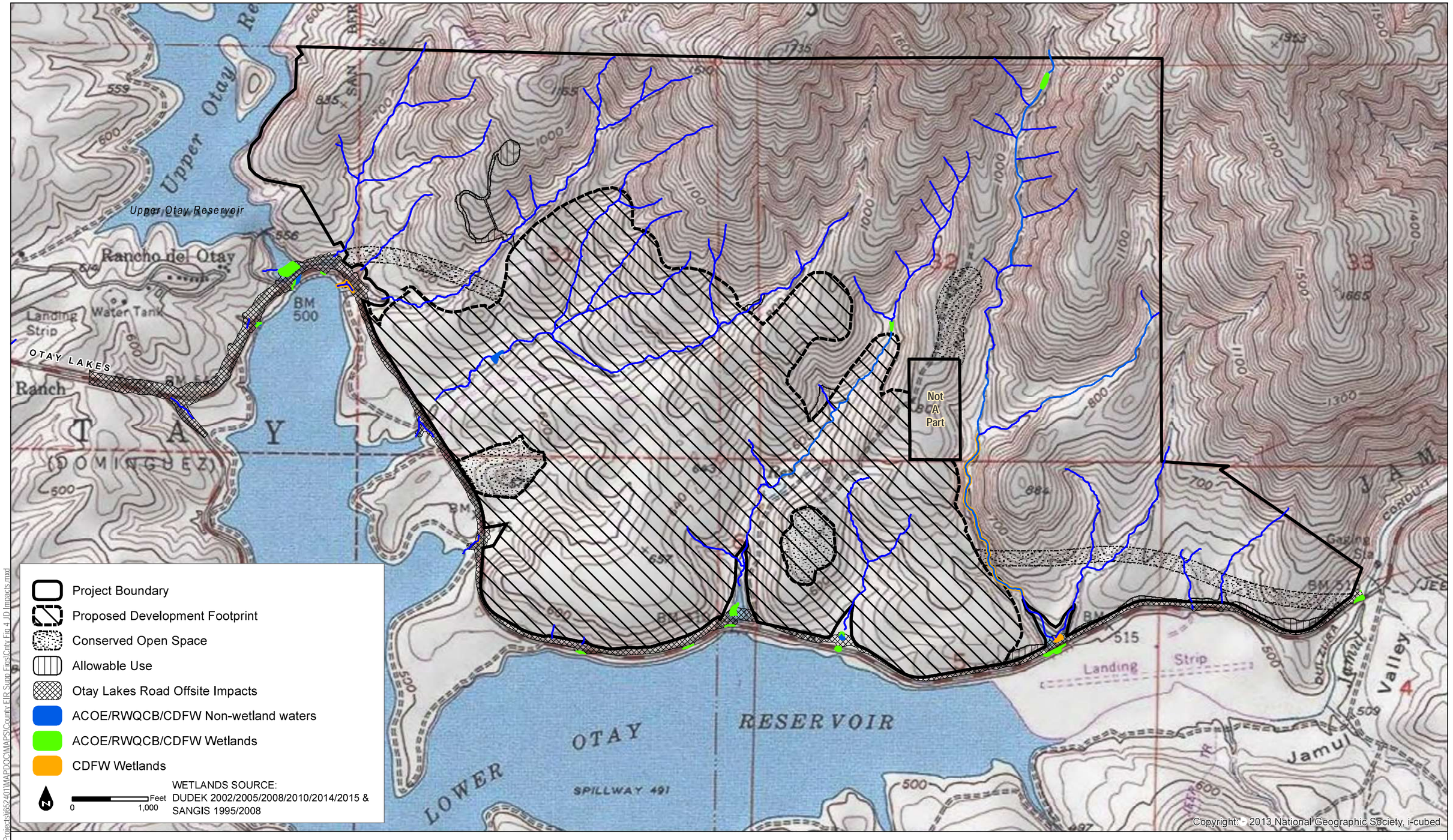
DUDEK

FIGURE 3
Vegetation Map with Proposed Development Footprint
Otay Ranch Resort Village - Alternative H Biological Resources Review Project



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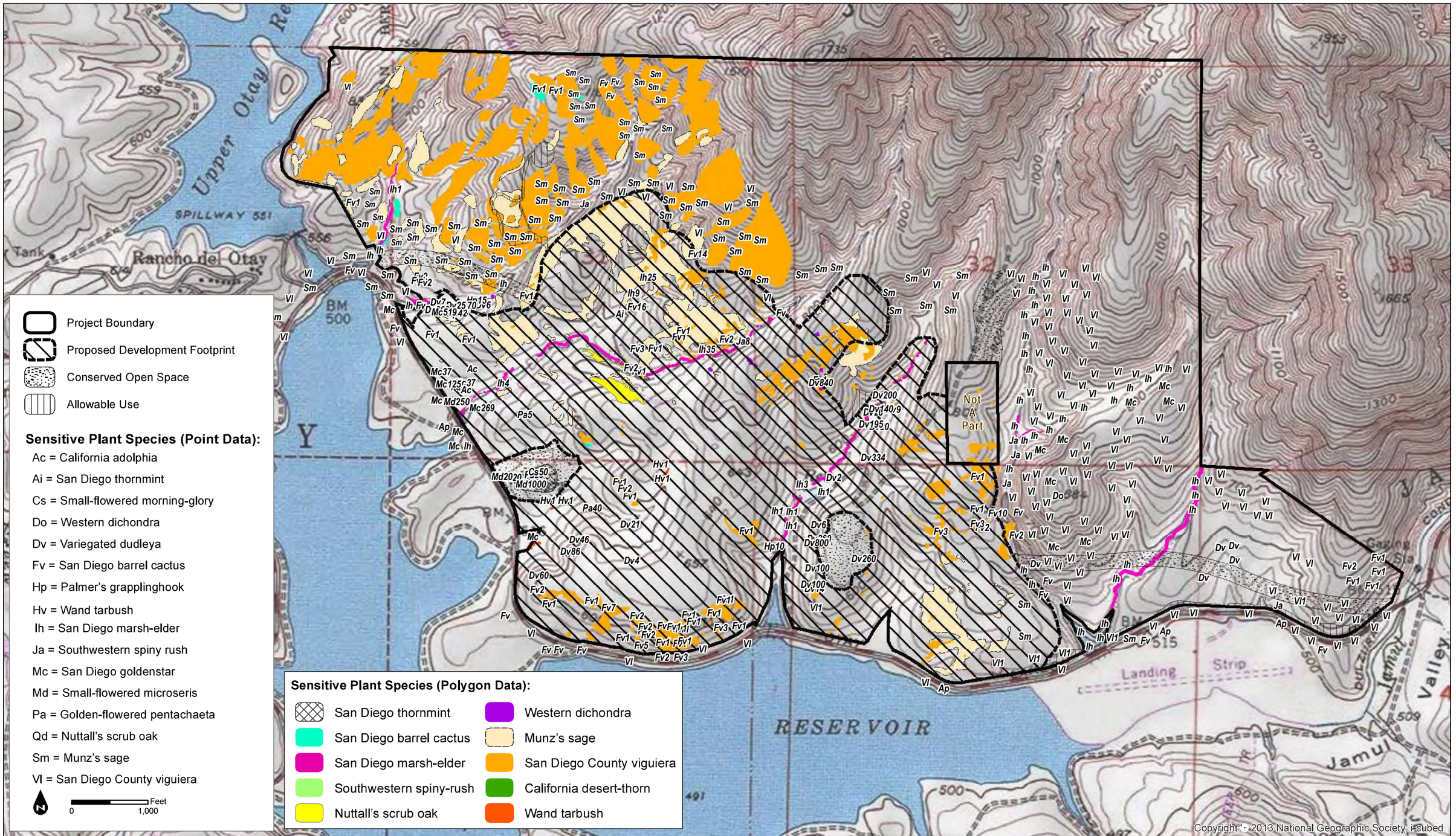
DUDEK

FIGURE 4

Jurisdictional Delineation with Proposed Development Footprint

Otay Ranch Resort Village - Alternative H Biological Resources Review Project



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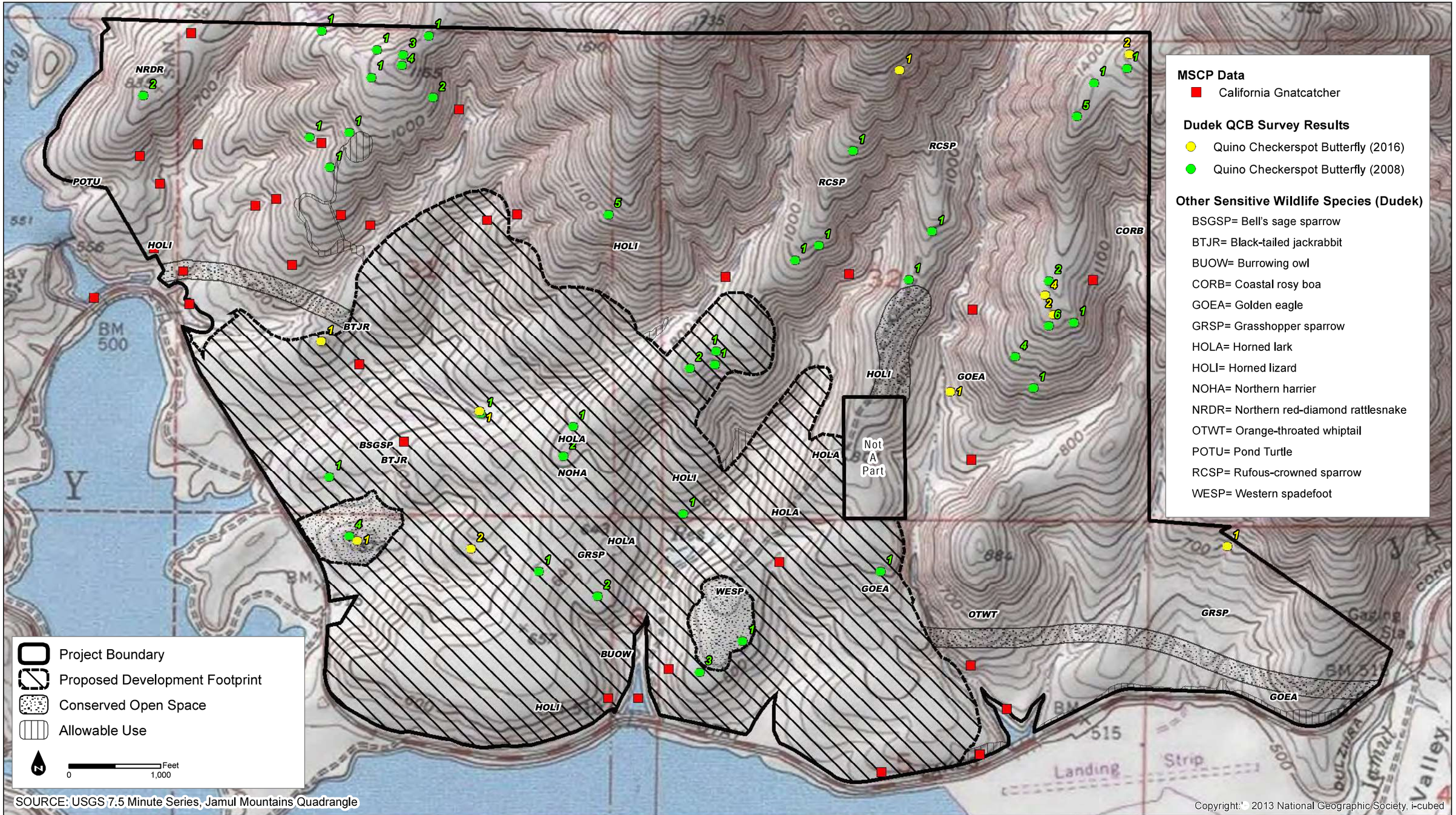
DUDEK

FIGURE 5

Sensitive Plant Species Map with Proposed Development Footprint

Otay Ranch Resort Village - Alternative H Biological Resources Review Project



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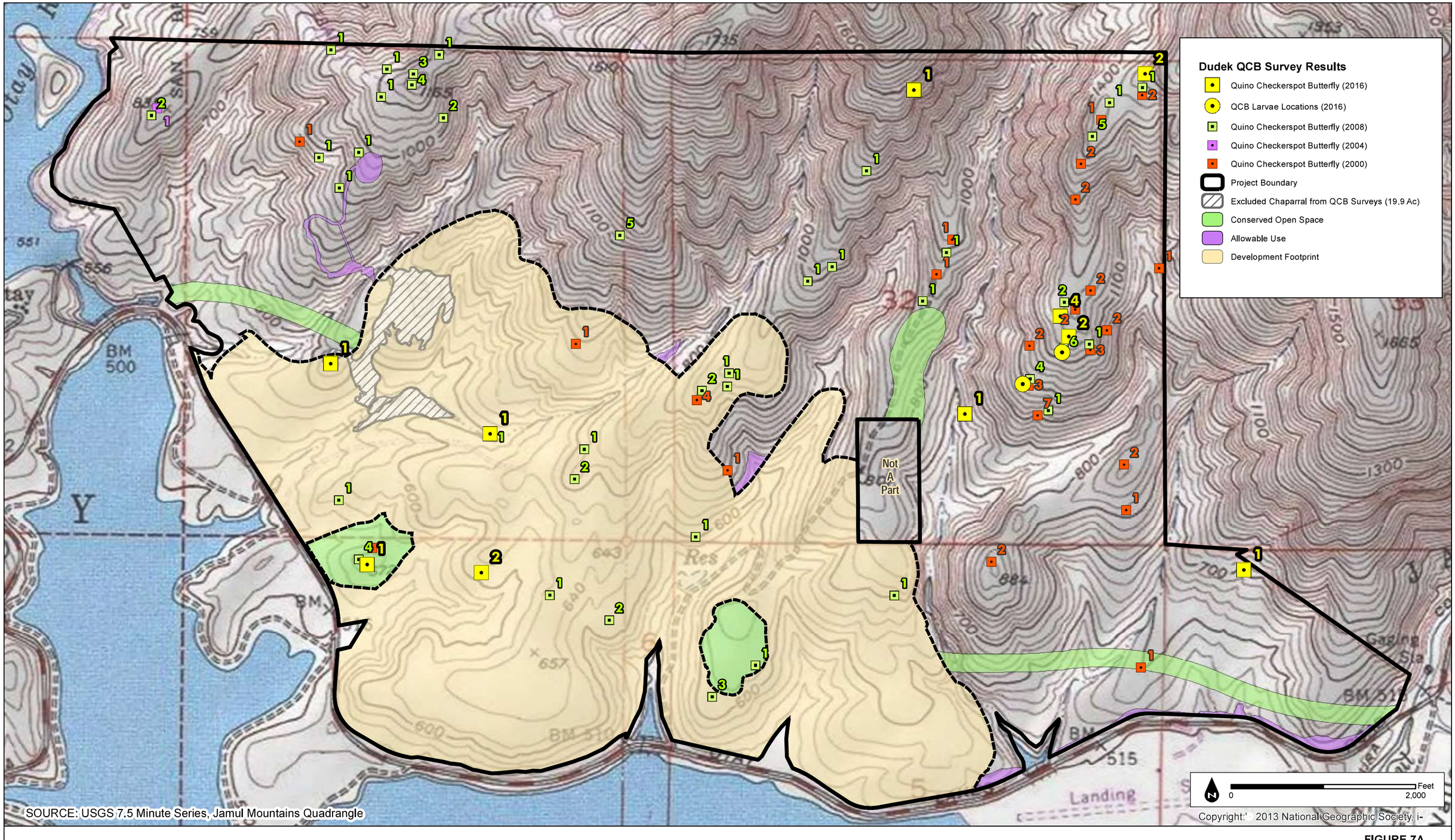
DUDEK

FIGURE 6

Sensitive Wildlife Species Map with Proposed Development Footprint

Otay Ranch Resort Village - Alternative H Biological Resources Review Project



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DUDEK

FIGURE 7A

Quino Checkerspot Butterfly Observations (2000 through 2016)

Otay Ranch Resort Village - Alternative H Biological Resources Review Project

Dudek QCB Survey Results

- Quino Checkerspot Butterfly (2016)
- QCB Larvae Locations (2016)
- Quino Checkerspot Butterfly (2008)
- Project Boundary
- Conserved Open Space
- Allowable Use
- Development Footprint
- Excluded Chaparral from QCB Surveys (19.9 Ac)

QCB Host Plant, Density

Dotseed plantain *(Plantago erecta)*
Exserted Indian paintbrush *(Castilleja exserta)*

- Castilleja exserta, very low
- Castilleja exserta, low
- Castilleja exserta, high
- Plantago erecta, very low
- Plantago erecta, low
- Plantago erecta, medium
- Plantago erecta, high

DENSITY DESCRIPTIONS:

Very Low: 1-10 plants per square meter
Low: 11-100 plants per square meter
Medium: 100-1,000 plants per square meter
High: 1,000-10,000+ plants per square mete

Not A Part

N
0
Feet
2,000

SOURCE: USGS 7.5 Minute Series, Jamul Mountains Quadrangle

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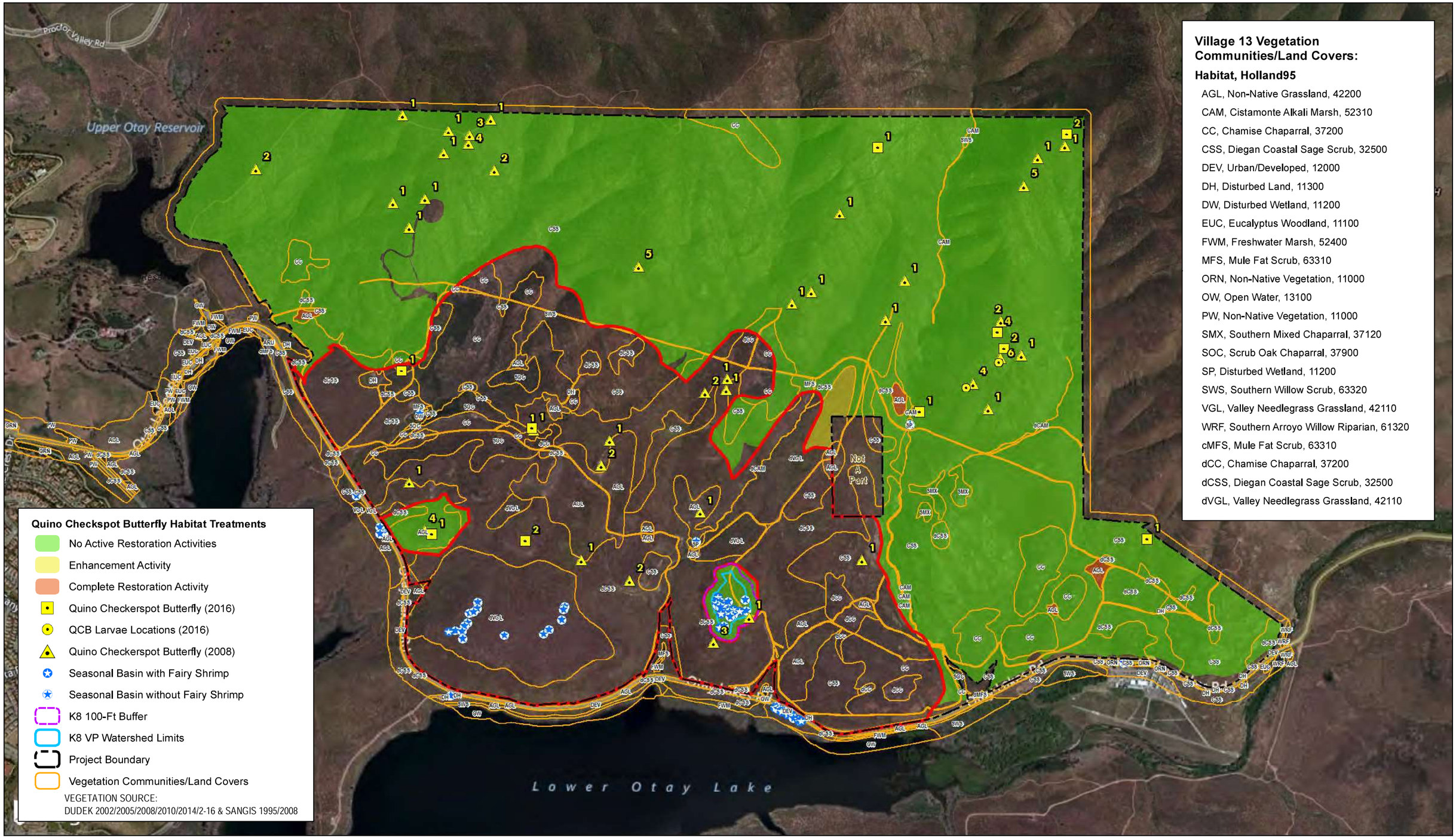
DUDEK

FIGURE 7B

2008 and 2016 Quino Checkerspot Butterfly Observations and Host Plant LocationsMap

Otay Ranch Resort Village - Alternative H Biological Resources Review Project



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DUDEK

0 Feet 2,000

FIGURE 8

Proposed Restoration Treatment Levels for Habitat Management

Otay Ranch Resort Village Project

Quino checkerspot butterfly (USFWS)

- 2017
- 2016
- 1910 - 1963
- 1964 - 1989
- 1990 - 1999
- 2000 - 2009
- 2010 - 2015
- Project Boundary
- Proposed Development Footprint
- Otay Ranch Preserve
- MSCP Preserve (City of San Diego)

Public Lands:

- BLM
- CDFG
- DOD
- USFWS

Existing Wildlife Corridors (Source: OGDEN 1992)

- Regional Corridor for Focal Mammal & Bird Species
- Major Local Corridor for Focal Mammal & Bird Species

N

0 4,000 8,000 Feet

R1 L4 L3 R1 L4 L3 R1 R7 R2 R2 R10 R11 R5 L8 L9 R6

PROCTOR VALLEY PRESERVE

PRESUMPTIVE CORRIDOR

DULZURA CREEK

Upper Otay Reservoir

Lower Otay Reservoir

SAN YSIDRO MOUNTAINS

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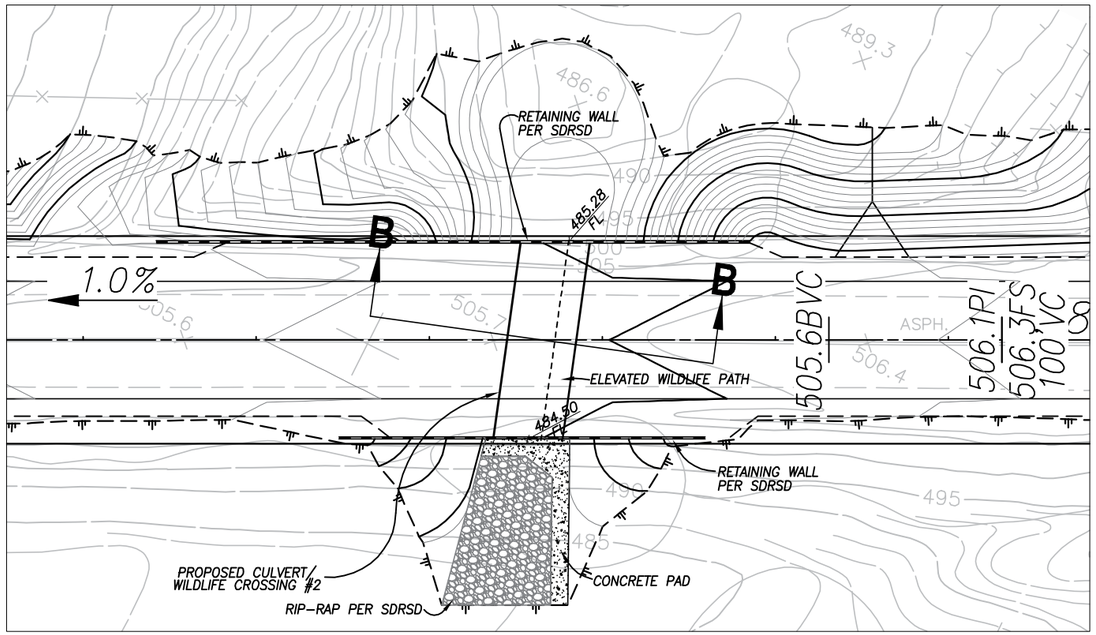
DUDEK

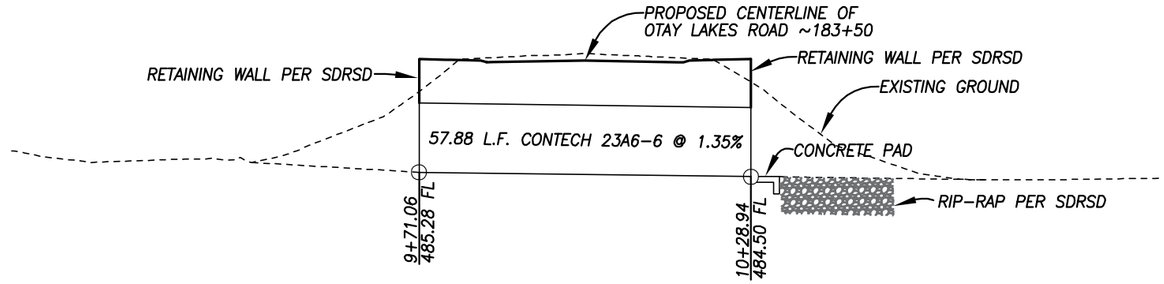
FIGURE 9

Existing Habitat Linkages/Movement Corridors

Otay Ranch Resort Village Project



PLAN VIEW
CULVERT/WILDLIFE CROSSING
ALONG OTAY LAKES ROAD



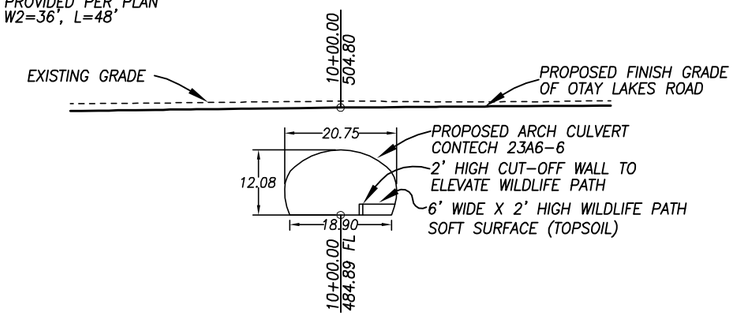
PROFILE VIEW
CULVERT/WILDLIFE CROSSING
ALONG OTAY LAKES ROAD

REFERENCE CONTECH 23A6-6 (PG 91)
AREA=214sq.ft.

PER PLAN
L=58'

OPENESS RATIO
=A/L (m)
=214sq.ft./58'=3.69'
=1.12m

PROPOSED CULVERT UPGRADE #9
Q100=1078.82cfs, A=936.64ac, Dreq=10'X8 RCBC
RIP RAP PROVIDED PER PLAN
W1=24', W2=36', L=48'



SECTION B-B
CULVERT/WILDLIFE CROSSING # 2
ALONG OTAY LAKES ROAD

SOURCE: HUNSAKER & ASSOCIATES, INC.

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DUDEK

FIGURE 10

Wildlife Crossing along Otay Lakes Road

Otay Ranch Resort Village Project

APPENDIX A

2016 Focused Quino Checkerspot

~~*Butterfly*~~*Butterfly*

Survey Report

DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

May 31, 2016 9510/9511

U.S. Fish and Wildlife Service
Attention: Recovery Permit Coordinator
2177 Salk Avenue #250
Carlsbad, California 92008

Subject: ***2016 Focused Quino Checkerspot Butterfly Survey Report for the Proposed Otay Ranch Resort Village (Village 13) Project, County of San Diego, California***

Dear Ms. Love:

This report documents the 2016 results of a focused survey conducted by Dudek for the federally listed endangered Quino checkerspot butterfly (*Euphydryas editha quino*; Quino). This survey was conducted in support of the approximately 1869-acre Otay Ranch Resort Village (Village 13) Project site, located in the City of Chula Vista, California. The survey area included the entire site exclusive of wetland communities and other land covers not suitable for Quino as well as a 19.9 acre area of excluded closed canopy vegetation. The survey included those areas currently proposed for development and areas proposed for an open space preserve.

This report is intended to satisfy reporting requirements for the following Quino-permitted biologists:

- Anita Hayworth TE781084-8
- Paul Lemons TE051248-5
- Erin Bergman TE813545-5
- Tricia Wotipka TE840619-2
- Vipul Joshi TE019949-3
- Travis Cooper TE170389-5
- Alicia Hill TE06145B-0
- Garrett Huffman TE20186A-1
- Antonette Gutierrez TE-50992B-0
- Brian Lohstroh TE-063608-5
- Crysta Dickson TE-067347-5
- Darin Busby TE-115373-3
- David King TE-785148-11
- Erika Eidson TE-051236
- Erik LaCoste TE-027736-5
- Greg Chatman TE-075112-2
- Gretchen Cummings TE-031850-4
- Nicole Kimball TE-053598
- Monica Alfaro TE-051242-2
- Diana Saucedo TE-811615-6.1

Assistance was provided from Patricia Schuyler (TE-27502B-0), Callie Ford (TE-36118B-0), Marshall Paymard, Janice Wondolleck, and Emily Mastrelli as supervised by a permitted biologist. Quino host plant mapping was conducted by Andy Thomson, Danielle Mullen, Janice Wondolleck, Kathleen Dayton, Kyle Matthews, Kevin Shaw, Marshall Paymard, and Erin Bergman. Korey Klutz accompanied Dr. Hayworth during a final survey visit and to confirm and review site conditions.

PROJECT LOCATION AND EXISTING CONDITIONS

The Otay Ranch Resort Village is located in an unincorporated portion of southwestern San Diego County (County), California (Figure 1, Regional Map). The survey area is located approximately thirteen miles east of the Pacific Ocean and six miles north of the international border with Mexico. The approximate centroid of the survey area is at 32°38'06.46" North, 117°55'17.24" West on the U.S. Geological Survey (USGS) 7.5- minute series Jamul Mountains Quadrangle: Township 16 South and 17 South; Range 1 East; Sections 4, 5, 6, 31, 32, 33 (Figure 2, Vicinity Map).

The Otay Ranch Resort Village consists of a broad mesa sloping to the south, broken by several steep canyons draining from north to south, towards Otay Lakes Road. Portions of the relatively flat mesa extend north into the Jamul Mountains, becoming part of steeper slopes. Site elevations range from approximately 500 feet above mean sea level (AMSL) at the southern end of the property to approximately 1,500 feet AMSL in the northeastern portions.

The majority of the survey area is currently vacant, but characteristic of a landscape that has been used historically for grazing. A few dirt roads traverse the sites. Prior to 2001, the southern half of the project area was used for ranching, specifically cattle grazing, and possibly other agriculture uses. Lower Otay Lake (which is owned by the City of San Diego) is located south of the site; open space in the Jamul Mountains is adjacent to the site in the north and east (which is owned by the U.S. Bureau of Land Management (BLM) and private parties).

According to Bowman (1973), soils within the project site are mostly Olivenhain cobbly loam, San Miguel–Exchequer rocky silt loams, Redding cobbly loam, and Friant rocky fine sandy loam.

VEGETATION COMMUNITIES

As shown in Table 1, the survey area is dominated by sage scrub and grasslands. In total, thirteen plant communities and three land cover types are mapped within the Otay Ranch Resort Village consisting of: coastal sage scrub, chamise chaparral, southern mixed chaparral, scrub oak chaparral, disturbed valley needlegrass grassland, non-native grassland, cismontane alkali marsh, freshwater

marsh, open water, mulefat scrub, southern willow scrub, eucalyptus woodland, ornamental, stock pond, disturbed habitat, and developed land (Figure 3, Vegetation Map). Of the total of 1869.01 acres within the site, the survey incorporated all of the 1,845.88-acres of upland communities (Table 1) except for 19.9 acres of dense chamise chaparral. This particular patch of chamise chaparral has become so dense that it forms a closed canopy and is not traversable on foot. To attempt to pass through the patch would result in breaking limbs of the chamise shrubs. Other patches of chamise chaparral within the site were not excluded because the biologist was able to pass through the vegetation without causing damage. Approximately 1,825.98 acres of Quino-suitable habitat were included within the survey as mapped according to Holland (1986) and Oberbauer (2008).

A description of the vegetation communities that were surveyed for Quino is provided below.

Table 1
Vegetation Communities and Land Cover Types on the Village 13 Project Site

Vegetation Community/Land Cover	Acres
Sensitive Upland Communities	
Chamise Chaparral	143.14
Coastal Sage Scrub	1,121.51
Disturbed Chamise Chaparral	15.67
Disturbed Coastal Sage Scrub	348.62
Scrub Oak Chaparral	22.45
Southern Mixed Chaparral	4.95
Disturbed Valley Needlegrass Grassland	110.58
Non-native Grassland	78.96
Subtotal	*1,845.88*
Sensitive Wetland Communities (ACOE, RWQCB, CDFW unless otherwise noted)	
Cismontane Alkali Marsh	6.39
Disturbed Cismontane Alkali Marsh	0.17
Mulefat Scrub, all jurisdictions Mulefat Scrub, CDFW only	0.02 0.06
Open Water	0.17
Southern Willow Scrub	1.19
Subtotal	*8.00*
Non-Sensitive Communities and Land Covers	
Developed Land	0.88
Disturbed Habitat	13.46
Stock Pond	0.79
Subtotal	*15.13*
Grand Total*	**1,869.01***

* Numbers may not sum precisely due to rounding.

Chamise Chaparral/Disturbed Chamise Chaparral

A predominant chaparral type found in Ventura, Los Angeles, San Bernardino, Riverside and San Diego counties, chamise chaparral is a plant community overwhelmingly dominated by chamise (Holland 1986). Typically between 1 and 4 meters in height, stands of chamise are adapted to repeated fires because the species is capable of stump-sprouting following wildfire. Associated species may include manzanita (*Arctostaphylos* spp.), ceanothus (*Ceanothus* spp.), California buckwheat (*Eriogonum fasciculatum*), deerweed (*Lotus scoparius*), scrub oak (*Quercus berberidifolia*), lemonadeberry (*Rhus integrifolia)*, sages (*Salvia* spp.), ashy spike-moss (*Selaginella cinerascens*), and yucca (*Yucca* spp.). However, associated species do not comprise a significant portion of the overall cover, and mature stands contain very little herbaceous understory or litter.

Chamise chaparral occurs in the north-central portion of the site, often on mesic exposures, and in the southeastern portion on relatively flat topography. Covering relatively large areas, these habitat patches consist of nearly monotypic stands of chamise (*Adenostoma fasciculatum*). In habitat edges, usually adjacent to either coastal sage scrub or scrub oak chaparral, components of those habitats will also be present. For example, California buckwheat, scrub oak, and chaparral broom (*Baccharis sarothroides*) occur along with chamise in habitat edge areas. Very little understory is present in this community, with the exception of ashy spike-moss and fringed spineflower (*Chorizanthe fimbriata*) occurring in many of the chamise patches in the eastern areas, and non-native grasses that have filled gaps in a few areas where chamise chaparral occurs as a disturbed community.

One 19.9-acre patch of chamise chaparral, as noted above, was excluded from the survey because of its dense, closed canopy condition.

Coastal Sage Scrub/Disturbed Coastal Sage Scrub

Within the project area, coastal sage scrub occurs in relatively distinct subassociations. Shrub cover in disturbed coastal sage scrub may vary from 5% to 50% and typically consists of California sagebrush (*Artemisia californica)*, California buckwheat, deerweed, rock-rose (*Helianthemum scoparium*), and laurel sumac (*Malosma laurina*). In addition to these native shrub species, a large percentage of the ground cover is taken up by broad-leaved filaree (*Erodium botrys*) and fascicled tarplant (*Deinandra [Hemizonia] fasciculata*). Other non-natives include grasses such as slender wild-oat (*Avena barbata*) and soft chess (*Bromus hordeaceus*), as well as black mustard (*Brassica nigra*) and star-thistle (*Centaurea melitensis*).

Another subassociation occurs in many of the northwestern areas, where coastal sage scrub consists of nearly monotypic stands of Munz's sage (*Salvia munzii*). This subassociation contains a typical shrub cover of 80% to 90%, with Munz's sage comprising approximately 60% to 70% of the overall cover. Other species present include San Diego County viguiera (*Bahiopsis (=Viguiera) laciniata*), California buckwheat, and occasionally laurel sumac and chamise. The typical non-disturbed coastal sage scrub on site, occurring throughout the site but concentrated in the northern portions, consists of 50% to 90% shrub cover with a relative co-dominance of California sagebrush, California buckwheat, and San Diego County viguiera. The density of shrub cover within this sub-type varies with exposure, with denser cover often associated with laurel sumac and white sage (*Salvia apiana*) occurring in more mesic areas and sparser cover often associated with San Diego barrel cactus (*Ferocactus viridescens*) occurring in more xeric conditions. In the eastern portion of the project site shrub cover is relatively low, however, because the percent cover of non-native species is very low it is likely that the low shrub cover is a natural condition due to exposure, slope, and/or soil. There are also small occurrences of coastal sage scrub dominated by broom baccharis (*Baccharis sarothroides*). This form often is the result of historic disturbance or occurs in association with a drainage.

Scrub Oak Chaparral

Regionally, scrub oak chaparral is a dense chaparral up to 20 feet tall, dominated by scrub oak. Occurring on more mesic areas than other chaparrals, associated species may include manzanitas, ceanothus, bedstraw (*Galium angustifolium*), toyon (*Heteromeles arbutifolia*), honeysuckle (*Lonicera* spp.), holly-leaf cherry (*Prunus ilicifolia*), redberry (*Rhamnus* spp.), and western poison oak (*Toxicodendron diversilobum*) (Holland 1986).

Scrub oak chaparral occurs on north-facing slopes in the west-central and eastern portions of the project site. In the west-central areas, the main component of this vegetation community was identified as Nuttall's scrub oak (*Quercus dumosa*). In more steeply sloped areas, shrub density reaches 100% with the predominant species being Nuttall's scrub oak, mission manzanita (*Xylococcus bicolor*), chamise, and lemonadeberry. In more gently sloped areas, which appear to have been disturbed due to exposure to grazing activity, shrub density is approximately 60%, nearly all of which is composed of Nuttall's scrub oak with the other shrubs occurring only occasionally. This area has an understory of mainly non-native grass species (*Avena barbata*, *Bromus* spp.). The single scrub oak chaparral patch in the eastern portion of the site is dominated by scrub oak (*Q. berberidifolia*), mission manzanita, and chamise.

Southern Mixed Chaparral

Southern mixed chaparral is a drought- and fire-adapted community of woody shrubs, 1.5 to 3.0 meters (5 to 10 feet) tall, frequently forming dense, impenetrable stands. It develops primarily on mesic north-facing slopes and in canyons and is characterized by crown- or stump-sprouting species that regenerate following burns or other ecological catastrophes. This association typically is a mixture of chamise, mission manzanita, ceanothus, scrub oak, laurel sumac, and black sage (*Salvia mellifera*).

Southern mixed chaparral occurs as three patches in a single area in the project area on a steep north-facing slope in the eastern half of the site. Vegetation components in this area include mission manzanita, chamise, laurel sumac, lemonadeberry, and white sage.

Valley Needlegrass Grassland

Valley needlegrass grassland is a native grassland dominated by perennial bunchgrasses such as needlegrass (*Stipa* spp.). This plant community typically occurs as a mosaic with coastal sage scrub on heavy or clay soils, often on more mesic exposures and at the bases of slopes, but also may occur in large patches.

In the project area, Valley needlegrass grassland often occurs on more mesic exposures in the southwestern and central portions of the site. Native and non-native species both are present and include the following species: purple needlegrass (*Stipa pulchra*), foothill needlegrass (*N. lepida*), blue-eyed grass (*Sisyrinchium bellum*), shooting star (*Dodecatheon clevelandii*), checker mallow (*Sidalcea sparsifolia*), Johnny jump-up (*Viola pedunculata*), and California melic (*Melica imperfecta*), as well as non-native grasses (e.g., *Avena barbata, Bromus madritensis, Vulpia myuros*, and *B. hordeaceus*) and non-native annual forbs (e.g., *Erodium botrys* and *Logfia gallica*). Native shrubs also are present to varying degrees, from approximately 2% to 10% cover, and mainly include California sagebrush, coastal goldenbush (*Ericameria* sp.), and California buckwheat.

All native grasslands on site appear disturbed, presumably due to past grazing and presence of non-native species. Disturbance is indicated by the abundance of invasive non-native species and lower percentage of native grass cover. Grasslands in which at least 10% of the cover consisted of *Stipa* and other native species were considered Valley needlegrass grasslands; all others were mapped as non-native grasslands. It should be noted that native grassland species including needlegrasses and native annuals are found throughout the site within coastal sage scrub and non-native grassland communities. Densities of native grasses were generally below 10% with

the exception of small patches of high density native grasses usually within disturbed coastal sage scrub. The patches were too small for mapping purposes and comprise the typical mosaic of shrub cover intermixed with grasses.

Non-Native Grassland

Where the native habitat has been disturbed frequently or intensively by grazing, fire, agriculture, or other activities, the native community usually is incapable of recovering. These areas often are characterized by weedy, introduced annuals, primarily grasses, including especially slender wild oat, bromes, mustards, filaree, and Russian-thistle (*Salsola tragus*).

In the project area, non-native grassland occurs in distinct patches where extensive grazing and possibly mechanical disturbance have reduced the cover of native shrub and grass species to below 5%. These areas typically are dominated by soft chess, foxtail chess, fascicled tarplant, and broad-leaved filaree, but also contain star-thistle, black mustard, and shining peppergrass (*Lepidium nitidum*).

QUINO CHECKERSPOT BUTTERFLY SURVEY

Background Information

The Quino was added to the federal Endangered Species List by U.S. Fish and Wildlife Service (USFWS) on January 16, 1997 (USFWS 1997). The species (*E. editha*) has a range extending from British Columbia and Alberta, Canada, south through Colorado and Utah, and west along the coast to northern Baja California. It is divided into 20 subspecies, each of which has its own range and biological and morphological characteristics. In California, there are 12 subspecies (Garth and Tilden 1986). Three other subspecies of *E. editha* are currently known to occur in Southern California. The Quino is the southwestern most subspecies of *E. editha* (Mattoni et al. 1997).

The Quino is known to occur in association with a variety of plant communities, soil types, and elevations (up to 5,000 feet). The plant communities include clay soil meadows, open grasslands, coastal sage scrub, chamise chaparral, red shank chaparral, juniper woodlands, and semi-desert scrub (Ballmer et al. 2001). The Quino is also associated with clay soils that possess cryptogamic crusts and vernal pools (USFWS 2002).

The Quino is a medium-sized butterfly (approximately 0.8-to 1.1-inch wingspan) belonging to the family Nymphalidae. The adults are primarily orange-red with white and have black markings on the dorsal wing surface. They are active primarily in March and April. This active period may vary depending on weather conditions (Ballmer et al. 2001). The adult butterfly feeds

on nectar, which it obtains from spring annuals such as popcorn flower (*Cryptantha* spp.), layia (*Layia glandulosa*), goldenbush (*Ericameria* spp.), pincushion (*Chaenactis* spp.), fiddleneck (*Amsinckia intermedia*), chia (*Salvia columbariae*), and blue dicks (*Dichelostemma capitatum*), among others.

Adult males and virgin females sometimes "hilltop," or travel to elevated locations to find mates. While waiting for females to arrive, the males will often exhibit "territorial behavior" and will chase other butterflies that approach them. Frequently, the butterflies are observed in meadows or clearings where their host plants occur (Ballmer et al. 2001).

A female may lay 20 to 75 eggs at one time and may produce up to 1,200 eggs in her lifetime. The eggs hatch in approximately 10 days under favorable weather conditions and the young larvae will immediately begin to feed upon a host plant. The feeding larvae use the dot-seed plantain (*Plantago erecta*), Patagonia plantain (*Plantago patagonica*), white snapdragon (*Antirrhinum coulterianum*), and Chinese houses (*Collinsia concolor*) as their host plants (Pratt 2009). Dark-tipped bird's-beak (*Cordylanthus rigidus*) and owl's clover (*Castilleja exserta*) are considered secondary hosts (USFWS 2002).

After feeding, the early larva enters an obligatory aestival diapause (dormant stage), which may be broken after fall or winter rains (Murphy and White 1984; Osborne 1998). If adverse weather conditions occur, the emergent larva may reenter a diapause stage repeatedly, for up to 5 or 6 years, until favorable weather conditions permit sufficient growth of the host plant to allow the larva to complete its development.

The Quino was once common in Southern California. It ranged north into Ventura County, west to the Pacific Ocean, east to the deserts, and south into northern Baja California. Currently, it is known to occur only in a few, probably isolated, colonies in southwestern Riverside County, San Diego County, and northern Baja California.

Reasons for the butterfly's reduction in population are not well understood. Habitat loss due to degradation and fragmentation caused by urban and rural development, agricultural conversion, off-road-vehicular use, the invasion of nonnative plants and insects, fire management practices, over collecting, and adverse weather conditions have likely contributed to the species' decline (USFWS 1997).

Methods

Focused Quino Surveys

The surveys were conducted in accordance with the description in the most recent Quino checkerspot butterfly survey guidelines (December 15, 2014) as modified by the 2016 Building Industry Association (BIA) deviation (Appendix A) with the additional deviation of conducting three weeks of surveys (Appendix A). So the methods for the survey included much of the 2014 protocol, as modified by the 2016 BIA deviation, with an added deviation specific for Otay Ranch Resort Site.

According to the December 15, 2014 USFWS protocol, the first weekly survey shall begin during the third week of February and the survey season will end the second Saturday in May. Surveys shall be conducted weekly and spaced no closer than 4 days apart. To avoid starting the survey effort prior to the onset of the flight of the butterfly, Dudek conducted the 2016 surveys in accordance to the protocol outlined in the negotiated *Proposed 2016 Quino Checkerspot Survey Protocol* (BIA 2016) (Appendix A). This proposed protocol was prepared in conjunction with the USFWS. The proposed protocol combines elements of the 2002 and 2014 (early and late) protocols with key modifications to the 2014 FWS Quino survey guidelines (December 15, 2014) including:

- A reference site was surveyed to determine the life stage of Quino and define the flight season.
- Surveys were initiated within one week of observed Quino flight at the reference site(s).
- Host plant were mapped as a separate effort following the methods used in 2014 by Helix Environmental for the Village 14 project with the exception that density was mapped rather than absolute number: host plant species will be mapped in patches of low density (11 - 100 plants), medium density (100 – 1,000 plants), and high density (1,000 –10,000 plants) with the addition of a very low category (1-10 plants) which can be collapsed into the low density category per the BIA protocol if warranted. In addition, the units for mapping will be based on plants per square meter and *Castilleja exserta* will be included. High density patches of host plant were mapped as polygons if they are in areas larger than approximately 250 square feet. If observed, Quino larvae will be recorded and a permitted biologist will be present to document the observation.

Dudek submitted a notification asking for permission to deviate from the 2014 USFWS protocol and the 2016 BIA protocol (Appendix A). Dudek was approved by USFWS to follow the

deviation for the Otay Ranch Resort Site on February 10, 2016. From the 2016 Revised Notification of Survey, Quino surveys at Village 13 were conducted for three weeks following the initial observed Quino flight at the reference site as discussed in the notification.

Focused Quino surveys were conducted over 103 surveys within a 3-week period between February 29, 2016 and March 16, 2016 per the Quino Checkerspot butterfly Survey Guidelines published on January 11, 2016, including an additional survey on March 31, 2016 and April 4, 2016 to confirm Quino was no longer in flight.

Surveys were conducted by Quino-permitted biologists Anita Hayworth (TE781084-8), Paul Lemons (TE051248-5), Erin Bergman (TE813545-5), Tricia Wotipka (TE840619-2), Vipul Joshi (TE019949-3), Travis Cooper (TE170389-5), Alicia Hill (TE06145B-0), Garrett Huffman (TE20186A-1), Antonette Gutierrez (TE-50992B-0), Brian Lohstroh (TE-063608-5), Crysta Dickson (TE-067347-5), Darin Busby (TE-115373-3), David King (TE-785148-11), Erika Eidson (TE-051236), Erik LaCoste (TE-027736-5), Greg Chatman (TE-075112-2), Gretchen Cummings (TE-031850-4), Nicole Kimball (TE-053598), Monica Alfaro (TE-051242-2), and Diana Saucedo (TE-811615-6.1). Dudek biologists Patricia Schuyler (TE-27502B-0), Callie Ford (TE-36118B-0), Marshall Paymard, and Janice Wondolleck, and biological consultants, Emily Mastrelli accompanied Quino-permitted biologists during some visits. County Biologist Korey Klutz accompanied Dr. Hayworth for a final visit to the site.

The site was divided into 32 survey polygons for weeks 1 through 3 (Figure 4, QCB Observations and Survey Areas), each representing a single-day survey effort at a rate no greater than 5 to 10 acres per hour (i.e., in accordance with USFWS 2014 protocol) (see Table 2, 2016 Quino Survey Polygons). One closed canopy chamise chaparral area totaling 19.9 acres within the site was excluded during the 2016 survey in order to avoid damaging habitat during surveys. These survey areas were numbered and assigned to Dudek's permitted biologists and independent investigators. The biologists were provided with 200-scale (1 inch = 200 feet) aerial photographs of each survey polygon. These photographs were used for mapping additional host plant populations and Quino, if observed, although the task of the host plant mapping was separate from the adult surveys. Plant species also were recorded and potential nectar plants were included (Appendix B). Binoculars were used to aid in detecting and identifying butterfly and other wildlife species. GPS units also were available for recording locations.

Table 2
2016 Quino Survey Polygons

Survey Area	Acreage of Survey Area
1	59.7
2	57.6
3	58.8
4	58.1
5	59.7
6	60.0
7	58.1
8	57.9
9	57.8
10	58.7
11	55.6
12	60.2
13	58.6
14	60.0
15	59.5
16	59.2
17	59.8
18	55.8
19	42.0
20	56.1
21	59.4
22	56.6
23	60.3
24	60.1
25	59.7
26	59.8
27	59.8
28	60.4
29	58.8
30	53.6
31	50.5
32	56.9

The survey methods consisted of slowly walking roughly parallel transects spaced approximately 30 feet (10 meters) apart throughout all habitats within the approximately 1,826-acre survey area (excluding the 19.9 closed canopy chamise chaparral area). Survey routes were arranged to thoroughly cover the survey area at a rate of approximately 5-10 acres per person hour.

Surveys were conducted only during acceptable weather conditions (i.e., surveys were not conducted during fog, drizzle, or rain; winds greater than 15 miles per hour measured 4–6 feet above ground level for more than 30 seconds; temperature in the shade at ground level less than 60°F on a clear, sunny day with less than 50% cloud cover; or temperature in the shade at ground level less than 70°F on an overcast or cloudy day with 50% or more cloud cover. Survey times, personnel, and conditions during the Quino survey are shown in Table 3, Schedule of Focused Quino Surveys, and Table 4, Schedule of Host Plant Mapping. Photocopies of the surveyor's field notes are included as Appendix C.

Table 3
Schedule of Focused Quino Surveys

Date	Hours	Personnel	Survey Area	Conditions (temperature, cloud cover, wind speed)
2/29/2016	9:00 AM–4:00 PM	GH	28	Air: 62–83°F; Ground: 60–81°F; 0–20% cc; 0-2 to 2-5 mph winds
2/29/2016	9:29 AM–5:31 PM	EB, MP	19	Air: 62–72°F; Ground: 59–70°F; 0–100% cc; 1 to 2 mph winds
2/29/2016	8:45 AM–3:53 PM	AnH	14	Air: 59–79°F; Ground: 61–85°F; 10–20% cc; 3 to 5 mph winds
2/29/2016	9:30 AM–3:40 PM	DK	17	Air: 70–82°F; Ground: 73–86°F; 0–0% cc; 0-1 to 1-4 mph winds
2/29/2016	9:30 AM–4:30 PM	AG	3	Air: 68–74°F; Ground: 66–78°F; 0–20% cc; 0 to 1-2 mph winds
2/29/2016	9:30 AM–4:30 PM	AG	3	Air: 68–74°F; Ground: 66–76°F; 0–20% cc; 0 to 1-2 mph winds
2/29/2016	8:15 AM–2:15 PM	GCu	16	Air: NR; Ground: 64.5–80.1°F; 10–40% cc; 1.4-2.8 to 3.8-6.3 mph winds
2/29/2016	8:30 AM–3:00 PM	CD	15	Air: NR; Ground: 63.3–75.8°F; 0–0% cc; 0.7 to 1.2 mph winds
2/29/2016	8:30 AM–2:30 PM	EL	18	Air: 67–74°F; Ground: 67–74°F; 0–10% cc; 0.2 to 5.7 mph winds
3/1/2016	8:54 AM–1:15 PM	VJ	1	Air: 70–75°F; Ground: 70–75°F; 0–10% cc; 0 to 1 mph winds
3/1/2016	9:20 AM–3:46 PM	DK	25	Air: 74–78°F; Ground: 76–85°F; 0–0% cc; 0-4 to 1-2 mph winds
3/1/2016	8:15 AM–4:18 PM	BL	31	Air: 67–77°F; Ground: 69–78°F; 0–10% cc; 0-3 to 4-8 mph winds
3/1/2016	9:16 AM–5:02 PM	CF, EB, PS	10, 11	Air: 70–82°F; Ground: 68–80°F; 20–40% cc; 1.2 to 2 mph winds
3/1/2016	8:00 AM–4:30 PM	GH	29	Air: 63–81°F; Ground: 61–83°F; 10–10% cc; 0 to 2 mph winds
3/1/2016	8:20 AM–4:20 PM	TC	23	Air: 67–67°F; Ground: NR; 10–30% cc; 1–3 to 1–3 mph winds
3/1/2016	9:00 AM–4:00 PM	AHi	20	Air: NR; Ground: 65–71°F; 0–10% cc; 0-1 to 1-5 mph winds
3/1/2016	8:15 AM–4:30 PM	AG	4	Air: 72–74°F; Ground: 68–72°F; 10–10% cc; 0 to 1-2 mph winds
3/1/2016	8:54 AM–1:15 PM	TC	23	Air: 67–73°F; Ground: NR; 10–10% cc; 1-3 to 2-5 mph winds
3/2/2016	8:50 AM–11:28 AM	VJ	1	Air: 68–73°F; Ground: 73–73°F; 10–10% cc; 0 to 1 mph winds
3/2/2016	8:30 AM–3:40 PM	BL	30	Air: 61–74°F; Ground: 72–79°F; 10–10% cc; 0-2 to 3-6 mph winds
3/2/2016	9:34 AM–3:50 PM	DK	27	Air: 68–77°F; Ground: 73–80°F; 10–20% cc; 0-2 to 0-3 mph winds
3/2/2016	8:30 AM–4:39 PM	CF, EB, PS	12, 13	Air: 64–85°F; Ground: 62–83°F; 20–40% cc; 0 to 3 mph winds
3/2/2016	8:40 AM–3:39 PM	AHa	21	Air: 62–78°F; Ground: 63–74°F; 10–20% cc; 3 to 5-7 mph winds
3/2/2016	9:00 AM–4:30 PM	AG	5	Air: 68–72°F; Ground: 64–78°F; 30–40% cc; 0-1 to 1-3 mph winds

Table 3
Schedule of Focused Quino Surveys

Date	Hours	Personnel	Survey Area	Conditions (temperature, cloud cover, wind speed)
3/2/2016	8:50 PM–2:45 PM	PL	2	Air: PL; Ground: 75–87°F; 30–40% cc; 1-3 to 2-5 mph winds
3/3/2016	9:00 AM–4:00 PM	AG	6	Air: 68–78°F; Ground: 64–80°F; 30–100% cc; 0-1 to 1-3 mph winds
3/3/2016	8:25 AM–2:30 PM	PL	26	Air: NR; Ground: 65–75°F; 20–100% cc; 0-1 to 3-6 mph winds
3/3/2016	8:40 AM–12:30 PM	AHi	22	Air: NR; Ground: 67–81°F; 0–100% cc; ; 0-1 to 2-4 mph winds
3/4/2016	9:50 AM–3:53 PM	DK	24	Air: 68–69°F; Ground: 70–77°F; 10–20% cc; 0-4 to 3-8 mph winds
3/4/2016	8:30 AM–4:26 PM	CF, EB, MP	8, 9	Air: 64–75°F; Ground: 61–74°F; 10–50% cc; 1 to 3.3 mph winds
3/4/2016	8:30 AM–4:00 PM	AG	7	Air: 68–74°F; Ground: 71–76°F; 40–50% cc; 0-1 to 1-2 mph winds
3/5/2016	9:30 AM–4:30 PM	AG	19	Air: 70–76°F; Ground: 72–79°F; 70–100% cc; 3 to 5 mph winds
3/5/2016	8:30 AM–4:30 PM	TC	32	Air: 67–73°F; Ground: NR; 30–90% cc; 1-3 to 2-4 mph winds
3/8/2016	9:30 AM–3:45 PM	BL	30	Air: 63–70°F; Ground: 65–72°F; 0–0% cc; 0-3 to 3-6 mph winds
3/8/2016	9:00 AM–4:30 PM	AG	2	Air: 66–70°F; Ground: 68–72°F; 0–0% cc; 1-2 to 3-4 mph winds
3/8/2016	9:23 AM–5:06 PM	EB, MP	1	Air: 58.9–83.3°F; Ground: 56.7–79.2°F; 0–40% cc; 1.1 to 3.1 mph winds
3/8/2016	9:25 AM–4:00 PM	EE	5	Air: 67°F; Ground: 62–70°F; 0–0% cc; 0-3 to 3-7 mph winds
3/8/2016	9:55 AM–4:57 PM	DK	3	Air: 55–74°F; Ground: 55–78°F; 0–0% cc; 0-3 to 5 mph winds
3/8/2016	9:00 AM–4:30 PM	GH	20	Air: 62–63°F; Ground: 61–64°F; 0–0% cc; 0-3 to 3-6 mph winds
3/8/2016	9:45 AM–11:50 AM	DB, EL, MA	17	Air: 63–71°F; Ground: 61–71°F; 0–0% cc; 4 to 7 mph winds
3/8/2016	9:32 AM–4:05 AM	AHa	24	Air: 65–70°F; Ground: 61–66°F; 0–0% cc; 4 to 4-6 mph winds
3/8/2016	9:35 AM–4:20 PM	AHi	6	Air: NR; Ground: 61–70°F; 0–0% cc; 0 to 1 mph winds
3/8/2016	9:30 AM–4:24 PM	TC	4	Air: 61–65°F; Ground: NR; 0–0% cc; 1-2 to 3-6 mph winds
3/8/2016	11:50 AM–1:50 PM	DB, EL, MA	18	Air: 69–71°F; Ground: 71–72°F; 0–0% cc; 4 to 7 mph winds
3/8/2016	10:50 AM–3:20 PM	DS, DB, EL, MA	22	Air: 64–72°F; Ground: NR; 0–0% cc; 0-3 to 4-7 mph winds
3/9/2016	9:00 AM–4:21 PM	CF	10, 11	Air: 61.5–72.3°F; Ground: 60–70.1°F; 0–10% cc; 1.5 to 2.1 mph winds
3/9/2016	8:45 AM–3:45 PM	BL	31	Air: 64–77°F; Ground: 66–87°F; 0–10% cc; 2-7 to 4-7 mph winds
3/9/2016	9:04 AM–4:21 PM	EB	10, 11	Air: 58.3–82.3°F; Ground: 56.1–80°F; 0–10% cc; 1.1 to 2.8 mph winds
3/9/2016	9:00 AM–4:00 PM	AG	7	Air: 68–76°F; Ground: 70–80°F; 0–30% cc; 1-2 to 2-3 mph winds
3/9/2016	9:59 AM–4:08 PM	DK	28	Air: 65–72°F; Ground: 71–75°F; 0–20% cc; 0-3 to 1-3 mph winds
3/9/2016	8:30 AM–4:00 PM	GH	29	Air: 64–74°F; Ground: 62–76°F; 0–0% cc; 0-2 to 3-6 mph winds
3/9/2016	8:48 AM–3:45 PM	EE, EM	15	Air: 76°F; Ground: 60–75°F; 0–0% cc; 0-3 to 1-5 mph winds
3/9/2016	8:45 AM–3:15 PM	EE	15	Air: NR; Ground: 67–78°F; 0–0% cc; 0-4 to 1-4 mph winds

Table 3
Schedule of Focused Quino Surveys

Date	Hours	Personnel	Survey Area	Conditions (temperature, cloud cover, wind speed)
3/10/2016	9:47 AM–2:41 PM	CF, EB, JW	12, 14	Air: 66–72°F; Ground: NR; 10–10% cc; 0-1 to 1-2 mph winds
3/10/2016	9:00 AM–3:45 PM	AG	8	Air: 68–70°F; Ground: 64–71°F; 40–80% cc; 0 to 1-2 mph winds
3/10/2016	10:05 AM–3:56 PM	DK	32	Air: 68–74°F; Ground: 72–78°F; 0–50% cc; 0 to 2 mph winds
3/10/2016	8:49 AM–3:20 PM	AHa	27	Air: 63–69°F; Ground: 64–75°F; 40–90% cc; 2 to 4-8 mph winds
3/10/2016	1:25 PM–5:15 PM	AHi	21	Air: NR; Ground: 81–86°F; 10–70% cc; 1-3 to 4-8 mph winds
3/10/2016	8:00 AM–1:20 PM	AHi	23	Air: NR; Ground: 60–86°F; 10–20% cc; 0-1 to 4-8 mph winds
3/10/2016	8:47 AM–4:53 PM	CF, EB, JW	12, 14	Air: 66–86°F; Ground: 64–83°F; 0–50% cc; 0.1 to 3.8 mph winds
3/10/2016	8:45 AM–3:43 PM	EE	16	Air: 73°F; Ground: 68–80°F; 10–90% cc; 0-3 to 1-4 mph winds
3/10/2016	8:40 AM–2:40 PM	PL	25	Air: NR; Ground: 64–80°F; 10–40% cc; 0-2 to 3-6 mph winds
3/11/2016	8:35 PM–10:45 AM	AHi	21	Air: NR; Ground: 70–70°F; 90–90% cc; 1-3 to 2-4 mph winds
3/11/2016	8:30 AM–10:45 AM	TC	21	Air: 70–71°F; Ground: NR; 80–90% cc; 1-3 to 2-4 mph winds
3/12/2016	9:30 AM–12:30 PM	TC	13	Air: 63–74°F; Ground: NR; 40–80% cc; 2-4 to 2-5 mph winds
3/13/2016	10:00 AM–4:15 PM	AG	9	Air: 65–72°F; Ground: 68–74°F; 30–40% cc; 1 to 1-2 mph winds
3/13/2016	10:00 AM–1:30 PM	AHi	13	Air: NR; Ground: 63–74°F; 10–30% cc; 1 to 4 mph winds
3/13/2016	9:30 AM–1:30 PM	TC	13	Air: 65–74°F; Ground: NR; 10–20% cc; 1 to 4 mph winds
3/14/2016	9:17 AM–9:30 AM	EB	1, 2	Air: 65.9–67.8°F; Ground: 62.1–68.5°F; 10–100% cc; 2.1 to 2.3 mph winds
3/15/2016	9:30 AM–4:01 PM	BL	31	Air: 61–77°F; Ground: 66–81°F; 0–0% cc; 0-2 to 2-6 mph winds
3/15/2016	8:30 AM–4:15 PM	EB, MP, PS	1, 2	Air: 61–86.8°F; Ground: 63–63°F; 0–10% cc; 1.6 to 2 mph winds
3/15/2016	9:20 AM–3:30 PM	TC	23	Air: 60–79°F; Ground: NR; 0–0% cc; 1-2 to 2-5 mph winds
3/15/2016	9:30 AM–5:00 PM	AG	7	Air: 64–76°F; Ground: 62–80°F; 0–0% cc; 1 to 0-1 mph winds
3/15/2016	10:11 AM–4:02 PM	DK	20	Air: 63–74°F; Ground: 72–77°F; 0–0% cc; 0-3 to 1-2 mph winds
3/15/2016	9:00 AM–2:05 PM	AHi	27	Air: NR; Ground: 63–78°F; 0–0% cc; 1-2 to 1-3 mph winds
3/15/2016	8:40 AM–2:40 PM	PL	26	Air: NR; Ground: 68–80°F; 0–0% cc; 0 to 1-3 mph winds
3/16/2016	9:05 AM–3:30 PM	BL	30	Air: 63–89°F; Ground: 69–98°F; 0–0% cc; 1-3 to 2-5 mph winds
3/16/2016	10:07 AM–3:58 PM	DK	32	Air: 73–84°F; Ground: 74–84°F; 0–0% cc; 0-2 to 1-2 mph winds
3/16/2016	10:00 AM–4:30 PM	AG	8	Air: 78–81°F; Ground: 81–84°F; 0–0% cc; 1 to 3 mph winds
3/16/2016	8:21 AM–4:53 AM	EB	3, 4	Air: 60.4–82.4°F; Ground: 61.2–84.2°F; 0–0% cc; 1.1 to 1.7 mph winds
3/16/2016	8:30 AM–4:30 PM	GH	6	Air: 66–76°F; Ground: 63–80°F; 0–0% cc; 0-3 to 3-7 mph winds
3/16/2016	8:35 AM–3:30 PM	EE	24	Air: 65–80°F; Ground: 66–87°F; 0–0% cc; 0-2 to 1-5 mph winds
3/17/2016	9:00 AM–3:00 PM	VJ	5	Air: 72–74°F; Ground: –°F; 0–0% cc; 0-1 to 1-3 mph winds
3/17/2016	8:10 AM–2:10 PM	EL	16	Air: 60–83°F; Ground: 60–87°F; 0–0% cc; 0-1 to 8-12 mph winds
3/17/2016	9:30 AM–5:00 PM	AG	10	Air: 72–76°F; Ground: 70–84°F; 0–0% cc; 1 to 5 mph winds
3/17/2016	10:26 AM–4:45 PM	DK	25	Air: 72–75°F; Ground: 74–79°F; 0–0% cc; 0-3 to 1-4 mph winds

Table 3
Schedule of Focused Quino Surveys

Date	Hours	Personnel	Survey Area	Conditions (temperature, cloud cover, wind speed)
3/17/2016	8:30 AM–4:45 PM	GH	29	Air: 62–70°F; Ground: 60–73°F; 0–0% cc; 0-3 to 2-6 mph winds
3/17/2016	8:16 AM–4:05 PM	AHa, MP, PS	12, 13	Air: 62–77°F; Ground: 63–78°F; 0–0% cc; 0 to 7 mph winds
3/17/2016	8:21 AM–4:29 PM	AHa, MP, PS	12, 13	Air: 62–70°F; Ground: 63–70°F; 0–0% cc; 0 to 7 mph winds
3/17/2016	9:30 AM–3:30 PM	GCh	14	Air: NR; Ground: 67–81°F; 0–0% cc; 1-2 to 2-4 mph winds
3/17/2016	9:15 AM–1:15 PM	TW	21	Air: 64–81°F; Ground: 70–92°F; 0–0% cc; 1-2 to 3-6 mph winds
3/17/2016	9:00 AM–4:15 PM	DS	18	Air: 72–78°F; Ground: NR; 0–0% cc; 0-1 to 3-5 mph winds
3/18/2016	10:36 AM–4:41 PM	DK	28	Air: 70–71°F; Ground: 72–77°F; 0–0% cc; 0-3 to 2-5 mph winds
3/18/2016	9:00 AM–3:30 PM	AG	11	Air: 68–78°F; Ground: 68–84°F; 0–30% cc; 0-1 to 5 mph winds
3/18/2016	9:10 AM–1:28 PM	AHa	19	Air: 60–81°F; Ground: 62–83°F; 0–0% cc; 1 to 3-8 mph winds
3/18/2016	1:48 PM–4:16 PM	AHa	21	Air: 78–80°F; Ground: 81–83°F; 0–0% cc; 4-8 to 4-9 mph winds
3/18/2016	9:30 AM–4:00 PM	GCh	15	Air: NR; Ground: 63–79°F; 0–20% cc; 1-2 to 4-6 mph winds
3/18/2016	9:08 AM–4:15 PM	EE	17	Air: 78°F; Ground: 70–85°F; 0–50% cc; 0-2 to 1-4 mph winds
3/19/2016	9:30 AM–3:30 PM	AG	9	Air: 74°F; Ground: 70–76°F; 0–20% cc; 0 to 1 mph winds
3/19/2016	9:42 AM–4:45 PM	NK	22	Air: 68–74°F; Ground: 65–78°F; 0–50% cc; 1 to 2 mph winds
3/19/2016	9:20 AM–3:30 PM	PL	26	Air: NR; Ground: 72–83°F; 0–20% cc; 1-3 to 3-5 mph winds
3/31/2016	12:50 PM–4:18 PM	AHa	14	Air: 64–74°F; Ground: 65–76°F; 0–0% cc; 3 to 6-10 mph winds
3/31/2016	4:36 PM–7:37 PM	AHa	26	Air: 72–74°F; Ground: 75–78°F; 0–0% cc4-6 to 5-8 mph winds
4/4/2016	8:45 PM–10:46 AM	AHa, KK	14	Air: 63–72°F; Ground: 65–75°F; 0–0% cc; 3 to 5 mph winds
4/4/2016	11:00 AM–1:50 PM	AHa, KK	26	Air: 75–80°F; Ground: 79–85°F; 0–0% cc; 5 to 6 mph winds

* NR = Not Recorded

AG = Antonette Gutierrez; AHa = Anita Hayworth; AHi = Alicia Hill; BL = Brian Lohstroh; CD = Crysta Dickson; CF = Callie Ford; DB = Darin Busby; DK = David King; DS = Diana Saucedo; EB = Erin Bergman; EE = Erika Eidson; EL = Erik LaCoste; EM = Emily Mastrelli; GCh = Greg Chatman; GCu = Gretchen Cummings; GH = Garrett Huffman; JW = Janice Wondolleck; KK = Korey Klutz; MA = Monica Alfaro; MP = Marshall Paymard; NK = Nicole Kimball; PL = Paul Lemons; PS = Patricia Schuyler; TC = Travis Cooper; TW = Tricia Wotipka; VJ = Vipul Joshi.

Host Plant Mapping

Quino host plant mapping surveys were conducted in 23 survey areas, shown in Table 4, 2016 Quino Host Plant Survey Polygons. Quino host plant mapping surveys were conducted over 33 surveys within a 4-week period between February 22, 2016 and March 18, 2016 in accordance with the schedule provided in Table 5, Schedule of Host Plant Mapping. Botanical surveys were conducted by biologists Andy Thomson, Anita Hayworth, Kathleen Dayton, Danielle Mullen, Kevin Shaw, Janice Wondolleck, Jake Marcon, Marshall Paymard, Erin Bergman, and Kyle Matthews. All surveys were conducted on foot. Approximately 24 person-days were spent conducting host plant mapping within the study area.

Biologists were able to observe reference populations of dotseed plantain, which was one of the two host plants previously observed on site (Dudek 2008), to develop a search-image before conducting surveys of the site. Host plant mapping surveys focused on the identification and location of all six recognized host plants for Quino: dotseed plantain, woolly plantain (*Plantago patagonica*), Coulter's snapdragon (*Antirrhinum coulterianum*), stiffbranch bird's beak (*Cordylanthus rigidus*), exserta indian brush (*Castilleja exserta*), and Chinese houses (*Collinsia heterophylla*) (USFWS 2014; BIA 2016).

Table 4
2016 Quino Host Plant Survey Polygons

Survey Area	Acreage of Survey Area
1	85.7
2	82.7
3	81.6
4	68.4
5	80.8
6	85.0
7	95.8
8	89.0
9	81.6
10	83.7
11	84.7
12	81.4
13	88.3
14	70.3
15	57.8
16	90.6
17	93.6
18	88.0
19	85.7
20	86.3
21	75.3
22	71.7
23	81.5

Table 5
Schedule of Host Plant Mapping Surveys

Date	Hours	Personnel	Survey Area	Conditions (temperature, cloud cover, wind speed)
2/22/2016	12:34 PM–2:27 PM	AHa, KS	12, 14	Air: 77–81 °F; 0–0% cc; 3 to 5 mph winds
2/22/2016	8:29 AM–4:55 PM	AT	19	Air: 61–77 °F; 10–10% cc; 4 to 8 mph winds
2/23/2016	9:45 AM–2:44 PM	JW	21	Air: 73–75 °F; 10–10% cc; 2–4 mph winds
2/23/2016	8:46 AM–2:44 PM	DM	14	Air: 63–72 °F; 40–40% cc; 4 to 8 mph winds
2/23/2016	3:01 PM–3:54 PM	DM	19	Air: 72–73 °F; 20–20% cc; 3 to 4 mph winds
2/23/2016	8:00 AM–4:55 PM	EB	9	Air: 77–77 °F; 20–40% cc; 2 to 2 mph winds
2/23/2016	8:04 PM–4:28 PM	DM	15	Air: 55–75 °F; 10–10% cc; 2 to 6–8 mph winds
2/24/2016	8:12 PM–4:26 PM	EB	8	Air: 68–68 °F; 20–20% cc; 2 mph winds
2/24/2016	1:30 PM–3:10 PM	MP	5	Air: 80–80 °F; 0–0% cc; 2 mph winds
2/24/2016	10:05 AM–11:15 AM	MP	9	Air: 73–79 °F; 0–0% cc; 3 mph winds
2/24/2016	8:50 AM–4:31 PM	KS	20	Air: 65–70 °F; 0–0% cc; 3 to 10 mph winds
2/25/2016	8:17 AM–11:38 AM	JW	22	Air: 63–81 °F; 0–0% cc; 0–2 to 0–2 mph winds
2/25/2016	8:00 AM–2:45 PM	JM	13	Air: 0–0 °F; 0–0% cc; 1–4 mph winds
2/25/2016	8:00 AM–2:35 PM	DM	15	Air: 61–84 °F; 0–0% cc; 1 to 6 mph winds
2/26/2016	8:15 AM–2:21 PM	JM	6	Air: 57–80 °F; 0–30% cc; 0 to 1–4 mph winds
2/26/2016	7:38 AM–3:10 PM	KM	23	Air: 55–75 °F; 0–40% cc; 0 to 2 mph winds
2/26/2016	8:24 AM–3:43 PM	EB	7	Air: 72–76 °F; 10–30% cc; 2 to 3 mph winds
2/26/2016	7:24 AM–2:59 PM	DM	10	Air: 54–85 °F; 0–0% cc; 3 to 5 mph winds
2/26/2016	9:27 AM–4:00 PM	MP	5	Air: 72–77 °F; 0–30% cc; 3 to 2 mph winds
2/29/2016	8:26 AM–1:38 PM	JW	16, 17	Air: 55–70 °F; 0–10% cc; 0–1 to 1–2 mph winds
2/29/2016	2:03 PM–2:55 PM	JW	18	Air: 70–70 °F; 0–10% cc; 0–1 to 0–1 mph winds
2/29/2016	8:40 AM–2:59 PM	DM	16	Air: 59–75 °F; 20–40% cc; 1 to 3 mph winds
2/29/2016	8:23 AM–3:14 PM	AT	20	Air: 56–75 °F; 10–10% cc; 0–2 to 6–8 mph winds
2/29/2016	8:32 AM–3:48 PM	JM	18	Air: 57–79 °F; 0–0% cc; 0–1 to 0–2 mph winds
2/29/2016	1:37 PM–3:05 PM	MP	5	Air: 77–81 °F; 0–0% cc; 3 to 2 mph winds
3/1/2016	8:11 AM–2:14 PM	JW	3, 11	Air: 55–72 °F; 10–10% cc; 0–1 to 0–2 mph winds
3/1/2016	7:25 AM–1:16 PM	KM	4	Air: 54–74 °F; 10–20% cc; 1 to 0–1 mph winds
3/1/2016	8:02 AM–2:18 PM	DM	11	Air: 59–77 °F; 0–40% cc; 2 to 3 mph winds
3/1/2016	7:48 AM–2:25 PM	KD	11	Air: 57–72 °F; 0–0% cc; 0 to 2 mph winds
3/4/2016	7:34 AM–2:03 PM	DM	1	Air: 55–70 °F; 30–100% cc; 1 to 6 mph winds
3/4/2016	8:00 AM–1:31 PM	JM	2	Air: 54–75 °F; 20-90% cc; 0 to 0-3 mph winds
3/16/2016	8:13 AM–2:07 PM	JW	5, 13, 14, 15, 18, 19, 20, 21	Air: 54–75 °F; 0–0% cc; 0–1 to 0–2 mph winds
3/16/2016	8:13 AM–2:08 PM	DM	5, 9, 10, 18	Air: 55–78 °F; 0–0% cc; 1 to 7 mph winds
3/18/2016	8:00 AM–10:54 AM	KD	16, 17, 23	Air: 57–66 °F; 0–100% cc; 1 to 2 mph winds
3/18/2016	8:04 AM–10:53 AM	DM	11, 12	Air: 52–68 °F; 0–100% cc; 3 to 3 mph winds

AHa = Anita Hayworth; AT = Andy Thomson; DM = Danielle Mullen; EB = Erin Bergman; JM = Jake Marcon; JW = Janice Wondolleck; KD = Kathleen Dayton; KM = Kyle Matthews; KS = Kevin Shaw; MP = Marshall Paymard.

Dudek biologists recorded locations of Quino host plants using a mobile application. Data collected included the surveyor(s), date, species of host plant, and density of the host plant at the point at which the host plant was found. All host plant occurrences were mapped as points. Density was assessed per square meter and was collected using the following classes:

- Very Low: 1-10 plants per square meter
- Low: 11–100 plants per square meter
- Medium: 100–1,000 plants per square meter
- High: 1,000–10,000+ plants per square meter

Points were collected within patches of host plant at least as close as every 3 meters (10 feet). At the conclusion of surveys, a Dudek Geographic Information Systems (GIS) analyst created a GIS coverage for host plants. After review by a biologist, a geodatabase was created to ensure these data are topologically correct and met final quality control and assurance procedures.

RESULTS

Focused Quino Surveys

Quino adults and larvae were observed during the 2016 survey (Figure 4). Although not required after the initial confirmation of presence on site, the observations were submitted to the FWS within 24 hours of observation for all observations including the brief letter documenting the observer, USGS map name, and a map showing the location.

Quino larvae were observed on January 27th, 2016 during anecdotal surveys for the larvae and in conjunction with a check on host plant condition at the location. A total of five larvae were initially detected by Kevin Shaw and Danielle Mullen while verifying condition of the host plant and identification was confirmed by Anita Hayworth, PhD (TE-781084). The larvae were observed at two locations within a single area, as seen on Figure 4.

A total of 18 adult Quino were observed during the survey visits (Figure 4). Most of the adults, a total of 16, were observed during the first week of the survey; two were observed during the third week as worn adults. While there is some potential that a couple of the observed butterflies were duplicates, in general, it seems like most were unique individuals. During the first week of the survey, adults were observed by Erin Bergman (TE813545-5), Callie Ford (TE-36118B-0), and Patricia Schuyler (TE-27502B-0) in polygons 10, 12, and 13, Erin Bergman (TE813545-5) and Marshall Paymard (a supervised individual) in polygon 12, Anita Hayworth (TE781084-8) in polygon

14, Crysta Dickson (TE-067347-5) in polygon 15, Paul Lemons (TE051248-5) in polygon 26, David King (TE-785148-11) in polygon 27, Garrett Hoffman (TE20186A-1) in polygon 29, and Brian Lohstroh (TE-063608-5) in polygon 31. Most of the butterflies were observed on the ridgeline/plateau in the northeastern corner of the site. During the third week of the survey, the two adults were observed by Anita Hayworth (TE781084-8) and Patricia Schuyler (TE-27502B-0) in polygon 13, and David King (TE-785148-11) in polygon 26.

Forty-seven butterfly species were observed during the surveys. The weeks in which these butterflies were observed are shown in Tables 6, Butterflies Observed on Site.

Table 6
Butterflies Observed on Site

Scientific Name	Common Name	Week		
		1	*2*	*3*
Hesperiidae – Skippers				
Copaeodes aurantiacus	Orange skipperling	X	—	—
Erynnis brizo	Sleepy duskywing	—	—	X
Erynnis funeralis	Funeral duskywing	X	X	X
Erynnis propertius	Propertius duskywing	X	X	X
Erynnis tristis	Mournful duskywing	—	X	X
Heliopetes ericetorum	Northern white-skipper	X	X	X
Hylephila phyleus	Fiery skipper	—	X	X
Lerodea eufala	Eufala skipper	X	—	—
Pyrgus albescens	Checkered skipper	X	X	X
Nymphalidae – Brush-Footed Butterflies				
Chlosyne californica	California patch	X	X	X
Chlosyne gabbii	Gabb's checkerspot	X	X	X
Chlosyne lacinia	Bordered patch	—	—	X
Coenonympha tullia california	Common California ringlet	X	X	X
Danaus gilippus	Queen	X	—	X
Danaus plexippus	Monarch	X	X	X
Euphydryas editha quino	Quino checkerspot	X	—	X
Junonia coenia	Common buckeye	X	X	X
Phyciodes mylitta	Mylitta crescent	X	—	—
Vanessa annabella	West coast lady	X	X	X
Vanessa atalanta	Red admiral	X	X	X
Vanessa cardui	Painted lady	X	X	X

Table 6
Butterflies Observed on Site

Scientific Name	Common Name	Week		
		1	*2*	*3*
Vanessa virginiensis	Virginia lady	X	X	X
Lycaenidae – Blues and Hairstreaks				
Brephidium exile	Western pygmy blue	X	X	X
Callophrys augustinus	Brown elfin	X	X	—
Callophrys dumetorum	Bramble hairstreak	X	X	X
Celistrina ladon [argiolus] echo	Echo blue	—	X	—
Everes amyntula	Western tailed-blue	X	—	—
Glaucopsyche lygdamus australis	Southern blue	X	X	X
Hemiargus ceraunus gyas	Edward's blue	X	—	—
Leptotes marina	Marine blue	X	X	X
Plebejus acmon	Acmon blue	X	X	X
Strymon melinus	Gray hairstreak	X	X	X
Papilionidae – Swallowtails				
Papilio eurymedon	Pale swallowtail	X	X	X
Papilio rutulus	Western tiger swallowtail	X	X	X
Papilio zelicaon	Anise swallowtail	X	X	X
Peiridae – Whites and Sulfurs				
Anthocharis cethura	Desert orangetip	X	X	X
Anthocharis sara sara	Pacific sara orangetip	X	X	X
Colias eurydice	California dogface	—	X	—
Colias eurytheme	Orange sulphur	X	X	X
Colias harfordii	Harford's sulphur	X	X	X
Nathalis iole	Dainty sulphur	X	—	X
Phoebis sennae	Cloudless sulphur	—	—	X
Pieris rapae rapae	Cabbage white	X	—	X
Pontia protodice	Common white	X	X	X
Pontia sisymbrii	Spring white	X	X	X
Riodinidae – Metalmarks				
Apodemia virgulti	Behr's metalmark	X	X	X
Apodemia mormo	Mormon's Metalmark	—	—	X

Host Plant Mapping

Two quino larval host plants, dotseed plantain and exserted indian paintbrush, were observed within the study area during focused host plant mapping surveys (Figures 5, Quino Checkerspot Butterfly Observations and Host Plant Locations Map). Dotseed plantain is the dominant host plant observed and is commonly found in open patches and ridgetops. Exserted indian paintbrush is densely populated on the western edge of the site, as well as observed on the eastern ridgetops.

Appendix B, Potential Quino Nectar Sources and Fauna Compendium, includes the potential nectar species of the observed plants on site.

Dudek certifies that the information in this survey report and attached exhibits fully and accurately represents the work conducted by the Quino-permitted biologists. The undersigned certify that the information in this survey report and attached exhibits fully and accurately represents the work of each individual permittee. Please feel free to contact me or Anita Hayworth, PhD at ahayworth@dudek.com if you have any questions regarding the contents of this report.

Sincerely,

Paul M. Lemons
Permit #TE051248-4

Anita Hayworth
Permit #TE781084-8

Erin Bergman
Permit #TE813545-5

Tricia Wotipka
Permit #TE840619-2

Vipul Joshi
Permit #TE019949-3

Travis Cooper
Permit #TE170389-5

Alicia Hill
Permit #TE06145B-0

Garrett Huffman
Permit #TE20186A-1

Antonette Gutierrez
Permit #TE-50992B-0

Brian Lohstroh
Permit #TE-063608-5

Crysta Dickson
Permit #TE-067347-5

Darin Busby
Permit #TE-115373-3

David King
Permit #TE-785148-11

Erika Eidson
Permit #TE-051236

Erik LaCoste Permit #TE-027736-5	Greg Chatman Permit #TE-075112-2	Gretchen Cummings Permit #TE-031850-4
Nicole Kimball Permit #TE-053598	Monica Alfaro Permit #TE-051242-2	Diana Saucedo Permit #TE-811615-6.1

Att: Figure 1, Regional Map
Figure 2, Vicinity Map
Figure 3, Vegetation Map
Figure 4, QCB Observations and Survey Areas
Figure 5, Quino Checkerspot Butterfly Observations and Host Plant Locations Map
Appendix A, Revised Notification of Survey for Quino including 2016 BIA Deviation
Appendix B, Potential Quino Nectar Sources and Fauna Compendium
Appendix C, 2016 Village 13 Quino Survey Field Notes

cc: Anita Hayworth, PhD, Dudek

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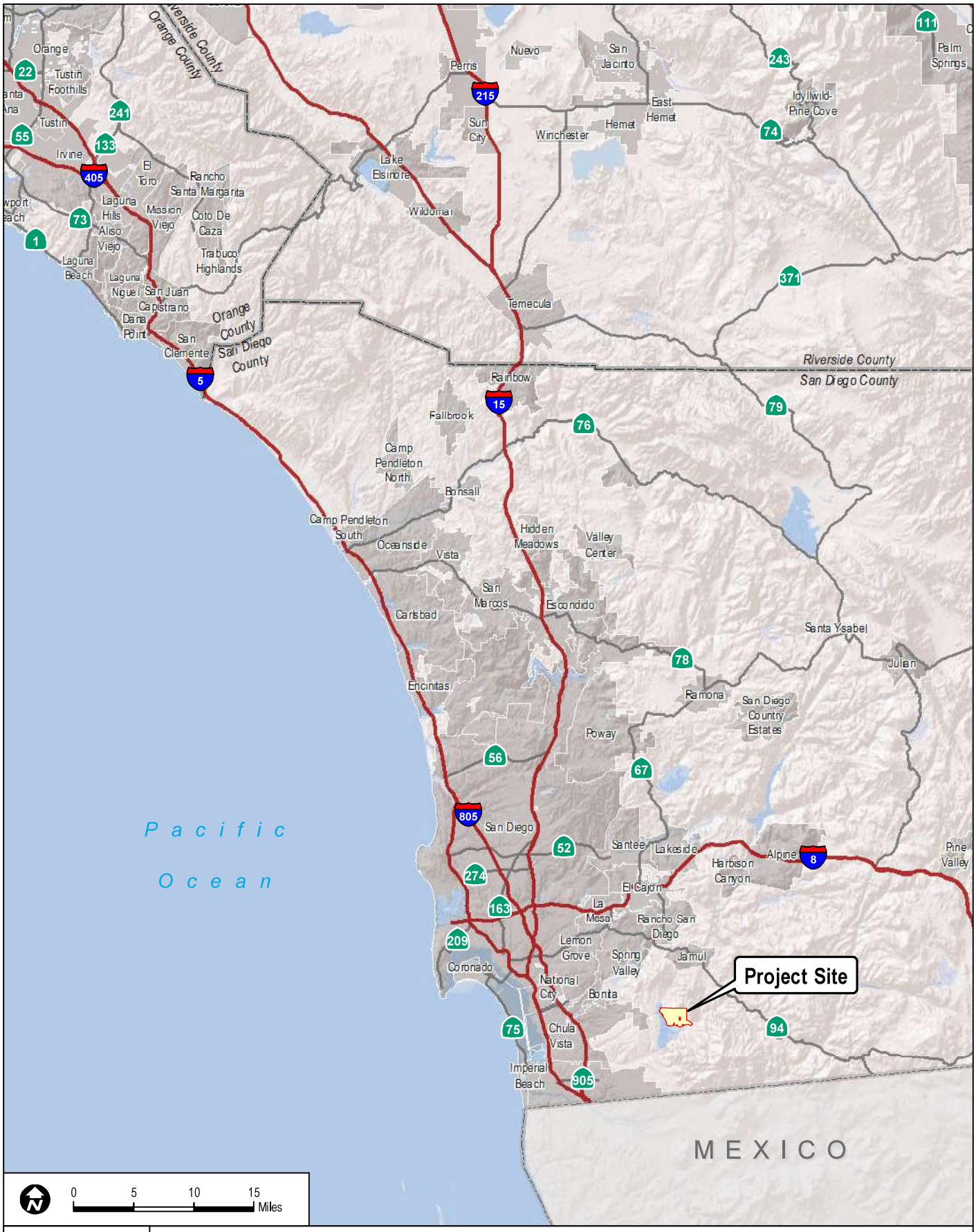
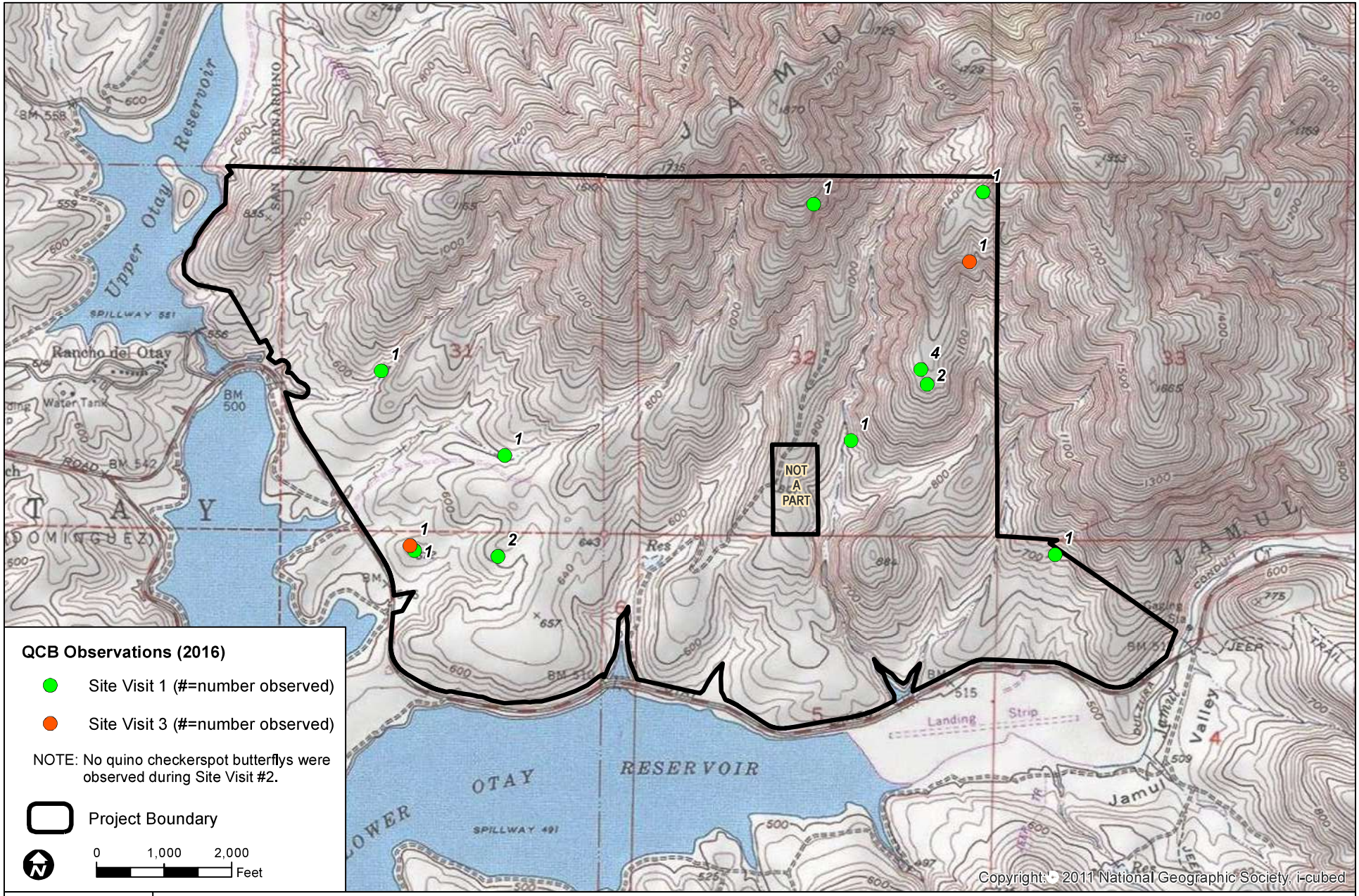


FIGURE 1
Regional Map

DUDEK

Otay Ranch Resort Site/Village 13 - 45-Day Report for the Quino Checkerspot Focused Surveys

Document Path: Z:\Projects\j652401\MAPDOC\MAPS\QCB 45-Day Figs 2016\Fig1 Regional.mxd



DUDEK

SOURCE: USGS 7.5 Minute Series, Jamul Mountains Quadrangle

FIGURE 2
Vicinity Map

Otay Ranch Resort Site/Village 13 - 45-Day Report for the Quino Checkerspot Focused Surveys

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DUDEK

6524

0 1,000 Feet

FIGURE 3

Vegetation Map

Otay Ranch Resort Site/Village 13 - 45-Day Report for the Quino Checkerspot Focused Surveys

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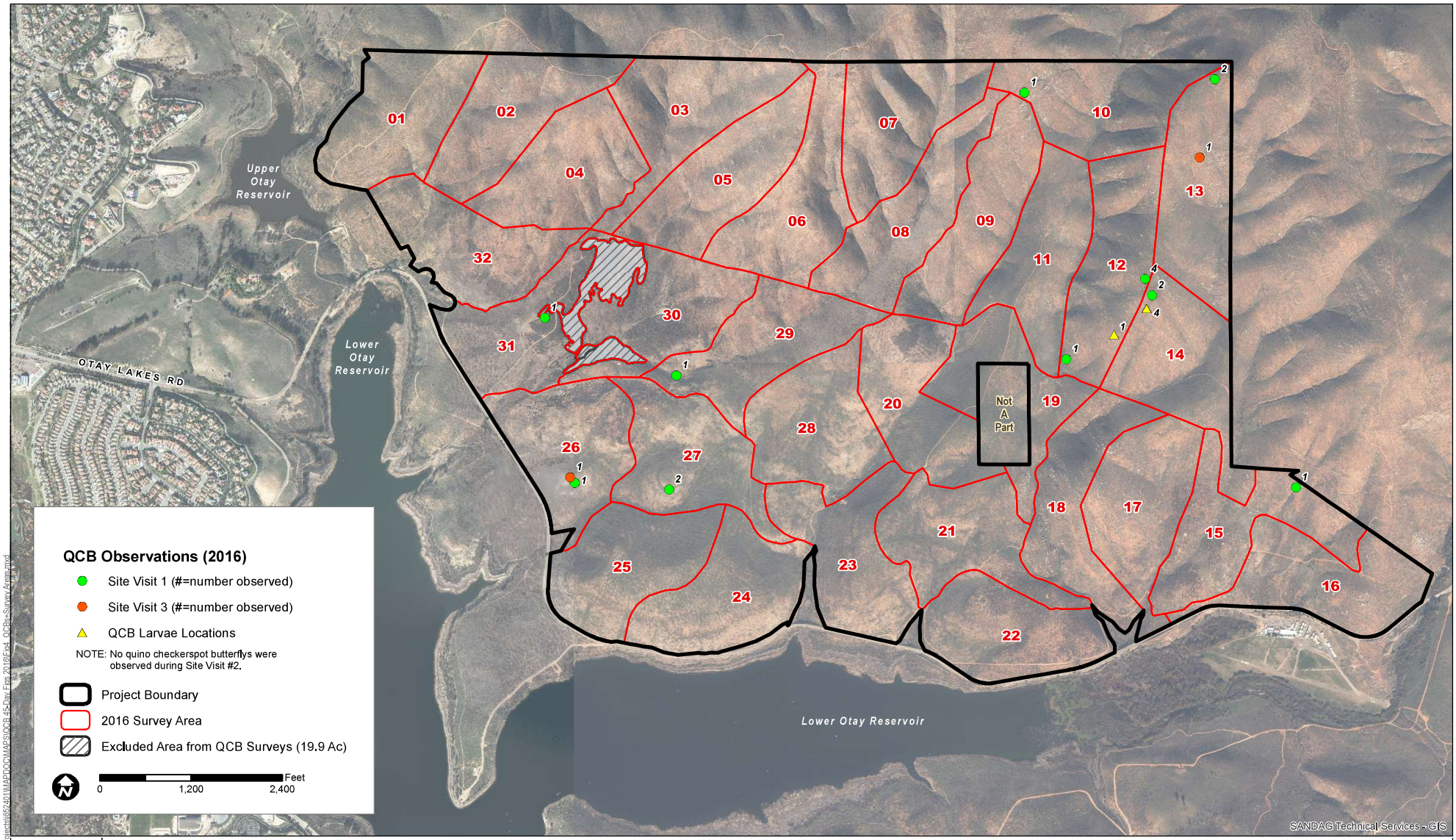

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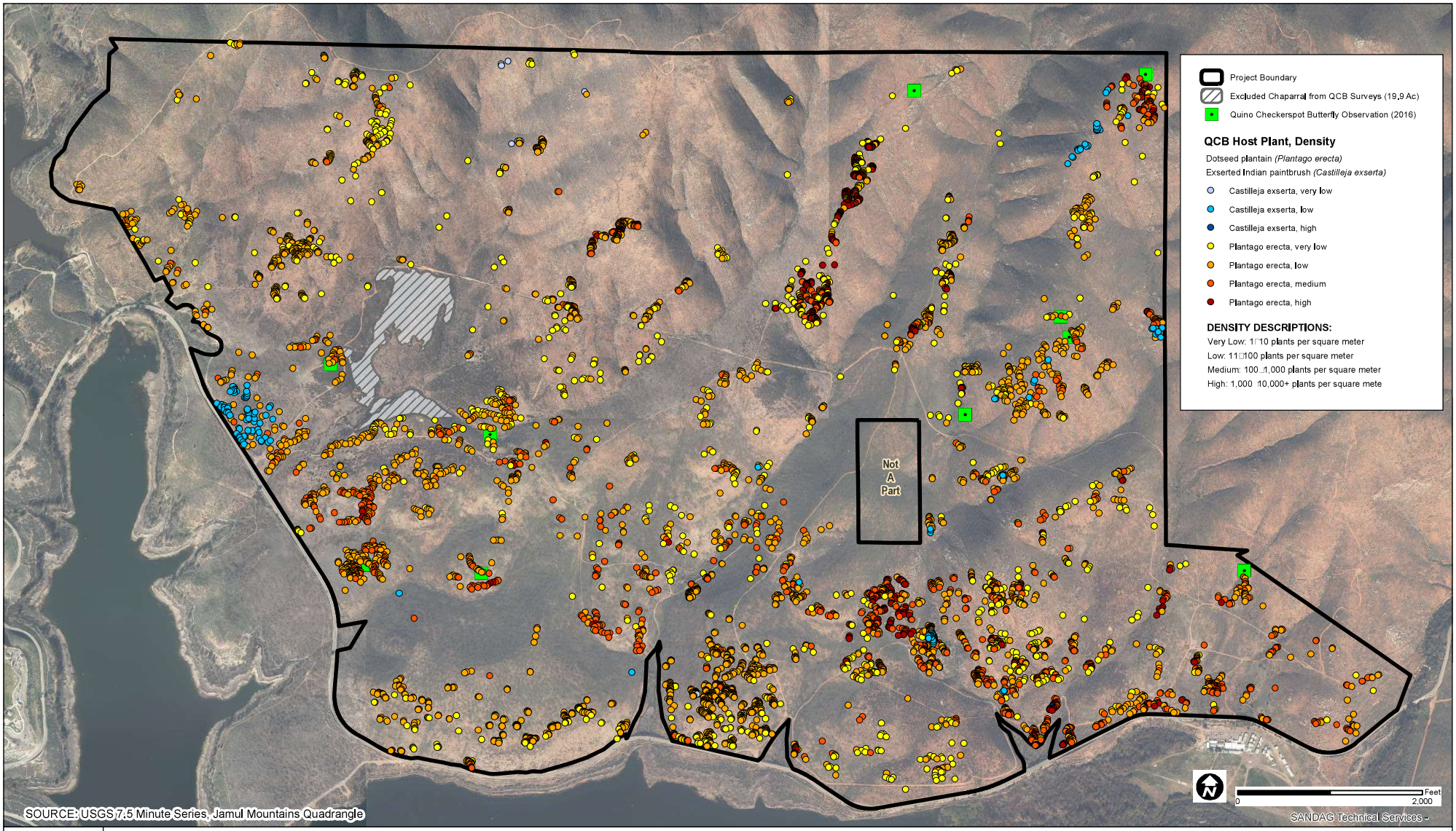
DUDEK

AERIAL SOURCE: SANDAG IMAGERY 2014

FIGURE 4

QCB Observations and Survey Areas



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DUDEK

FIGURE 5

Quino Checkerspot Butterfly Observations and Host Plant LocationsMap

APPENDIX A

Revised Notification of Survey for Quino including 2016 BIA Deviation

DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

February 01, 2016 6524

U.S. Fish and Wildlife Service
Attn: Recovery Permit Coordinator
6010 Hidden Valley Road
Carlsbad, California 92011

Subject: ***Revised Notification of Survey for Quino Checkerspot Butterfly for the Otay Ranch Resort Village (Village 13) Project, County of San Diego, California***

Dear Recovery Permit Coordinator:

The purpose of this letter is to notify the United States Fish and Wildlife Service (USFWS) that Dudek will be conducting surveys for Quino checkerspot butterfly (QCB) at the Otay Ranch Resort Village (Village 13) Project site. The approximate centroid of the survey area is on the U.S. Geological Survey 7.5 minute series, Jamul Mountains Quadrangle, at approximately 32° 38' 06.46" North, 117° 55' 17.24" West (Figures 1 and 2). Surveys will be conducted by biologists holding current Recovery Permits listed here:

Brock Ortega TE813545-6
Anita Hayworth TE781084-8
Paul Lemons TE051248-5
Erin Bergman TE813545-5
Jeff Priest TE840619-3
Tricia Wotipka TE840619-2
Vipul Joshi TE019949-3
Brian Drake TE006328
Bonnie Peterson TE038701-02
Travis Cooper TE170389-5
Alicia Hill TE06145B-0
Victor Novik TE069534-2
Garrett Huffman TE20186A-1
Dale Powell TE006559-6
Jun Powell TE006559-6

Dudek will send an amendment to this notification should additional permitted staff be added to this survey effort. Assistance will be provided from Patricia Schuyler (TE-27502B-0), Callie Ford (TE-36118B-0), Marshall Paymard, Danielle Mullen, Kathleen Dayton, Kevin Shaw, Jake Marcon, Kyle Matthews, Shana Carey, and Janice Wondolleck as supervised by a permitted biologist upon passing the required test, as needed.

Dudek is also requesting a deviation from protocol surveys, to conduct surveys in support of recent coordination between the County of San Diego and USFWS (Susan Wynn and Eric Porter). The primary purpose of the work is to determine the status of Quino at a number of locations that were previously known to support Quino. Ultimately, the results will help determine the County's approach to amending the South County Multiple Species Conservation Program to include "Take" coverage for Quino and this effort will coordinate with the efforts as identified in the notification submitted by Korey Klutz on January 27, 2016. In addition, this project is moving forward as a project and this survey effort will update and support the previous focused surveys that have been conducted in prior years.

Dudek proposes to conduct three weeks of surveys, covering all suitable habitat within the Village 13 site. The surveys will be conducted in accordance with the description in the most recent Quino checkerspot butterfly survey guidelines (December 15, 2014) as modified by the 2016 Building Industry Association deviation (discussed in more detail below) with the additional deviation of conducting **three weeks of surveys** and the addition of some specificity on the host plant mapping as noted below in bold.

Dudek will conduct the 2016 surveys in accordance to the protocol outlined in the negotiated *Proposed 2016 Quino Checkerspot Survey Protocol* (BIA 2016) (Attachment 1). This proposed protocol was prepared in conjunction with the U.S. Fish and Wildlife Service (FWS). The proposed protocol combines elements of the 2002 and 2014 (early and late) protocols with key modifications to the 2014 FWS Quino checkerspot butterfly survey guidelines (December 15, 2014) including:

- A reference site will be surveyed to determine the life stage of Quino checkerspot butterfly and define the flight season.
- Surveys will be initiated within one week of observed Quino checkerspot butterfly flight at the reference site(s).
- Host plant will be mapped as a separate effort following the methods used in 2014 by Helix Environmental for the Village 14 project: host plant species will be mapped in patches of low density (11 - 100 plants), medium density (100 – 1,000 plants), and high density (1,000 –10,000 plants) with the **addition of a very low category (1-10 plants) which can be collapsed into the low density category per the BIA protocol**. **In addition, the units for mapping will be based on plants per square meter and *Castilleja exserta* will be included.** High density patches of host plant will be mapped as polygons if they are in areas larger than approximately 250 square feet. **If observed, Quino larvae will be recorded and a permitted biologist will be present to document the observation**.

The survey will commence in approximately 15 days. Please contact me at (760) 479-4239 if there are any questions concerning the survey.

Sincerely,

Anita Hayworth

Anita Hayworth
Wildlife Biologist

att: *Figures 1 & 2*
Attachment 1 – Proposed 2016 Quino Checkerspot Survey Protocol

Cc: *Eric Porter, FWS*
Susan Wynn, FWS
Stephen Haase, Baldwin & Sons
Scott Molloy, Baldwin & Sons
Ted Shaw, Atlantis Group

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*), wooly 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 60o F (15.5o C) on a clear, sunny day with less than 50 percent cloud cover, or less than 70o F (21o 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.

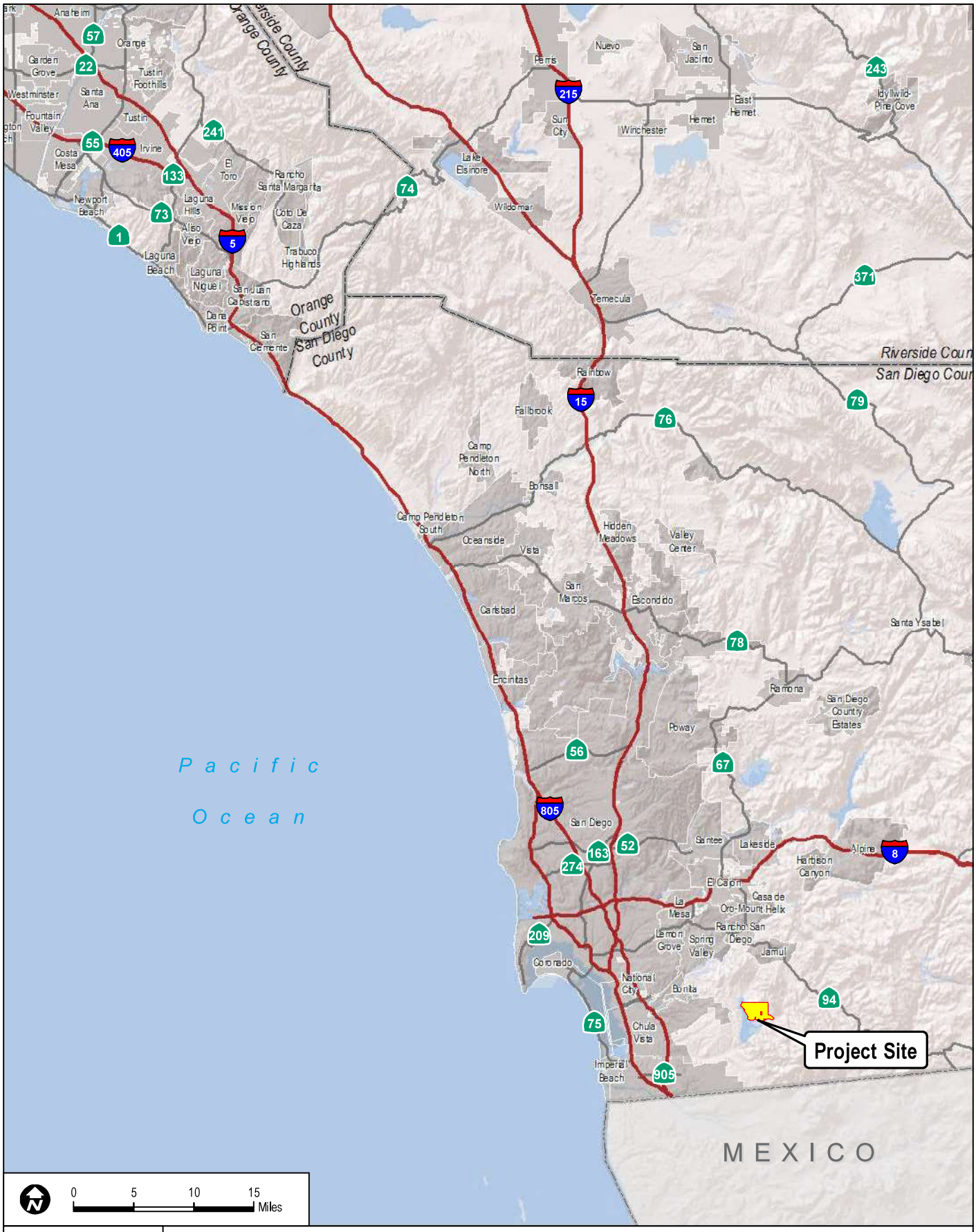

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FIGURE 1
Regional Map

Otay Ranch Resort Village Site - Quino Checkerspot Butterfly Survey Notification 2016

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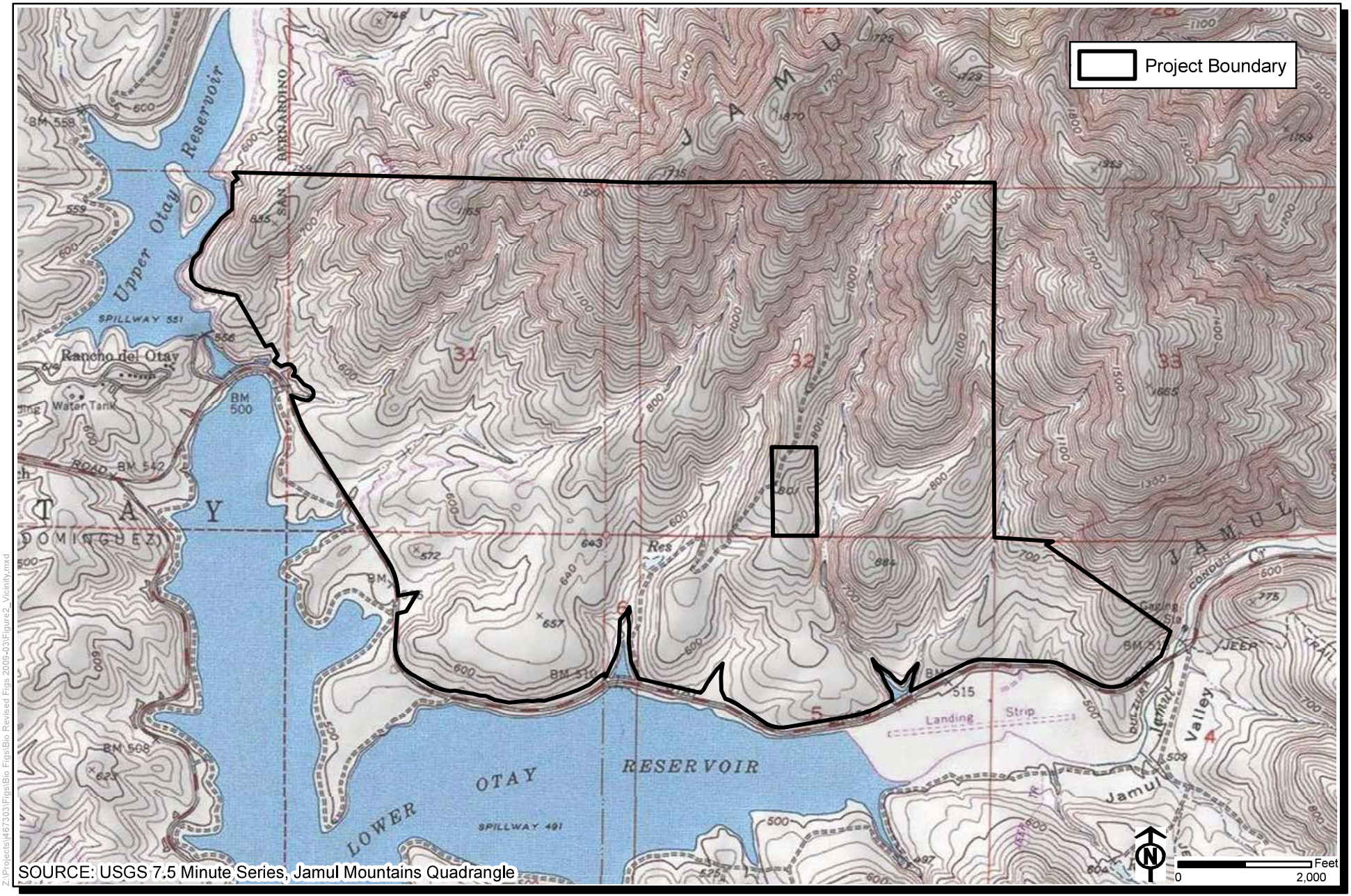

SOURCE: USGS 7.5 Minute Series, Jamul Mountains Quadrangle

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Otay Ranch Resort Village Site - Quino Checkerspot Butterfly Survey

Vicinity Map

FIGURE
2

APPENDIX B

Potential Quino Nectar Sources and Fauna Compendium

APPENDIX B
Potential Quino Nectar Sources and Fauna Compendium

POTENTIAL QUINO NECTAR SOURCES

VASCULAR PLANT SPECIES

ASTERACEAE - SUNFLOWER FAMILY

Acourtia microcephala - sacapellote
Ambrosia psilostachya var. *californica* - western ragweed
Artemisia californica - coastal sagebrush
Baccharis salicifolia - mulefat
Baccharis sarothroides - chaparral broom
Brickellia californica - California brickellbush
* *Centaurea melitensis* - star-thistle
* *Conyza canadensis* - horseweed
* *Cotula australis* - Australian brass-buttons
* *Cotula coronopifolia* - African brass-buttons
Erigeron foliosus var. *stenophyllus* - leafy daisy
Eriophyllum confertiflorum var. *confertiflorum* - long-stem golden yarrow
Logfia filaginoides - California fluffweed
Gnaphalium californicum - California everlasting
Gutierrezia sarothrae - broom snake-weed, matchweed
Hazardia squarrosa ssp. *grindelioides* - saw-toothed goldenbush
* *Hedypnois cretica* - Crete hedypnois
Hemizonia fasciculata - fascicled tarweed
Holocarpha virgata - virgate tarweed
* *Hypochaeris glabra* - smooth cat's-ear
Isocoma menziesii ssp. *veneta* - coastal goldenbush
Lasthenia californica - coast goldfields
Lessingia filaginifolia - virgate cudweed aster
Microseris douglasii - Douglas's microseris
Osmadenia tenella - rosin-weed
* *Picris echioides* - bristly ox-tongue
Porophyllum gracile - odora
Pluchea odorata - marsh-fleabane
Senecio californica - California groundsel
* *Silybum marianum* - milk thistle
Stylocline gnaphalioides - everlasting nest-straw
Uropappus lindleyi - silver puffs
Viguiera laciniata - San Diego County viguiera
Xanthium strumarium - cocklebur

BORAGINACEAE - BORAGE FAMILY

Amsinckia menziesii - yellow fiddleneck
Cryptantha spp. - cryptantha
Cryptantha intermedia - common forget-me-not
Heliotropium curassavicum - wild heliotrope
Pectocarya linearis - slender pectocarya
Plagiobothrys acanthocarpus - adobe popcorn flower

BRASSICACEAE - MUSTARD FAMILY

* *Brassica nigra* - black mustard
Caulanthus heterophyllus - San Diego jewelflower
Lepidium nitidum - shining peppergrass
* *Raphanus sativus* - wild radish
Thysanocarpus curvipes - hairy fringepod

CACTACEAE - CACTUS FAMILY

Ferocactus viridescens - San Diego barrel cactus
Opuntia littoralis - coastal prickly-pear
Opuntia prolifera - coast cholla

CAPPARACEAE - CAPER FAMILY

Isomeris arborea - bladderpod

CAPRIFOLIACEAE - HONEYSUCKLE FAMILY

Lonicera subspicata var. *denudata* - southern honeysuckle
Sambucus mexicana - Mexican elderberry

CARYOPHYLLACEAE - PINK FAMILY

* *Cerastium glomeratum* - sticky mouse-ear
* *Silene gallica* - common catchfly
* *Stellaria media* - common chickweed

CHENOPODIACEAE - GOOSEFOOT FAMILY

* *Chenopodium murale* - nettle-leaved goosefoot

CISTACEAE - ROCK-ROSE FAMILY

Crocanthemum scoparium var. *aldersonii* - Alderson's rock-rose

CONVOLVULACEAE - MORNING-GLORY FAMILY

Calystegia macrostegia - western bindweed
Dichondra occidentalis - western dichondra

CRASSULACEAE - STONECROP FAMILY

Crassula connata - dwarf stonecrop
Dudleya pulverulenta - chalk dudleya
Dudleya variegata - variegated dudleya

CUCURBITACEAE - GOURD FAMILY

Marah macrocarpus - wild cucumber

CUSCUTACEAE - DODDER FAMILY

Cuscuta californica - California dodder

ERICACEAE - HEATH FAMILY

Xylococcus bicolor - mission manzanita

EUPHORBIACEAE - SPURGE FAMILY

Chamaesyce albomarginata - rattlesnake spurge
Chamaesyce polycarpa - small-seed sand mat
Eremocarpus setigerus - doveweed
* *Ricinus communis* - castor-bean

FABACEAE - PEA FAMILY

Astragalus trichopodus - Santa Barbara locoweed
Lathyrus vestitus var. *alefeldii* - wild pea
Lotus hamatus - grab lotus
Lotus scoparius - deerweed
Lotus strigosus - strigose deerweed
Lupinus bicolor - Lindley's annual lupine
* *Melilotus indica* - yellow sweet-clover
Pickeringia montana - chaparral pea

GENTIANACEAE - GENTIAN FAMILY

Centaurium venustum - canchalagua

GERANIACEAE - GERANIUM FAMILY

* *Erodium botrys* - broad-lobed filaree
* *Erodium cicutarium* - red-stemmed filaree

GROSSULARIACEAE - CURRANT FAMILY

Ribes indecorum - winter currant

HYDROPHYLLACEAE - WATERLEAF FAMILY

Eriodictyon trichocalyx - hairy yerba santa
Phacelia cicutaria - caterpillar phacelia
Phacelia parryi - Parry's phacelia

LAMIACEAE - MINT FAMILY

* *Marrubium vulgare* - horehound
Salvia apiana - white sage
Salvia columbariae - chia
Salvia munzii - Munz's sage

LYTHRACEAE - LOOSESTRIFE FAMILY

* *Lythrum hyssopifolia* - Hyssop loosestrife

MALVACEAE - MALLOW FAMILY

Malacothamnus fasciculatus - mesa bushmallow
* *Malva parviflora* - cheeseweed
Sidalcea sparsifolia - checker mallow

NYCTAGINACEAE - FOUR O'CLOCK FAMILY

Mirabilis californica var. *californica* - California wishbone-bush

OLEACEAE - OLIVE FAMILY

* *Olea europaea* - mission olive

ONAGRACEAE - EVENING-PRIMROSE FAMILY

Camissonia strigulosa - field evening primrose

OXALIDACEAE - WOOD-SORREL FAMILY

Oxalis albicans - wood-sorrel

PAPAVERACEAE - POPPY FAMILY

Eschscholzia californica - California poppy

PLANTAGINACEAE - PLANTAIN FAMILY

Plantago erecta - dot-seed plantain
* *Plantago lanceolata* - English plantain

POLEMONIACEAE - PHLOX FAMILY

Eriastrum filifolium - thread-leaved eriastrum
Gilia capitata ssp. *abrotanifolia* - ball gilia

Linanthus dianthiflorus - ground pink
Navarretia hamata - hooked navarretia

POLYGONACEAE - BUCKWHEAT FAMILY
Eriogonum fasciculatum - California buckwheat
* *Rumex crispus* - curly dock

PORTULACACEAE - PURSLANE FAMILY
Claytonia perfoliata var. *perfoliata* - miner's-lettuce

PRIMULACEAE - PRIMROSE FAMILY
* *Anagallis arvensis* - scarlet pimpernel
Dodecatheon clevelandii - shooting star

RANUNCULACEAE - CROWFOOT FAMILY
Clematis pauciflora - ropevine
Ranunculus californicus - California buttercup
Thalictrum polycarpum - many-fruit meadow-rue

RHAMNACEAE - BUCKTHORN FAMILY
Ceanothus tomentosus ssp. *olivaceus* - woolly-leaved ceanothus

ROSACEAE - ROSE FAMILY
Adenostoma fasciculatum - chamise

RUBIACEAE - MADDER FAMILY
Galium angustifolium - narrow-leaved bedstraw
* *Galium aparine* - goose grass

RUTACEAE - RUE FAMILY
Cneoridium dumosum - bushrue, coast spicebush

SALICACEAE - WILLOW FAMILY
Salix gooddingii var. *gooddingii* - black willow
Salix lasiolepis var. *bracelinae* - arroyo willow

SCROPHULARIACEAE - FIGWORT FAMILY
Castilleja affinis - coast paintbrush
Castilleja exserta - common owl's-clover
Linaria canadensis - toadflax
Mimulus aurantiacus - bush monkeyflower

Mimulus brevipes - wide-throat monkeyflower
Scrophularia californica var. *floribunda* - coast figwort

SOLANACEAE - NIGHTSHADE FAMILY

* *Datura wrightii* - western jimsonweed
* *Nicotiana glauca* - tree tobacco
Solanum douglasii - white nightshade
Solanum xanti - chaparral nightshade

VIOLACEAE - VIOLET FAMILY

Viola pedunculata - johnny jump-up

ANGIOSPERMAE (MONOCOTYLEDONES)

LILIACEAE - LILY FAMILY

Allium sp. - onion
Calochortus sp. - mariposa lily
Chlorogalum parviflorum - small-flowered amole
Dichelostemma capitata - blue dicks
Muilla clevelandii - San Diego goldenstar
Yucca whipplei - our lord's candle

* signifies introduced (non-native) species

FAUNAL COMPENDIUM
WILDLIFE SPECIES -VERTEBRATES

AMPHIBIANS

PELOBATIDAE - SPADEFOOT TOADS

Scaphiopus hammondi - western spadefoot toad

BUFONIDAE - TRUE TOADS

Bufo boreas - western toad

HYLIDAE - TREEFROGS

Hyla regilla - Pacific treefrog

RANIDAE - TRUE FROGS

* *Rana catesbeiana* - bullfrog

REPTILES

EMYDIDAE - BOX AND WATER TURTLE

Clemmys marmorata - western pond turtle

IGUANIDAE - IGUANID LIZARDS

Phrynosoma coronatum - coast horned lizard
Sceloporus occidentalis - western fence lizard
Sceloporus orcutti - granite spiny lizard
Uta stansburiana - side-blotched lizard

TEIIDAE - WHIPTAIL LIZARDS

Cnemidophorus hyperythrus - orange-throated whiptail
Cnemidophorus tigris - western whiptail

COLUBRIDAE - COLUBRID SNAKES

Diadophis punctatus - ringneck snake
Lamoropeltis zonata - California mountain kingsnake
Pituophis melanoleucus - gopher snake

VIPERIDAE - VIPERS

Crotalus oreganus helleri – Southern Pacific rattlesnake
Crotalus ruber - red-diamond rattlesnake

BIRDS

PODICIPEDIDAE - GREBES

Podilymbus podiceps - pied-billed grebe

ARDEIDAE - HERONS

Ardea herodias - great blue heron
Egretta thula - snowy egret
Nycticorax nycticorax - black-crowned night-heron

THRESKIORNITHIDAE - IBISES

Plegadis chihi - white-faced ibis

ANATIDAE - WATERFOWL

Anas platyrhynchos - mallard

CATHARTIDAE - NEW WORLD VULTURES

Cathartes aura - turkey vulture

ACCIPITRIDAE - HAWKS

Accipiter cooperii - Cooper's hawk
Aquila chrysaetos - golden eagle
Buteo jamaicensis - red-tailed hawk
Buteo lineatus - red-shouldered hawk
Circus cyaneus - northern harrier
Elanus caeruleus - white-tailed kite
Pandion haliaetus - osprey

FALCONIDAE - FALCONS

Falco mexicana - prairie falcon
Falco sparverius - american kestrel

PHASIANIDAE - PHEASANTS AND QUAILS

Callipepla californica - California quail

RALLIDAE - RAILS AND GALLINULES

Fulica americana - American coot

COLUMBIDAE - PIGEONS AND DOVES

Columba livia - rock dove
Zenaida macroura - mourning dove

CUCULIDAE - CUCKOOS AND ROADRUNNERS

Geococcyx californianus - greater roadrunner

TYTONIDAE - BARN OWLS

Tyto alba - barn owl

STRIGIDAE - TRUE OWLS

Athene cunicularia - burrowing owl
Bubo virginianus - great horned owl

CAPRIMULGIDAE - GOATSUCKERS

Chordeiles acutipennis - lesser nighthawk

APODIDAE - SWIFTS

Aeronautes saxatalis - white-throated swift

TROCHILIDAE - HUMMINGBIRDS

Archilochus alexandri - black-chinned hummingbird
Calypte anna - Anna's hummingbird
Calypte costae - Costa's hummingbird

PICIDAE - WOODPECKERS

Colaptes auratus - northern flicker
Picoides nuttallii - Nuttall's woodpecker
Sphyrapicus sp. - sapsucker

TYRANNIDAE - TYRANT FLYCATCHERS

Contopus sordidulus - western wood-pewee
Empidonax oberholseri - western flycatcher
Sayornis nigricans - black phoebe
Tyrannus vociferans - Cassin's kingbird

ALAUDIDAE - LARKS

Eremophila alpestris - horned lark

HIRUNDINIDAE - SWALLOWS

Tachycineta thalassina - violet-green swallow
Stelgidopteryx serripennis - northern rough-winged swallow

CORVIDAE - JAYS AND CROWS

Aphelocoma coerulescens - scrub jay
Corvus brachyrhynchos - American crow
Corvus corax - common raven

AEGITHALIDAE - BUSHTITS

Psaltriparus minimus – bushtit

TROGLODYTIDAE - WRENS

Catherpes mexicanus - canyon wren
Salpinctes obsoletus - rock wren
Thryomanes bewickii - Bewick's wren

MUSCICAPIDAE - KINGLETS, GNATCATCHERS, THRUSHES AND BABBLERS

Chamaea fasciata - wrentit
Polioptila caerulea - blue-gray gnatcatcher
Polioptila californica - California gnatcatcher
Sialia mexicana - western bluebird
Turdus migratorius - American robin

MIMIDAE - THRASHERS

Mimus polyglottos - northern mockingbird
Toxostoma redivivum - California thrasher

MOTACILLIDAE - PIPITS

Anthus rufescens - American pipit

PTILOGONATIDAE - SILKY-FLYCATCHERS

Phainopepla nitens - phainopepla

LANIIDAE - SHRIKES

Lanius ludovicianus - loggerhead shrike

STURNIDAE - STARLINGS

Sturnus vulgaris - European starling

PARULIDAE - WOOD WARBLERS

Dendroica coronata - yellow-rumped warbler
Geothlypis trichas - common yellowthroat
Vermivora ruficapilla - Nashville warbler

EMBERIZIDAE - BUNTINGS AND SPARROWS

Aimophila ruficeps - rufous-crowned sparrow
Ammodramus savannarum - grasshopper sparrow
Amphispiza belli - sage sparrow
Amphispiza bilineata - black-throated sparrow
Chondestes grammacus - lark sparrow
Melospiza melodia - song sparrow
Passerculus sandwichensis - Savannah sparrow
Pipilo crissalis - California towhee
Pipilo maculatus - spotted towhee
Zonotrichia leucophrys - white-crowned sparrow

CARDINALIDAE - CARDINALS AND GROSBEAKS

Passerina amoena - lazuli bunting
Passerina caerulea - blue grosbeak

ICTERIDAE - BLACKBIRDS AND ORIOLES

Agelaius phoeniceus - red-winged blackbird
Euphagus cyanocephalus - Brewer's blackbird
Icterus cucullatus - hooded oriole
Icterus bullockii - Bullock's oriole
Molothrus ater - brown-headed cowbird
Sturnella neglecta - western meadowlark

FRINGILLIDAE - FINCHES

Carpodacus mexicanus - house finch
Carduelis psaltria - lesser goldfinch
Carduelis tristis - American goldfinch

MAMMALS

LEPORIDAE - HARES AND RABBITS

Lepus californicus - black-tailed jackrabbit
Sylvilagus bachmani - brush rabbit

SCIURIDAE - SQUIRRELS

Spermophilus beecheyi - California ground squirrel

GEOMYIDAE - POCKET GOPHERS

Thomomys bottae - Botta's pocket gopher

HETEROMYIDAE - POCKET MICE AND KANGAROO RATS

Dipodomys agilis - agile (Pacific) kangaroo rat

MURIDAE - RATS AND MICE

Microtis californicus - California vole
Neotoma sp. - woodrat
Peromyscus maniculatus - deer mouse

CANIDAE - WOLVES AND FOXES

* *Canis familiaris* - domestic dog
Canis latrans - coyote

PROCYONIDAE - RACCOONS AND RELATIVES

Bassariscus astutus - ringtail
Procyon lotor - common raccoon

MUSTELIDAE - WEASELS, SKUNKS, AND OTTERS

Mephitis mephitis - striped skunk
Mustela frenata - long-tailed weasel

FELIDAE - CATS

Lynx rufus - bobcat

CERVIDAE - DEERS

Odocoileus hemionus - mule deer

* signifies introduced (non-native) species

APPENDIX C

2016 Village 13 Quino Survey Field Notes

Provided on Request

APPENDIX B

Vernal Pool Mitigation Plan

APPENDIX J

CONCEPTUAL VERNAL POOL MITIGATION PLAN

for the

OTAY RANCH RESORT VILLAGE – ALTERNATIVE H
GPA 04-003; SPA 04-002; R04-009; TM 5361RPL; S08-028;
ER#04-19-005; KIVA#03-1004387

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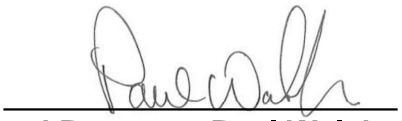

County Approved Preparer: Paul Walsh
March 2019

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1 DESCRIPTION OF THE DEVELOPMENT PROJECT/IMPACT SITE FOR WHICH COMPENSATORY MITIGATION IS REQUIRED

The purpose of this document is to provide site-specific instructions for vernal pool restoration as mitigation for on-site impacts to vernal pools associated with the construction of the Otay Ranch Resort Village Alternative H (Alternative H) project of Otay Ranch. This Conceptual Vernal Pool Mitigation Plan for the Otay Ranch Resort Village Alternative H (Mitigation Plan) is prepared in accordance with the Otay Ranch Resort Village Biological Resources Technical Report (Dudek 2015; see Section 5.3) and the Biological Resources Technical Report Supplemental Analysis Otay Ranch Resort Village – Alternative H.

1.1 Responsible Parties

The project applicants (Moller Otay Lakes Investments LLC and Baldwin & Sons LLC) are responsible for initiating and funding all mitigation installation, maintenance and monitoring requirements during the 5-year program. They shall be responsible for hiring a qualified landscape maintenance contractor to carry out all maintenance work and for hiring a qualified Project Biologist to carry out the monitoring program for the duration of the 5-year period.

1.2 Location of the Development Project

The Otay Ranch Resort Village's Specific Plan area is located in southwestern San Diego County, approximately 13 miles east of the Pacific Ocean and 6 miles north of the international border with Mexico (Figure 1). The site is located in the Proctor Valley Parcel of the Otay Subregional Plan (SRP) approximately 0.25 mile east of the City of Chula Vista (Figure 2). As part of the planning for the development of Otay Ranch, several villages and planning areas were designated for various types of development while other areas were reserved for preservation of multiple species and habitats. An effort was undertaken to plan development of the ranch so as to conserve species and habitats in the region. The Otay Ranch Resort Village project area comprises approximately 1,869 acres, is located in an unincorporated portion of the County, and is designated for residential and resort development and for open space by the Otay Ranch *Subregional Plan* (SRP; Otay Ranch 1993). Associated with the project, off-site improvements to Otay Lakes Road required analysis of an area south and west of the project area.

1.3 Summary of Overall Development Project with Proposed Compensatory Mitigation

The Alternative H site comprises approximately 1,869 acres located in the unincorporated portion of San Diego County (County) and is designated for residential and resort development and for open space in the current Otay *Subregional Plan, Volume 2* ("Otay SRP"; 1993). The proposed land uses for the Otay Ranch Resort Village project consist of single-family neighborhoods, a

mixed use residential and commercial use neighborhood, a resort hotel with associated ancillary facilities, an elementary school site, a site for public safety facilities, open space, Otay Ranch Preserve (Preserve) land, conserved open space, and park and recreational uses. The proposed specific plan includes a residential footprint of approximately 523.4 acres designated for 1,881 single-family detached homes and 57 multi-family homes. Other areas of impacts such as fuel modification and detention basins are included in the total impact analysis.

1.3.1 Topography

Alternative H consists of a broad mesa sloping to the south, broken by several steep canyons draining from north to south. Portions of the relatively flat mesa extend north into the Jamul Mountains, becoming part of steeper slopes. Site elevations range from approximately 500 feet above mean sea level (AMSL) at the southern end of the property to approximately 1,500 feet AMSL in the northeastern portions. The project area lies within the watershed of the Otay River, a westerly flowing stream which drains an area of approximately 145 square miles. The site is upstream of Savage Dam, which creates Lower Otay Reservoir.

The southern half of the site contains three large mesas (K6, K8, and K9 from west to east), an expansive and relatively flat area in the west, and increasing elevations with steep canyons in the north. Drainages bisect the mesas and generally run north–south, with the exception of one drainage running east–west from the center to the western edge of the property. Several stock ponds have been intentionally created along the drainages on the property. Typical vernal pool and mima mound topography consists of depressions within undulating landscapes where soil mounds are interspersed with basins, swales, and drainages (USFWS 1997).

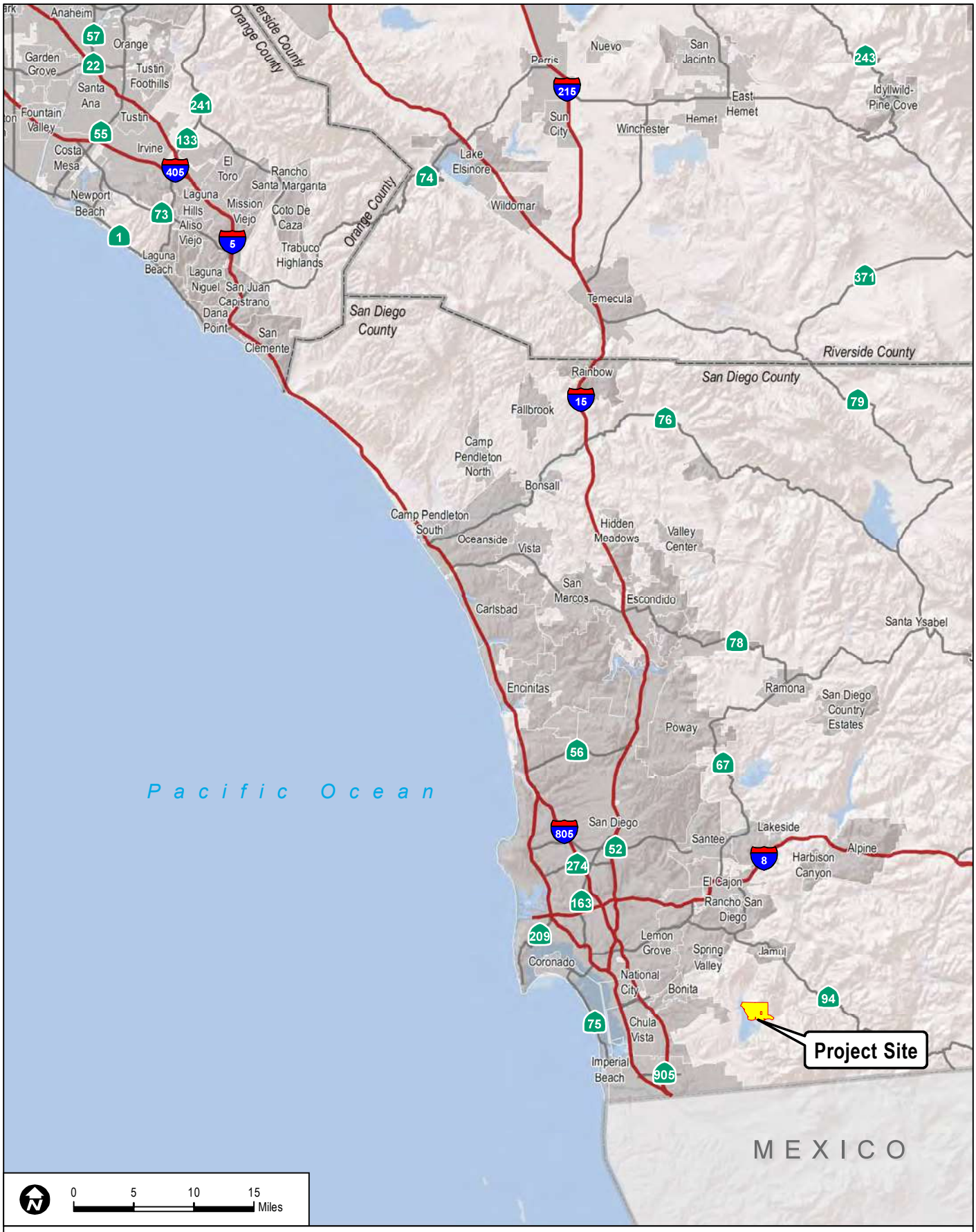

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FIGURE 1

Regional Map

Otay Ranch Resort Village Site - Conceptual Vernal Pool Mitigation Plan

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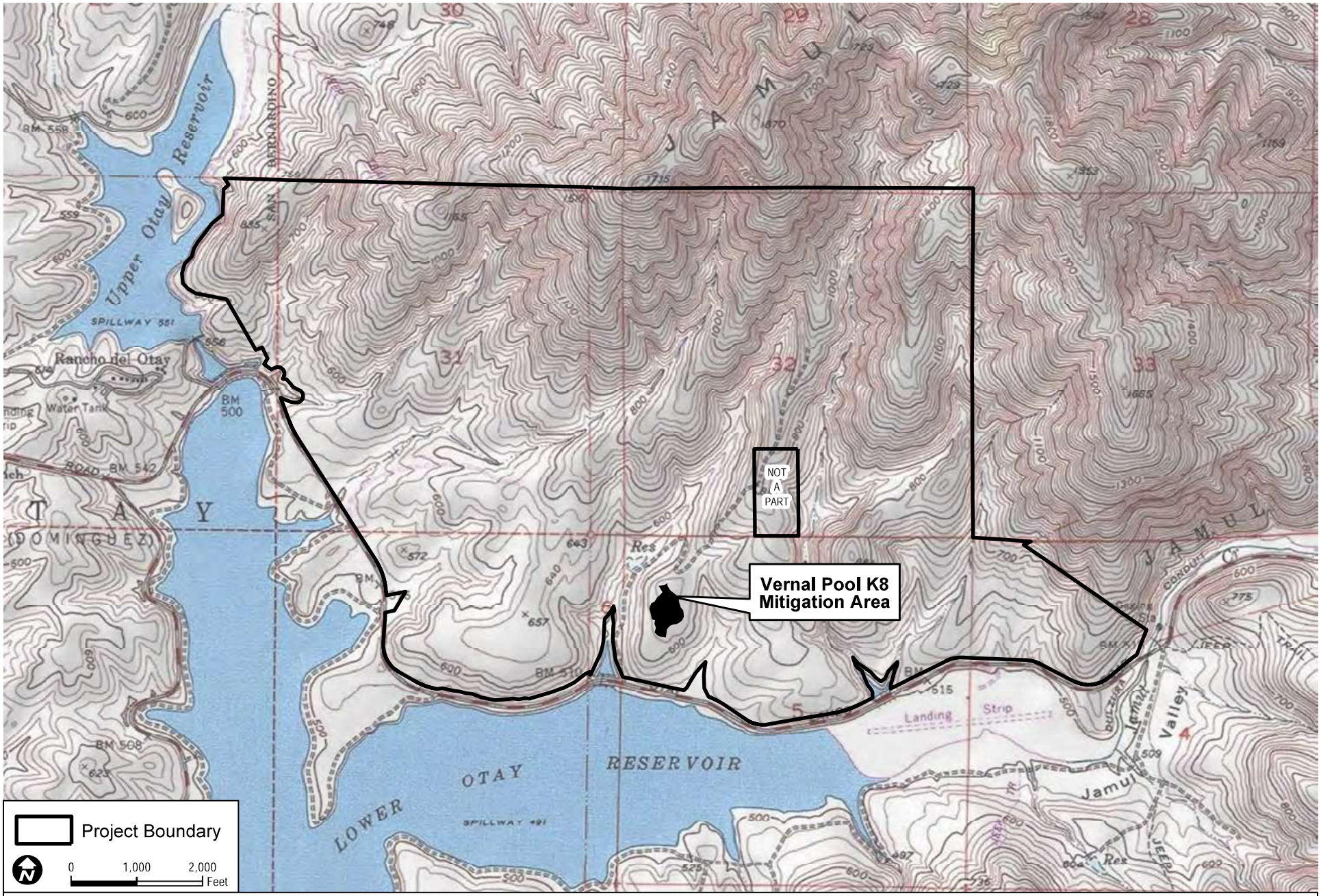

SOURCE: USGS 7,5 Minute Series, Jamul Mountains Quadrangle

DUDEK

FIGURE 2

Vicinity Map

Otay Ranch Resort Village Site - Conceptual Vernal Pool Mitigation Plan

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1.3.2 Vegetation Types

The project site is dominated by sage scrub, with substantial representation of grassland and chaparral (Table 1). Various wetland plant communities also occur on the site. Portions of the site have been historically mechanically disturbed by farming and grazing activity, reducing the presence of natural vegetation. In total, 16 plant communities and land cover types were mapped within the project area on site and off site, consisting of coastal sage scrub, chamise chaparral, southern mixed chaparral, scrub oak chaparral, disturbed valley needlegrass grassland, non-native grassland, cismontane alkali marsh, freshwater marsh, open water, mulefat scrub, southern willow scrub, stock pond, disturbed habitat, eucalyptus woodland, ornamental, and developed land. The coastal sage scrub, chamise chaparral, cismontane alkali marsh, and mulefat scrub were subdivided as the non-disturbed versus disturbed forms depending on the percent native shrub cover and dominance of non-native species.

Table 1
Acreages of Plant Communities

Plant Community Type	Holland Code	On Site	Off Site*	Total
Sensitive Upland Communities				
Coastal Sage Scrub	32500	1,121.52	7.61	1129.14
Disturbed Coastal Sage Scrub	32500	348.62	4.99	353.61
Chamise Chaparral	37210	143.14	—	143.14
Disturbed Chamise Chaparral	37210	15.67	—	15.67
Scrub Oak Chaparral	37900	22.45	—	22.45
Southern Mixed Chaparral	37121	4.95	—	4.95
Disturbed Valley Needlegrass Grassland	42110	110.58	0.03	110.61
Non-Native Grassland	42200	78.96	5.43	84.39
	Subtotal	*1,845.89*	*18.07*	*1,863.96*
Sensitive Wetland Communities (ACOE, RWQCB, CDFW, and County unless otherwise noted)				
Cismontane Alkali Marsh	52310	6.39	—	6.39
Disturbed cismontane alkali marsh	11200	0.17	—	0.17
Freshwater Marsh	52410	—	0.17	0.17
Mulefat Scrub, all jurisdictions Mulefat Scrub, CDFW and County only	63310	0.08	—	0.08
Disturbed Mulefat Scrub	63310	—	0.13	0.13
Open Water	64140	0.17	0.49	0.66
Southern Willow Scrub	63320	1.19	0.04	1.23
	Subtotal	*8.00*	*18.91*	*26.91*

Table 1
Acreages of Plant Communities

Plant Community Type	Holland Code	On Site	Off Site*	Total
Non-Sensitive Communities and Land Covers				
Developed Land	12000	0.87	19.22	20.10
Disturbed Habitat	11300	13.46	0.38	13.85
Eucalyptus Woodland	79100	—	0.61	0.61
Ornamental	11000	—	0.94	0.94
Stock Pond	18000	0.79	—	0.79
	Subtotal	*15.13*	*21.16*	*36.29*
	Total	**1,869.01**	**40.07**	**1,909.08**

* The off-site impacts are anticipated to remain the same as shown in Table 12 of the Biological Resources Technical Report (March 2015) and include the areas required for the improvements to Otay Lakes Road.

1.3.3 Sensitive Plant Species

Sensitive plant species locations recorded during surveys are summarized in Table 2. In addition to these current surveys, historical records of sensitive plant species were reviewed from the following published databases: Ogden (1992), Multiple Species Conservation Program (MSCP) maps (Ogden 1999), and California Department of Fish and Game (CDFW 2003).

Table 2
Summary of Sensitive Plant Species Detected on Site

Scientific Name Common Name	Status Federal/State CRPR MSCP Coverage County List	Locations and Population Size on Site		
		Previous Studies	*Current Surveys*	*Comments*
Acanthomintha ilicifolia San Diego thornmint	FT/SE 1B.1 Covered Narrow Endemic A	MBA 89/91	Observed in all recent surveys	Identified in two disturbed areas with heavy clay soils. Associated vegetation consists of non-native grasses and annuals. Populations cover approximately 0.1 and 3.3 acres each. Because the population is densely distributed in these locations, the actual number of individuals was not quantified. Analysis of this plant is based on the acreage over which it occurs.
Adolphia californica California adolphia	None/None 2B.1 Not Covered B	Not observed	Observed in 1999	Identified in two locations in the western portion of the site within sparse coastal sage scrub (<20 individuals).
Convolvulus simulans Small-flowered morning-glory	None/None 4.2 Not Covered D	Not observed	Observed in 2000	Three locations in western part of project site in clay soil grasslands; approximately 120 total individuals.

Table 2
Summary of Sensitive Plant Species Detected on Site

Scientific Name Common Name	Status Federal/State CRPR MSCP Coverage County List	Locations and Population Size on Site		
		Previous Studies	*Current Surveys*	*Comments*
Dichondra occidentalis Western dichondra	None/None 4.2 Not Covered D	MBA 89/90	Observed in 1999 and 2000	Recorded in eight locations on the central ridges of the site. A total of 30 patches were recorded that vary from 1 to 500 square feet. This species was recorded based on patch size due to low-growing dense form of the species. The species covers approximately 0.50 acre total over the 30 patches.
Dudleya variegata Variegated dudleya	None/None 1B.2 Covered – Narrow Endemic A	MBA 89/90	Observed in 1999 and 2000	Identified in 40 locations throughout the site. Estimated population size on site is approximately 5,833 individuals. Generally in clay soils and west-facing slopes, ridge lines, or margins of mesas.
Ferocactus viridescens San Diego barrel cactus	None/None 2B.1 Covered B	MBA 89/90	Observed in all recent surveys	Identified in approximately 50 locations throughout the project area, generally on south-facing slopes. Occurrences usually consist of <5 individuals; large stands contain 10–15 individuals. Approximately 217 individuals were recorded. Habitat association is generally open coastal sage scrub.
Harpagonella palmeri Palmer's grapplinghook	None/None 4.2 Not Covered D	Not identified	Observed in 1999 and 2000	Identified in three areas in the eastern and western portions of the site within disturbed coastal sage scrub, dirt road margins, and non-native grassland with heavy clay soils. Approximately 298 individuals were recorded.
Iva hayesiana San Diego marsh-elder	None/None 2B.2 Not Covered B	MBA 89/90	Observed in 1999 and 2000	Abundant within narrow drainages throughout the site. Total on-site population in the thousands. Generally associated with cismontane alkali marsh or sparsely vegetated, rocky stream channels. Due to densely occurring populations within these drainages, this plant was recorded by area rather than number of individuals. A total of 5.4 acres of this species was recorded on site.
Juncus acutus ssp. *leopoldii* Southwestern spiny rush	None/None 4.2 Not Covered D	MBA 89/90	Observed 1999 and 2000	Identified in 11 locations within cismontane alkali marsh. Occurrences typically contain <10 individuals within each location. Approximately 30 individuals present on site.
Microseris douglasii ssp. *platycarpha* Small-flowered microseris	None/None 4.2 Not Covered D	Not observed	Observed in 2000	Six locations identified in the western part of the site in open non-native grassland/coastal sage scrub. Approximately 1,270 individuals recorded on the site.

Table 2
Summary of Sensitive Plant Species Detected on Site

Scientific Name Common Name	Status Federal/State CRPR MSCP Coverage County List	Locations and Population Size on Site		
		Previous Studies	*Current Surveys*	*Comments*
Bloomeria [Muilla] clevelandii San Diego goldenstar	None/None 1B.1 Covered A	MBA 89/90	Observed in 1999 and 2000	Identified in 21 locations in western and eastern portions of the site on mesic slopes containing sparse coastal sage scrub/native grassland. Approximately 1,146 individuals in western part of site and 1,400 individuals in eastern part in 2000. 1999 observations were fewer in number of individuals than 2000 observations presumably due to rainfall differences.
Myosurus minimus ssp. *apus* Little mousetail	None/None 3.1 Not Covered C	MBA 89/90	Not observed in recent surveys	Number of individuals was not recorded. Was not detected in recent focused surveys and is no longer considered to be present in K6 vernal pools.
Ophioglossum californicum California adder's-tongue	None/None 4.2 Not Covered D	MBA 89/90	Not observed	Two locations described near Otay Lakes Road in west and south-central portions of the site. Location was not mapped by MBA. Not identified during recent surveys; may no longer be present since it was not recorded during the rare plant surveys conducted in 2000.
Pentachaeta aurea ssp. *aurea* Golden-rayed pentachaeta	None/None 4.2 Not Covered D	Not observed	Observed in 2000	Four locations identified in western portion of site; Approximately 91 individuals occur in coastal sage scrub/grassland.
Quercus dumosa Nuttall's scrub oak	None/None 1B.1 Not Covered A	Not observed	Observed in all recent surveys	Occurs as a major component in areas mapped as scrub oak chaparral (approximately 200 individuals per acre). The acreage encompassed by this species is approximately 6.2 acres, including additional small patches within chaparral in the western portion of the site.
Romneya coulteri Coulter's matilija poppy	None/None 4.2 Not Covered D	Not observed	Observed on site	Number, location not mapped. Single location described as being adjacent to a drainage in eastern part of site.
Salvia munzii Munz's sage	None/None 2B.2 Not Covered B	MBA 89/90	Observed in all recent surveys	Occurs throughout the site but most densely in the northwestern quarter. Also occurs on K9 mesa. Most areas containing dense coastal sage scrub in this area contain approximately 50%–80% vegetation cover of *S. munzii*. Because the population is densely distributed in these locations, the actual number of individuals was not quantified. Analysis of this plant is based on the acreage over which it occurs, approximately 295 acres.

Table 2
Summary of Sensitive Plant Species Detected on Site

Scientific Name Common Name	Status Federal/State CRPR MSCP Coverage County List	Locations and Population Size on Site		
		Previous Studies	*Current Surveys*	*Comments*
Viguiera laciniata San Diego County viguiera	None/None 4.2 Not Covered D	MBA 89/90	Observed in all recent surveys	Occurs throughout the site but most densely in the northern portion. Encompasses approximately 1,071 acres of the site. Comprises between 5% and 30% of vegetation cover in coastal sage scrub.

Federal Designations:
FE Federally listed Endangered
FT Federally listed as Threatened
FSC Federal Species of Concern
State Designations:
P CDFW Protected and Fully Protected Species
R California Rare Species
SE State-listed as Endangered
ST State-listed as Threatened.
CNPS Designations:
List 1A Presumed Extinct in California
List 1B Rare or Endangered in California and Elsewhere
List 2 Rare or Endangered in California, More Common Elsewhere
List 3 Need More Information
List 4 Plants of Limited Distribution
1 Seriously endangered in California
2 Fairly endangered in California
3 Not very endangered in California
MSCP Designations:
Covered: Listed as Covered Species in Appendix B of biotechnical report, Implementing Agreement between CDFW, USFWS, and County of San Diego (March 1998)
Not Covered: Not Listed as Covered Species in Appendix B of biotechnical report, Implementing Agreement between CDFW, USFWS, and County of San Diego (March 1998).
County Designations:
List A Plants rare, threatened, or endangered in California and elsewhere (corresponds to CNPS List 1B)
List B Plants rare, threatened, or endangered in California but more common elsewhere (corresponds to CNPS List 2)
List C Plants which may be quite rare, but need more information to determine their rarity status (corresponds to CNPS List 3)
List D Plants of limited distribution and are uncommon, but not presently rare or endangered (corresponds to CNPS List 4)

1.3.4 Sensitive Wildlife Species

Knowledge concerning the presence/absence of sensitive wildlife species was ascertained from previous studies of Otay Ranch, as well as from more recent focused surveys for fairy shrimp and Quino checkerspot butterfly. Although focused surveys for sensitive nesting bird species, amphibians, reptiles, or mammals have not been conducted, incidental observations of many sensitive wildlife species have been made. Species locations recorded during these surveys are summarized in Table 3. Evaluation of wildlife use is based on suitable habitat since the species may occur in areas other than where observed.

Table 3
Summary of Sensitive Wildlife Species
Detected on Site or with Moderate to High Potential to Occur

Species (Scientific Name)	Regulatory Status: Federal; State; MSCP; County Group	General Habitat Association	Status on Site		
			Previous Studies	*Current Surveys*	*Comments*
San Diego fairy shrimp (*Branchinecta sandiegonensis*)	USFWS: FE CDFW: None MSCP: Covered County: 1	Small, shallow vernal pools, occasionally ditches and road ruts	Not observed	Observed in 2000, 2004, and 2008, 2014-2015	A total of nine basins on K8 and one basin on K6 are confirmed occupied by this species.
Quino checkerspot butterfly *(Euphydryas editha quino)*	USFWS: FE CDFW: None MSCP: Not Covered County: 1	Sparsely vegetated hilltops, ridgelines, occasionally rocky outcrops; host plant *Plantago erecta* and nectar plants must be present	Not observed (known from 1970s P. Ehrlich research)	Observed in 1999, 2000, 2004, 2008, and 2016	Over five years of surveys, a total of 145 individuals have been observed; 71 observed in 2008 and 16 observed in 2016. A total of 1,470 acres of coastal sage scrub and disturbed coastal sage scrub as potential habitat are on site. A total of 1,624 acres of critical habitat occurs on site. Observations were concentrated in the northern portion and along a ridgeline within the central portion of the site. A number of additional observations were scattered throughout the rest of the site.
Monarch butterfly (*Danaus plexippus*)	USFWS: None CDFW: None MSCP: Not Covered. County: 2	Overwinters in eucalyptus groves	Not observed	Observed	This species occurs on site on occasion as single individuals in flight over the area; however, there are not sufficient resources available to make this a significant overwintering site.
Western spadefoot toad *(Spea hammondii)*	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Most common in grasslands, coastal sage scrub near rain pools or vernal pools; riparian habitats	Not observed	Observed in 2000	Tadpoles incidentally observed in a single depression on K8 mesa. Could occur within pools that inundate.
Rosy boa (*Charina trivirgata*)	USFWS: None CDFW: None MSCP: Not Covered County: 2	Rocky chaparral, coastal sage scrub, oak woodlands, desert and semi-desert scrub	Not observed	Observed in 2008	Observed in northeastern portion of the project site.

Table 3
Summary of Sensitive Wildlife Species
Detected on Site or with Moderate to High Potential to Occur

Species (Scientific Name)	Regulatory Status: Federal; State; MSCP; County Group	General Habitat Association	Status on Site		
			Previous Studies	*Current Surveys*	*Comments*
Western pond turtle *(Emys marmorata)*	USFWS: None CDFW: CSC MSCP: Covered County: 1	Slow-moving permanent or intermittent streams, ponds, small lakes, reservoirs with emergent basking sites; adjacent uplands used during winter	Not observed	Observed in 2000	Incidentally observed laying eggs in a dirt road in northwestern corner of site.
Orangethroat whiptail (*Aspidoscelis hyperythra*)	USFWS: None CDFW: CSC MSCP: Covered County: 2	Coastal sage scrub, chaparral, grassland, juniper, and oak woodland	MBA 89	Observed in 2000 and 2008	Observed in coastal sage scrub. Probably occurs elsewhere within open patches of coastal sage scrub and grassland.
Coastal whiptail (*Aspidoscelis tigris stejnegeri*)	USFWS: None CDFW: None MSCP: Not Covered County: 2	Coastal sage scrub, chaparral	Not observed	Observed in 2000	Observed in sparse coastal sage scrub on site. Probably resident in open areas and sparse coastal sage scrub and chaparral throughout the site.
San Diego ringneck snake (*Diadophis punctatus similis*)	USFWS: None CDFW: None MSCP: Not Covered County: 2	Open, rocky areas in moist habitats near intermittent streams: marsh, riparian woodland, sage scrub	Not observed	Observed on site.	Observed in the main eastern drainage. Moderate potential to occur within deeper canyons on site and under debris on site.
San Diego [coast; Blainville's] horned lizard *(Phrynosoma blainvillii)*	USFWS: None CDFW: CSC MSCP: Covered County: 2	Coastal sage scrub, non-native grassland, chaparral, oak and riparian woodland, coniferous forest	MBA 89	Observed in 1999, 2000, and 2008	Observed within undisturbed coastal sage scrub and chamise chaparral.
Red-diamond rattlesnake *(Crotalus ruber)*	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Variety of shrub habitats where there is heavy brush, large rocks, or boulders	Not observed	Observed in 1999, 2000, and 2008	Observed throughout the site within dense and sparse coastal sage scrub and chaparral.

Table 3
Summary of Sensitive Wildlife Species
Detected on Site or with Moderate to High Potential to Occur

Species (Scientific Name)	Regulatory Status: Federal; State; MSCP; County Group	General Habitat Association	Status on Site		
			Previous Studies	*Current Surveys*	*Comments*
Two-striped garter snake *(Thamnophis hammondi)*	USFWS: None CDFW: CSC MSCP: Not Covered County: 1	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	Not observed	Not observed	Probably occurs on site.
Cooper's hawk (*Accipiter cooperii*)	USFWS: None CDFW: WL MSCP: Covered County: 1	Riparian and oak woodlands, montane canyons	Not observed	Observed in 2000	Observed flying over site; potential for nesting on site is low due to lack of developed forest or woodland habitats.
Southern California rufous-crowned sparrow *(Aimophila ruficeps canescens)*	USFWS: None CDFW: WL MSCP: Covered County: 1	Grass-covered hillsides, coastal sage scrub, chaparral with boulders and outcrops	MBA 89	Observed in 1999, 2000, and 2008	Observed throughout the site and highly likely to nest on site.
Grasshopper sparrow (*Ammodramus savannarum*)	USFWS: None CDFW: CSC MSCP: Not Covered County: 1	Open grassland and prairie, especially native grassland with a mix of grasses and forbs	MBA 89	Observed in 2000 and 2008	Observed mainly in southwestern and central portions of the project site.
Bell's sage sparrow (*Artemisiospiza belli belli*) (taxonomy was changed to Bell's sparrow *(Artemisiospiza belli*)	USFWS: None CDFW: WL MSCP: Not Covered County: 1	Coastal sage scrub and dry chaparral along coastal lowlands and inland valleys	MBA 89	Observed in 1999, 2000, and 2008	Identified in eastern and western portions of site in sparse coastal sage scrub.
Golden eagle (*Aquila chrysaetos*)	USFWS: BCC CDFW: P, WL, Golden Eagle Protection Act MSCP: Covered County: 1	Open country, especially hilly and mountainous regions; grassland, coastal sage scrub, chaparral, oak savannas, open coniferous forest	Not observed	Observed in 1999, 2000, and 2008	Observed in eastern and north-central portion of the site. Site is in mapped primary foraging area for known golden eagle territory. Nearest known nest site is >3 miles from project site. No nesting observed; could forage.

Table 3
Summary of Sensitive Wildlife Species
Detected on Site or with Moderate to High Potential to Occur

Species (Scientific Name)	Regulatory Status: Federal; State; MSCP; County Group	General Habitat Association	Status on Site		
			Previous Studies	*Current Surveys*	*Comments*
Red-shouldered hawk *(Buteo lineatus)*	USFWS: None CDFW: None MSCP: Not Covered County: 1	Riparian and woodland habitats, eucalyptus	Not observed	Observed on site	Observed foraging over the site near the southern portion. Moderate potential to also occur on site as a breeding bird.
Turkey vulture (*Cathartes aura*)	USFWS: None CDFW: None MSCP: Not Covered County: 1	Rangeland, agriculture, grassland; uses cliffs and large trees for roosting, nesting, and resting	Not observed	Observed in flight over site	Occasionally forages over the project area. No breeding potential.
Northern harrier *(Circus cyaneus)*	USFWS: None CDFW: CSC MSCP: Covered County: 1	Open wetlands (nesting), pasture, old fields, dry uplands, grasslands, rangelands, coastal sage scrub	Not observed	Observed in 1999, 2000, and 2008	Observed foraging over grassland areas in the K6 and K8 mesas. Could nest on site.
White-tailed kite *(Elanus leucurus)*	USFWS: None CDFW: P MSCP: Not Covered County: 1	Open grasslands, savanna-like habitats, agriculture, wetlands, oak woodlands, riparian	Not observed	Observed in 1999 and 2000	Observed foraging in grassland areas; nesting is unlikely due to lack of forest or woodlands.
California horned lark (*Eremophila alpestris actia*)	USFWS: None CDFW: WL MSCP: Not Covered County: 2	Open habitats, grassland, rangeland, shortgrass prairie, montane meadows, coastal plains, fallow grain fields	Not observed	Observed in 1999, 2000, and 2008	Observed within sparse coastal sage scrub and grasslands on the project site.
Prairie falcon (*Falco mexicanus)*	USFWS: BCC CDFW: WL MSCP: Not Covered County: 1	Grassland, savannas, rangeland, agriculture, desert scrub, alpine meadows; nest on cliffs or bluffs	Not observed	Observed in 2000	Observed within coastal sage scrub and grasslands. Rock outcrops on site suggest possible roosting and nesting.

Table 3
Summary of Sensitive Wildlife Species
Detected on Site or with Moderate to High Potential to Occur

Species (Scientific Name)	Regulatory Status: Federal; State; MSCP; County Group	General Habitat Association	Status on Site		
			Previous Studies	*Current Surveys*	*Comments*
Loggerhead shrike (*Lanius ludovicianus*)	USFWS: BCC CDFW: CSC MSCP: Not Covered County: 1	Open ground including grassland, coastal sage scrub, broken chaparral, agriculture, riparian, open woodland	MBA 89	Observed in 2000	Likely to nest on site, individuals observed in grassland and sparse coastal sage scrub.
Coastal California gnatcatcher (*Polioptila californica californica*)	USFWS: FT CDFW: CSC MSCP: Covered County: 1	Coastal sage scrub, coastal sage scrub–chaparral mix, coastal sage scrub–grassland ecotone, riparian in late summer	MBA 89	Observed in 1999, 2000, and 2008	Observed nesting in coastal sage scrub and chamise chaparral throughout the site. Coastal sage scrub, coastal sage scrub–chaparral mix, coastal sage scrub–grassland ecotone, riparian in late summer; 29 locations are recorded on site and 3 additional locations are recorded for Cornerstone Land for a total of 32 locations recorded; (MSCP data).
Western bluebird (*Sialia mexicana*)	USFWS: None CDFW: None MSCP: Covered County: 2	Open forests of deciduous, coniferous or mixed trees, savanna, edges of riparian woodland saltmarsh, riparian habitats	Not observed	Observed during winter	This species once did not breed on the coastal plain; however, in recent years it has begun to do so. The only breeding opportunities for this species would be within wooded habitats which are not present on site.
Burrowing owl (*Athene cunicularia*)	USFWS: BCC CDFW: CSC MSCP: Covered County: 1	Grassland, lowland scrub, agriculture, coastal dunes and other artificial open areas	MBA 89	Observed in 2000	Previously identified on eastern slope of K6 mesa as an incidental observation of single individual in central portion of site.
Barn owl (*Tyto alba*)	USFWS: None CDFW: None MSCP: Not Covered County: 2	Open forests of deciduous, coniferous or mixed trees, savanna, riparian habitats , abandoned structures, mines	Not observed	Observed flying over site	This species has abundant foraging opportunities but limited nesting opportunities on site. It is unlikely that there is enough cover on site to support nesting by this species.

Table 3
Summary of Sensitive Wildlife Species
Detected on Site or with Moderate to High Potential to Occur

Species (Scientific Name)	Regulatory Status: Federal; State; MSCP; County Group	General Habitat Association	Status on Site		
			Previous Studies	*Current Surveys*	*Comments*
San Diego black-tailed jackrabbit *(Lepus californicus bennettii)*	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Arid habitats with open ground; grasslands, coastal sage scrub, agriculture, disturbed areas, rangelands	Not observed	Incidentally observed.	Observed throughout the site.
San Diego desert woodrat *(Neotoma lepida intermedia)*	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Coastal sage scrub, chaparral, pinyon–juniper woodland with rock outcrops, cactus thickets, dense undergrowth	Not observed	Nests incidentally observed.	Middens were observed within chaparral areas on site.
Mountain lion *(Puma concolor)*	USFWS: None CDFW: None MSCP: Covered County: 2	Coastal sage scrub, chaparral, riparian, woodlands, forest; rests in rocky areas, and on cliffs and ledges that provide cover	MBA 89	Not observed	Signs of movement through eastern portion of site.

Federal Designations:
FE Federally listed Endangered
FT Federally listed as Threatened
MNBMC Fish and Wildlife Service Migratory Nongame Birds of Management Concern.
State Designations:
CSC California Special Concern Species
P CDFW Protected and Fully Protected Species
R California Rare Species
SE State-listed as Endangered
ST State-listed as Threatened
WL Watch List.
MSCP Designations:
Covered Listed as Covered Species in Appendix B of Implementing Agreement between CDFW, USFWS, and County of San Diego (March 1998)
Not Covered Not Listed as Covered Species in Appendix B of Implementing Agreement between CDFW, USFWS, and County of San Diego (March 1998).
County Designations:
Group 1: High level of sensitivity, either because listed as threatened or endangered or because species has very specific natural history requirements that must be met
Group 2: Species is becoming less common, but is not yet so rare that extirpation or extinction is imminent without immediate action. These species tend to be prolific within their suitable habitat types.

1.3.5 Sensitive Resources Affected by the Project

Implementation of the proposed project would result in the direct impacts to sensitive vegetation communities, including vernal pools. Impacts would occur as the result of grading and the creation of fuel management zones.

A total of 34 potential vernal pools have been studied according to the Otay Ranch Resort Village Biological Resources Technical Report (Figure 3; Dudek 2015). In general, vernal pools on the project site contain flora that include wooly marbles (*Psilocarphus brevissimus*), graceful hairgrass (*Deschampsia danthonioides*), soft chess, narrow-leaved filago (*Filago gallica*), broad-leaved filaree, fascicled tarplant, and doveweed. Pools that held water during most of the survey period were found to contain American pillwort (*Pilularia americana*), long-stalk water-starwort (*Callitriche longipedunculata*), pale spike-sedge (*Eleocharis macrostachya*), wild heliotrope, and aquatic crassula (*Crassula aquatica*), in addition to other plant species listed above. Plant species observed within the vernal pools at the K6 and K8 mesas are listed in Tables 4 and 5. The surrounding vegetation on the western mesa (K6) consists of disturbed Valley needlegrass grassland. Sparse coastal sage scrub is found on the eastern mesa (K8).

Table 4
Plant Species Observed in K6 Vernal Pools

Scientific Name	Common Name	1*	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Allium sp.	onion																
Alopecurus howelli	Howell's foxtail					X											
Avena barbata	slender oat								X	X		X			X	X	
Brodiaea joloensis	dwarf brodiaea			X		X		X	X				X	X			
Bromus hordeaceus	soft chess		X	X					X	X		X	X	X	X		X
Bromus madritensis ssp. *rubens*	foxtail chess				X						X				X	X	
Calochortus splendens	lilac mariposa				X												
Calystegia macrostegia	western bindweed																
Castilleja exserta	common owl's-clover																
Centaurium venustum	canchalagua							X	X								
Chlorogalum parviflorum	small-flowered amole		X		X							X			X	X	
Cotula australis	Australian brass-buttons																
Crassula aquatica	pygmyweed						X										
Deinandra [Hemizonia] fasciculata	fascicled tarweed		X	X	X		X	X	X	X	X	X	X	X	X	X	
Deschampsia danthonioides	hairgrass			X		X		X	X		X		X	X			
Dodecatheon clevelandii	shooting star																
Dudleya variegata	variegated dudleya																
Eleocharis macrostachya	pale spike-rush			X									X				
Eremocarpus setigerus	doveweed																
Eriogonum fasciculatum	California buckwheat		X														
Erodium botrys	broad-leaved filaree																
Erodium sp.	filaree									X		X					X
Filago gallica	narrow-leaf filago																
Gastridium ventricosum	nitgrass				X	X	X	X	X	X	X	X			X		X
Hordeum sp.	barley			X			X							X			
Hypochaeris glabra	smooth car's-ear										X					X	
Isocoma menziesii	coastal goldenbush				X											X	
Juncus bufonius	toad-rush			X		X	X	X	X	X	X	X	X	X			
Lepidium sp.	peppergrass									X							X
Lolium sp.	ryegrass																
Lythrum hyssopifolia	Hyssop loosestrife			X		X	X	X	X	X	X	X	X				X
Microseris douglasii	Douglas's microseris																
Myosurus minimus var. *apus*	mouse-tail					X		X					X				
Nassella pulchra	purple needlegrass		X													X	
Plagiobothrys sp.	popcorn flower						X			X							
Polypogon monspeliensis	rabbit's-foot grass							X					X				
Psilocarphus brevissimus	woolly-heads			X		X	X	X	X	X	X		X	X			
Selaginella cinerascens	ashy spike-moss		X		X												
Sisyrinchium bellum	blue-eyed grass					X			X	X	X	X				X	X
Spergularia bocconii	sand spurrey																
Tauschia arguta	southern tauschia		X														
Trichostema lanceolatum	vinegar weed			X													
Vulpia myuros	rattail fescue							X	X			X				X	

* No data collected

Table 5
Plant Species Observed in K8 Vernal Pools

Plant Species Observed		Vernal Pool																
Scientific Name	**Common Name**	**1**	**2**	**4**	**5**	**6**	**7**	**8**	**10**	**11**	**13**	**14**	**15**	**16**	**A1**	**A2**	**A3**	**A4**
Allium sp.	onion												X					
Alopecurus howelli	Howell's foxtail		X	X	X	X	X	X		X	X	X	X	X	X		X	X
Avena barbata	slender oat															X		
Brodiaea joloensis	dwarf brodiaea	X						X		X	X	X	X					X
Bromus hordeaceus	soft chess	X	X	X		X	X	X	X	X			X	X	X	X		X
Bromus madritensis ssp. *rubens*	foxtail chess																	
Calochortus splendens	lilac mariposa																	
Calystegia macrostegia	western bindweed				X					X		X						
Castilleja exserta	common owl's-clover							X							X			
Centaurium venustum	canchalagua	X						X										
Chlorogalum parviflorum	small-flowered amole							X	X					X				
Cotula australis	Australian brass-buttons	X																
Crassula aquatica	pygmyweed	X													X			
Deinandra [Hemizonia] fasciculata	fascicled tarweed	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Deschampsia danthonioides	hairgrass	X	X	X	X	X	X	X		X			X	X				
Dodecatheon clevelandii	shooting star														X			
Dudleya variegata	variegated dudleya																	
Eleocharis macrostachya	pale spike-rush	X			X			X		X	X							
Eremocarpus setigerus	doveweed	X					X			X			X	X				
Eriogonum fasciculatum	California buckwheat																	
Erodium botrys	broad-leaved filaree								X									
Erodium sp.	filaree															X		
Filago gallica	narrow-leaf filago	X																
Gastridium ventricosum	nitgrass		X	X		X	X	X	X	X	X		X			X	X	
Hordeum sp.	barley	X	X	X				X							X			
Hypochaeris glabra	smooth cat's-ear																	
Isocoma menziesii	coastal goldenbush																	
Juncus bufonius	toad-rush	X	X	X	X	X	X	X		X	X	X		X	X			
Lepidium sp.	peppergrass	X																
Lolium sp.	ryegrass		X															
Lythrum hyssopifolia	Hyssop loosestrife	X	X	X		X	X	X		X	X	X	X	X	X			X
Microseris douglasii	Douglas's microseris			X		X		X	X								X	
Myosurus minimus var. *apus*	mouse-tail																	
Nassella pulchra	purple needlegrass												X					
Plagiobothrys sp.	popcorn flower	X														X		
Polypogon monspeliensis	rabbit's-foot grass	X												X				
Psilocarphus brevissimus	woolly-heads	X	X	X	X	X	X	X		X		X	X	X	X			X
Selaginella cinerascens	ashy spike-moss																	
Sisyrinchium bellum	blue-eyed grass							X	X	X	X				X			
Spergularia bocconii	sand spurrey	X																
Tauschia arguta	southern tauschia																	
Trichostema lanceolatum	vinegar weed											X	X	X				
Vulpia myuros	rattail fescue																	

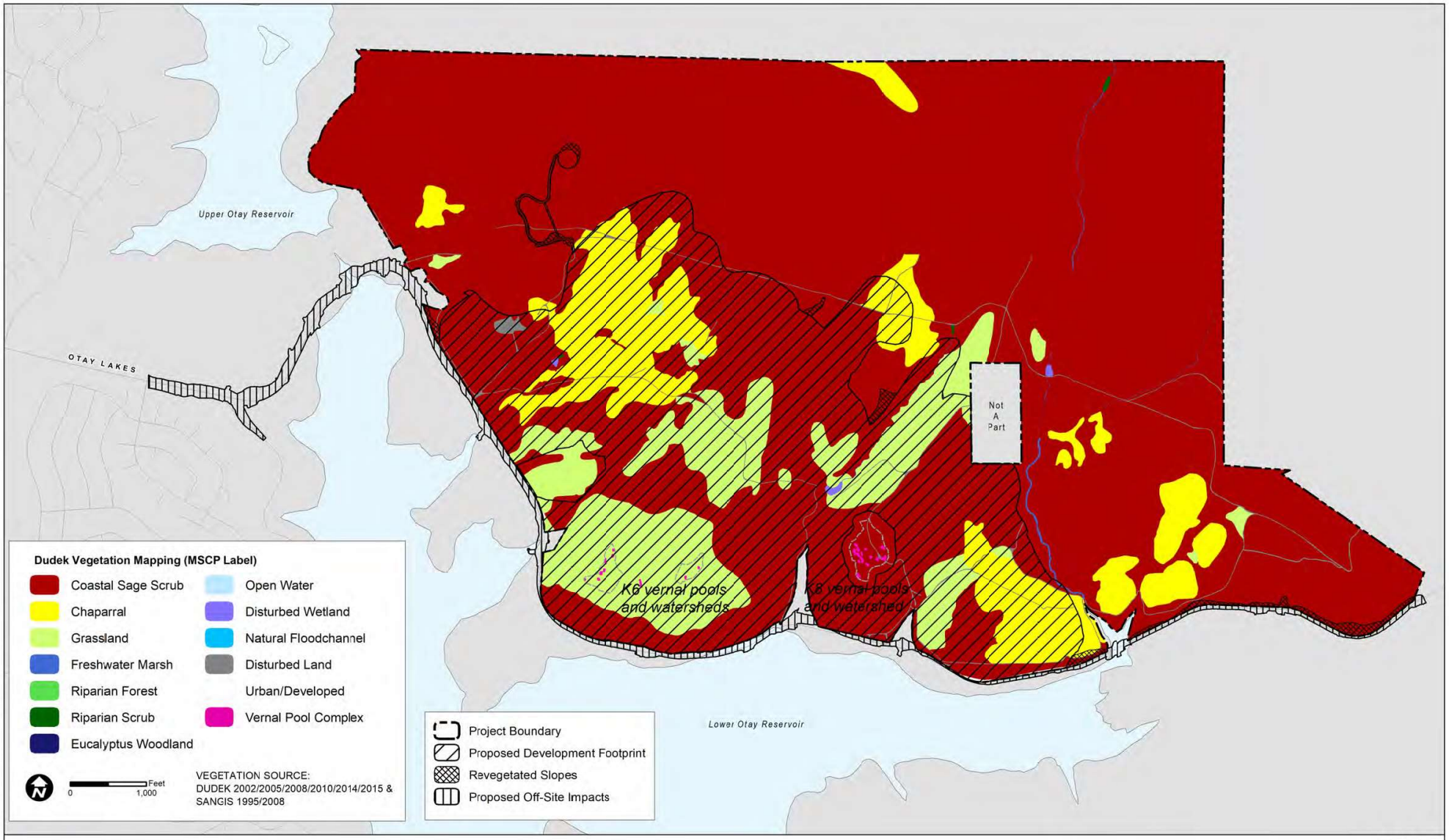

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FIGURE 3

Vegetation Map with Proposed Development Footprint

Otay Ranch Resort Village Site - Conceptual Vernal Pool Mitigation Plan

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1.3.6 Vernal Pool Impacts and Mitigation

This Mitigation Plan provides guidance for on-site restoration and enhancement of vernal pools within the K8 vernal pool complex to compensate for significant impacts to 0.11 acre of vernal pools in the K6 vernal pool complex (Figure 3). Additional vernal pool mitigation has been proposed at the K8 vernal pool complex as mitigation for impacts to vernal pools associated with the Otay Ranch Villages Two and Three Projects (Dudek 2008). This Mitigation Plan has been prepared to be consistent with the *Otay Ranch Villages Two and Three Conceptual Vernal Pool Mitigation Plan (Off-site Mitigation at Otay Ranch Village Thirteen)* prepared by Dudek (2008), with minor exceptions as appropriate.

Significant direct impacts to 0.11 acre of vernal pool basin area would occur as a result of Alternative H. The Resource Management Plan (RMP) contains guidelines for preservation and, when applicable, mitigation for impacts to vernal pools. The RMP was written in order to mitigate for biological resource impacts to satisfy California Environmental Quality Act (CEQA) and includes the requirement for providing a 100-foot buffer around the watershed but does not identify mitigation ratios. The County of San Diego provides mitigation ratios of 2:1 for Tier 1 habitat (includes vernal pools) but also indicates that 5:1 mitigation is required for areas outside of MSCP (San Diego, County of 2008). Because the K6 vernal pools impacted by the proposed project are characterized as having low to moderate value, the proposed mitigation will use a 2:1 mitigation ratio for the pools not occupied by San Diego fairy shrimp and 5:1 mitigation ratio for the occupied pool. Thus 0.025 acre will mitigate for impacts to the occupied pool, and 0.214 acre will mitigate for the impacts to the unoccupied pools for a total mitigation of 0.239 acre of vernal pool basin area. Ratios and acreages are shown in Table 6.

Table 6
Impacts and Mitigation Acreages

Vernal Pool Impact Acreage	Mitigation Ratio	Mitigation Acreage
0.105	2:1	0.214
0.005	5:1	0.025
0.110	--	0.239

The following is the mitigation measure outlined in the *Biological Resources Technical Report Supplemental Analysis* for Alternative H which would successfully mitigate for Alternative H's impacts under one of the following options:

M-BTR-5

This mitigation measure identifies two options for addressing the Proposed Project's potential impacts on vernal pools.

Option No. 1: Under this option, the applicant shall restore and reconfigure the K8 vernal pool group, and provide a 100-foot minimum buffer around the pools and their watershed. No activities, including fuel modification, would be permitted within the buffer. The required restoration and reconfiguration shall involve reconstruction of the mima mounds and basins, removal of weedy vegetation, revegetation of the mounds with upland sage scrub species, and inoculation of the pools with vernal pool species. A Conceptual Vernal Pool Mitigation Plan shall be prepared that outlines the location and activities of the restoration (Appendix X of this report). The plan will be submitted to and be to the satisfaction of, both the Directors of the Department of Planning & Development Services, Parks and Recreation, and USFWS. A ratio of at least 1:1 restoration shall include the establishment of new vernal pool basins within the K8 vernal pool group. The balance of the mitigation ratio shall include enhancement of the existing pools. There is a total of 0.26 acre available for enhancement within the existing pools. The additional restoration mitigation requirement (a total of 0.112 acre) shall be directed toward establishing new basins within the K8 vernal pool group.

Based on the inundation records, fairy shrimp surveys, and floral inventory, the following potential vernal pools meet the previously applied ACOE jurisdictional criteria:

Assuming all of K6 (approximately 0.11 acre of vernal pool basin) is impacted and the mitigation requirement is a combination of 2:1 (pools not occupied by San Diego fairy shrimp – 0.107 acre) and 5:1 (for one pool occupied by San Diego fairy shrimp – 0.005-acre), as outlined above, a total mitigation of 0.239 acre shall be required. This is typically satisfied by providing at least 1:1 as restoration and the balance as enhancement. Enhancement within the K8 pools will likely be restricted by the resource agencies to those pools not containing fairy shrimp. **Table 2.3-12** of the EIR summarizes the existing conditions of the pools within the K8 mesa.

The Conceptual Vernal Pool Mitigation Plan provides for the short term management and monitoring of the restoration area. Long term management will be provided by the POM or included with the requirements of the Conserved Open Space (See M-BI-17).

Option No. 2: Under this option, the applicants would mitigate the Project's vernal pool impacts by purchasing vernal pool mitigation bank credits for a total of 0.239 acre at a combined 2:1 (for pools not occupied by San Diego fairy shrimp) and 5:1 mitigation ratio (for pools that are occupied by San Diego fairy shrimp).

Vernal pool mitigation will include vernal pool restoration and enhancement within a disturbed upland habitat area nearby existing vernal pools within the K8 mesa that is assumed to have historically supported vernal pool habitat (Figure 4). The mitigation program will include the following steps that are further outlined in this document:

1. Preparation of biddable construction documents to implement the design intent. (To be prepared at a later date upon approval of this Mitigation Plan per Section 2.11 of the County Report Format and Content Requirements).
2. Control of non-native plant species from the restoration site and surrounding uplands.
3. Grading and re-sculpting of the restoration area to provide the intended grade elevations and hydrology for the restored vernal pools.
4. Collection of seed and inoculum from appropriate on-site vernal pools at the K6 mesa, with subsequent inoculation into the restored K8 vernal pools.
5. Application of additional collected native upland plant species seed to help revegetate disturbed mima mounds and adjacent upland areas.
6. Enhancement of adjacent disturbed upland habitats through seed application with appropriate native species.
7. Construction of access barriers surrounding the restoration site, to protect the existing vernal pool and mima mound habitat from future disturbance.
8. Maintenance of permanent perimeter fencing around the vernal pool preserve area.
9. Long-term maintenance of restoration areas and implementation of remedial measures as necessary.
10. Long-term biological monitoring and reporting.
11. Ultimate achievement of success criteria and performance standards.

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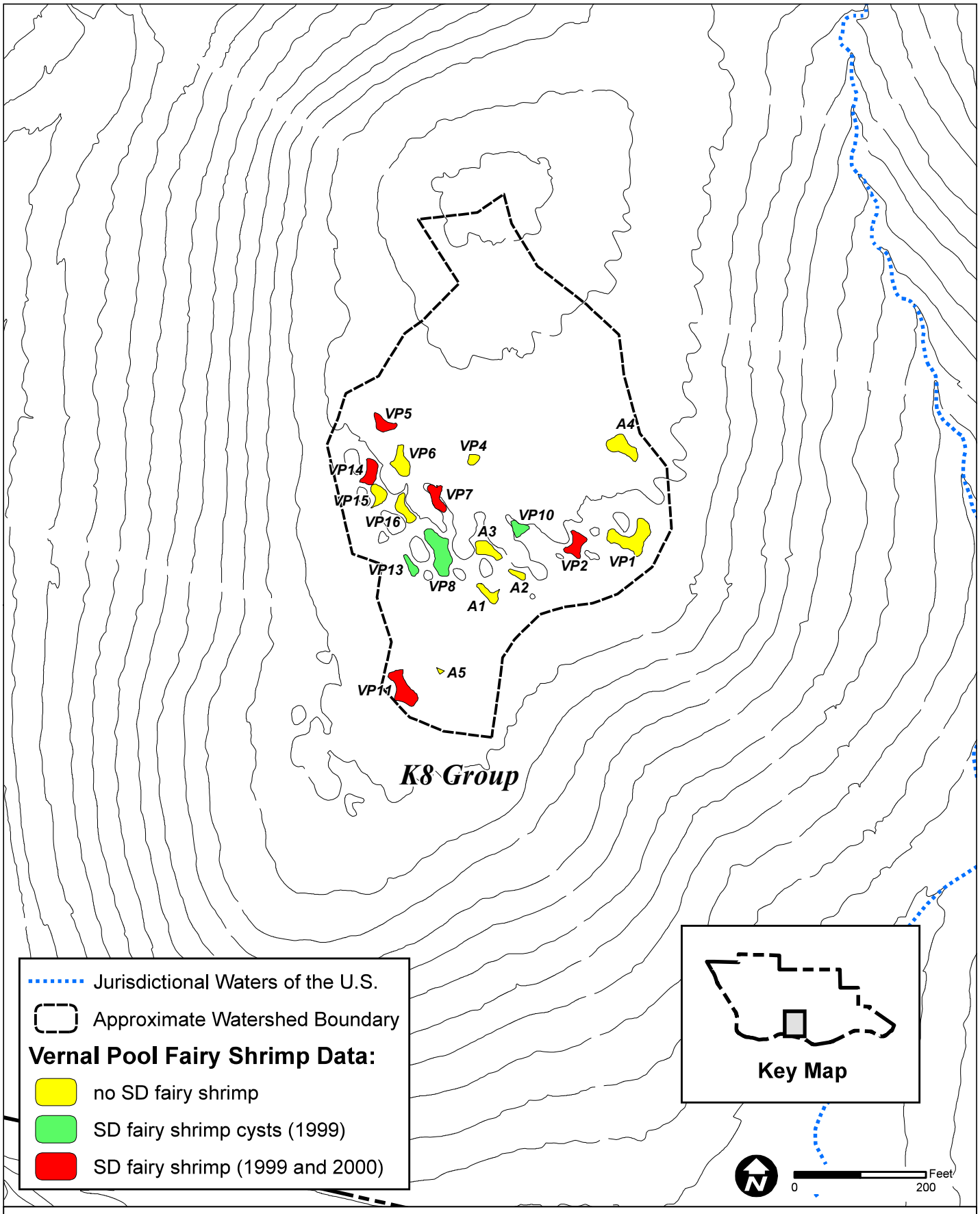

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FIGURE 4

Existing Vernal Pool Map

Otay Ranch Resort Village Site - Conceptual Vernal Pool Mitigation Plan

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2 GOAL OF THE COMPENSATORY MITIGATION PROJECT

The primary goal of the proposed vernal pool mitigation for Alternative H is to compensate for the impacts to the K6 vernal pools located on site within the development footprint through enhancement and restoration of vernal pools within the K8 vernal pool complex that will be preserved on site. As components of the overall goal, this Mitigation Plan will provide guidance for enhancement and restoration of adjacent mima mounds and degraded transitional upland areas surrounding the vernal pools on the K8 mesa.

2.1 Responsibilities

The project applicants (Moller Otay Lakes Investments LLC and Baldwin & Sons LLC) are responsible for initiating and funding all installation, maintenance and monitoring requirements during the 5-year program. They shall be responsible for hiring a qualified landscape maintenance contractor to carry out all maintenance work and for hiring a qualified Project Biologist to carry out the monitoring program for the duration of the 5-year period. The specific identity of the compensatory mitigation project designer, the installation contractor, the Project Biologist and the revegetation maintenance contractor will be determined at a later date during the permitting process.

2.1.1 Applicant Responsibilities

Dudek submits this Restoration Plan on behalf of the applicant, Baldwin & Sons LLC (contact: Mr. Stephen Haase) and Moller Otay Lakes Investments LLC (contact: Mr. Chuck Miller).

The applicant shall be financially responsible for all negotiations and costs associated with the implementation, monitoring, maintenance and long-term management and protection of the mitigation areas, as defined in this document. The applicant shall select and may replace, at their discretion, the landscape contractor, maintenance contractor, and Project Biologist for this project at any time. The applicant or current owner shall submit a bond to cover the anticipated costs for the implementation, maintenance, and monitoring of the program through the end of a 5-year maintenance and monitoring program. The applicant, or current owner, shall place a conservation easement over the new mitigation areas before project installation.

Proposed mitigation areas shall be accessible to the County throughout the project review and permitting phase, as well as during the installation and 5-year maintenance and monitoring period.

2.1.2 Project Biologist Responsibilities

A qualified Project Biologist shall be retained to monitor the implementation and perform long-term biological monitoring, as outlined in this plan. The Project Biologist may be an individual or a team of individuals and must have demonstrated experience in vernal pool restoration. The

Project Biologist must demonstrate an understanding of local plant community ecology and habitat restoration, and have expertise in plant and wildlife identification.

The Project Biologist shall help ensure that the applicant follows the guidelines of this plan, County permits, and final detailed revegetation construction documents for the interpretation of such plans, field monitoring of project installation, monitoring through the 120-day maintenance period, and biological monitoring throughout the 5-year monitoring period.

The Project Biologist shall be required to monitor throughout the construction period. Monitoring time may increase or decrease as required by field conditions, construction activities, and resource agency permit requirements. During the construction, the Project Biologist will have the authority to stop work in situations where biological resources, not permitted to be impacted, are in imminent danger of impacts from construction activities. Each site visit will be documented in a monitoring observation report that will note construction activities relating to the mitigation plan and any project deficiencies.

Biological monitoring will be performed following acceptance of mitigation installation and throughout the 5-year, long-term monitoring phase.

2.1.3 Restoration Contractor Responsibilities

Restoration project installation and associated labor shall be provided by a contractor who has a valid California landscape contractor's license, has previous experience with habitat revegetation in the region, and can demonstrate successful similar revegetation project experience in Southern California. The contractor must demonstrate knowledge of techniques for growing, transplanting, and installing native plant species.

The contractor will be responsible for conformance to this plan, resource agency permits, and construction documents. The construction documents will include detailed graphic revegetation construction plans and written specifications that are in substantial conformance with the information and direction contained within this plan. The contractor’s responsibility will continue until successful revegetation and final acceptance by the project applicant and Project Biologist at the end of the initial 120-day plant establishment period. The contractor will not be released from contractual obligations until written notification is received from the applicant, in consultation with the Project Biologist, certifying satisfactory completion of all required installation tasks as defined in the installation contract, construction documents, this plan, and resource agency permits.

After initial installation and completion of the 120-day plant establishment period, the applicant will have 5-year maintenance services performed by an experienced landscape maintenance contractor that specializes in habitat restoration. Maintenance work shall be performed as indicated herein and according to the Project Biologist’s recommendations. The applicant may choose to hire a maintenance contractor that is separate from the installation contractor.

2.1.4 Landscape Maintenance Contractor Responsibilities

A landscape contractor shall provide 5-year maintenance. The contractor shall possess a valid California landscape contractor's license, have previous experience with habitat revegetation in the region, and be able to demonstrate successful similar revegetation project experience in Southern California. The contractor must demonstrate knowledge of techniques for maintaining native plant species and control of non-native species.

The contractor must possess a Qualified Applicator's License issued by the California Department of Pesticide Regulation, and maintenance laborers must receive appropriate annual herbicide training. Maintenance laborers must be trained to distinguish common native and non-native plants.

Maintenance work shall be performed as indicated herein and according to the Project Biologist's recommendations. The landscape maintenance contractor will be responsible for conformance to this CWMMP and any other conditions of County or resource agency permits. The contractor's responsibility will continue until final project approval by the County. The contractor will not be released from contractual obligations until written notification is received from the applicant certifying satisfactory completion of all required maintenance activities.

2.1.5 Seed and Plant Collection and Procurement Responsibilities

Container plant material may be purchased from a native plant nursery (such as Tree of Life Nursery in San Juan Capistrano, Moosa Creek Nursery in Valley Center, Las Pilitas Nursery in Escondido, El Nativo Nursery in Azusa, Matilija Nursery in Moorpark, or other sources of local native plant material approved by the Project Biologist). If project timing allows, seed collected from the project area will be provided for propagation to one of the native plant nurseries listed above. At a minimum container plants shall have origins from cismontane San Diego County. The container plant provider is responsible for providing the quantity and sizes of plants specified in this plan in a pest, disease and weed-free condition.

Seed for inclusion in the seed mix may be obtained from S&S Seeds in Carpinteria, California, or an alternative source approved by the Project Biologist. The seed provider will be responsible for meeting the pure live seed and germination percentages standards listed in this plan and documenting the provenance of the seed collected. If feasible, seed shall be collected from the project site. At a minimum seed shall have origins from cismontane San Diego County.

2.2 Types and Areas of Habitat to be Restored

This Mitigation Plan proposes restoration of disturbed areas within the K8 vernal pool complex, including the road which bisects existing preserved areas of the K8 vernal pool complex. The habitat to be restored will consist of a mosaic of sage scrub and grassland habitat, typical of vernal

pool complexes in the region. The mitigation area will include vernal pools (both existing and newly established), mima mounds, and surrounding uplands.

Because the K6 vernal pools impacted by the proposed project are characterized as having low to moderate value, the proposed mitigation will use a 2:1 mitigation ratio for the pools not occupied by San Diego fairy shrimp and 5:1 mitigation ratio for the occupied pool. Thus 0.025 acre will mitigate for impacts to the occupied pool, and 0.214 acre will mitigate for the impacts to the unoccupied pools for a total mitigation of 0.239 acre of vernal pool basin area.

Recent biological field work and topographic analysis have identified locations for establishment of some additional mima mounds and vernal pools within the K8 vernal pool complex. The mesa has been previously disturbed (both vegetation and topography), and several areas that appear to have previously functioned as vernal pools and mima mounds are impaired and no longer functioning as such. These areas will be contoured to enhance the concave/convex attributes of vernal pool/mima mound topography. Surrounding topography will be left undisturbed. However, the vegetation that currently exists is largely non-native and the intent of the Mitigation Plan is to enhance the surrounding habitat with the addition of native species. Habitat enhancement in the surrounding habitat areas will consist of weed control and native species seeding. Detailed construction drawings and specifications will be prepared once direction has been provided by the permitting resource agencies and this plan is approved and finalized.

2.3 Functions and Values to be Restored

The degraded condition of the K8 mesa site is the result of previous vehicular access, grazing activities, sediment accumulation from erosion, and other prior site disturbances. As a result of prior disturbances, we believe that the area is currently functioning well below capacity relative to historic conditions. Thus, the functions and services to be restored include those typical of a properly functioning vernal pool/mima mound complex. For example, this Mitigation Plan intends to improve the existing functions and services, including adding additional vernal pool and mima mound area through restoration, thereby increasing biological and hydrological functions and services, controlling non-native vegetation in and around the existing and restored vernal pools, protecting the area from future disturbance with exclusionary fencing, restoring the roadway that bisects the vernal pool complex to native habitat, protecting and preserving the pool's watershed and providing adaptive, long-term management to address the viability of the vernal pool complex in perpetuity. The upland mima-mounds surrounding the restored pools will be planted and/or enhanced with available salvageable, native vegetation collected from adjacent areas, from acquired seed and from the proposed graded areas within the mitigation site. These enhancement measures will help stabilize the surface soils and will help improve long-term habitat quality through exotic plant and weed reduction, through native plant establishment and by providing a native plant buffer for the restored vernal pool habitat.

2.4 Time Lapse

It is likely that the restoration areas will require many years to approach the ultimate structure and composition of naturally occurring vernal pool habitat; however, within 5 years it is anticipated that the intended floral compositions for the restored pools should be established sufficiently to persist on their own under natural conditions. In addition, the hydrology anticipated to support the restored vernal pools should be similar to the hydrology of the existing vernal pools within the K8 group and should not affect the functionality of the existing pools. By the end of the 5-year maintenance and monitoring period it should be apparent whether the restoration and enhancement effort is proceeding toward successful establishment of a viable vernal pool habitat.

The success criteria outlined in Section 6.1 herein, which are goals to be achieved during the 5-year monitoring period, represent an intermediate stage in the development of the vernal pool habitat. The target species composition and cover to be achieved during the 5-year period should provide an adequate foundation for the long-term development of the restored vernal pool habitat.

2.5 Cost

Costs of preparation of the mitigation for the impacts to vernal pools are estimated based on past experience and knowledge of the site. It is estimated that the cost for preparation of the detailed construction plans and specifications, the implementation including topsoil salvage, vernal pool basin creation, and vegetation planting, and the mitigation site maintenance and monitoring for 5 years is $135,000.

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3 PROPOSED VERNAL POOL MITIGATION SITES

3.1 Site Selection

This Mitigation Plan has designated 21 vernal pool basins as potential basin location sites, but will select approximately 12–13 of the sites for basin location restoration. The 12–13 basin locations will be those determined to be the most suitable, requiring the least amount of topographic modification.

3.1.1 Soils

Soil type is a critical factor in the formation of vernal pools and must consist of a nearly impermeable surface or subsurface soil layers (USFWS 1997). According to Bowman (1973), soils within the project site consist of Olivenhain cobbly loam, San Miguel–Exchequer rocky silt loams, Redding cobbly loam, and Friant rocky fine sandy loam. The San Miguel–Exchequer soils occur in the northwestern portion of the site. The Redding soils occur in and around the tall hilltop in the eastern portion of the site. The Friant soils occur in much of the northern portions and in the far eastern portion of the site and are characterized by rapid runoff, high erosion hazard, and prolific rock outcrops. A small portion of Diablo–Olivenhain complex occurs in the western portion, adjacent to Otay Lakes Road. The Olivenhain soils occur in the southern, western, and central portion of Alternative H, including the three large mesas, within which the vernal pool complexes K6 and K8 exist. This soil type is known to support vernal pools and certain rare plant species.

The Olivenhain cobbly loam soil, which comprises the mitigation site, consists of a clay subsoil that has a high water holding capacity. Evidence of the clay subsoil can be seen in the road ruts running through the area. As a result, it is anticipated that the proposed mitigation site contains appropriate soil characteristics for successful establishment of vernal pool habitat. Typical vernal pool and mima mound topography consists of depressions within undulating landscapes where soil mounds are interspersed with basins, swales, and drainages (USFWS 1997). This specific topography exists within the proposed mitigation site, but in the proposed pool restoration areas the topography is currently too shallow and needs to be modified to function as sufficient vernal pool basins. The existing site conditions will be altered slightly in order to restore the proper micro-topography to support vernal pools.

As an additional design feature, this Mitigation Plan proposes to salvage soil from the K6 vernal pool group prior to development impacts, if the soil appears appropriate for use. Clay subsoil from the K6 vernal pools will be salvaged for use in development of clay hardpans in the restored vernal pools within the mitigation area at the K8 complex. This will ensure that the appropriate clay hard pan conditions exist within the restored pools.

Detailed biological information for the proposed mitigation site is provided in Tables 4 through 7 which provide the determination of occupation of the pools by fairy shrimp and a plant list for

each existing vernal pool. The mitigation site is readily accessible by vehicle and an existing ranch road is present that provides access directly to the K8 mesa.

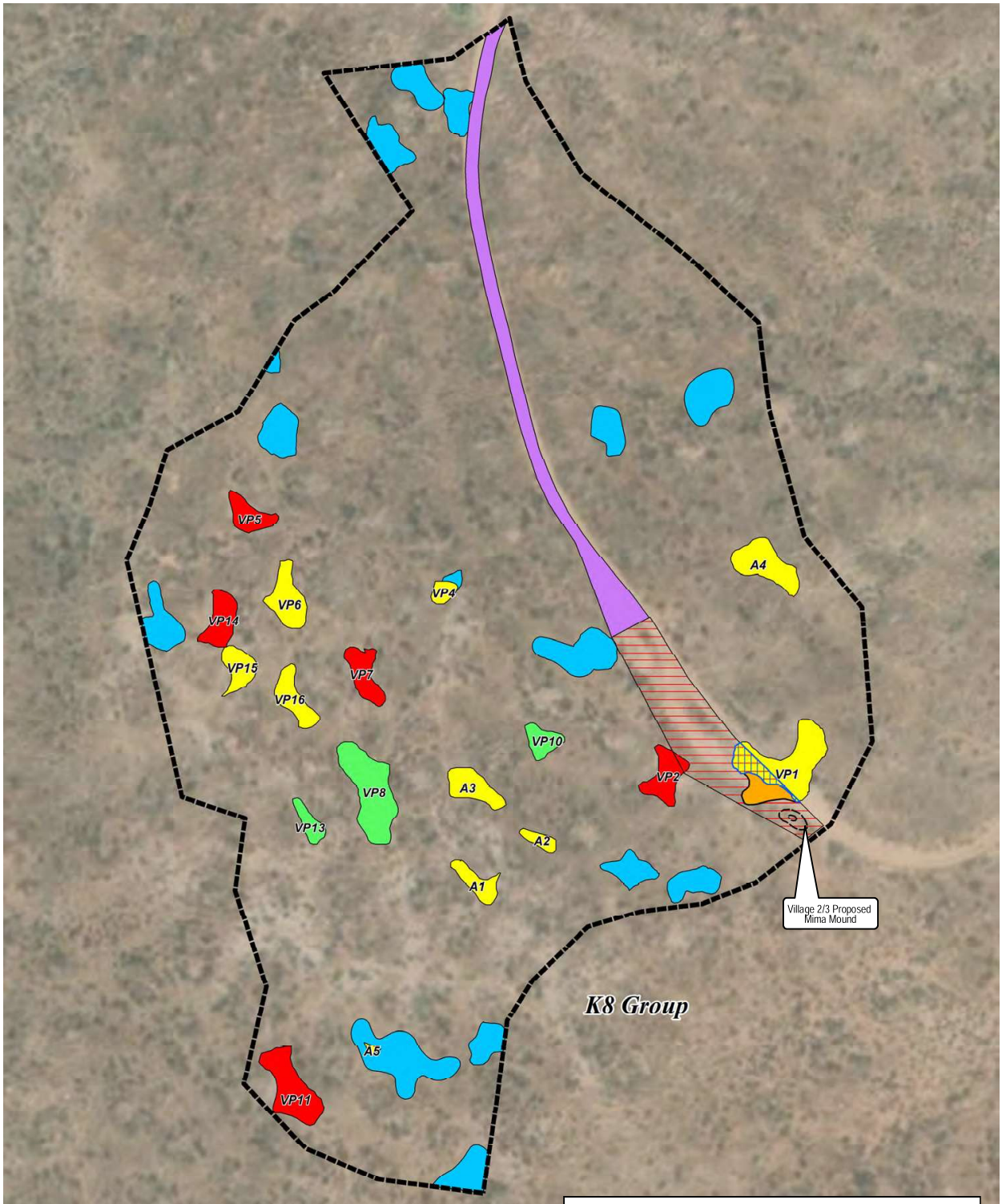
3.2 Location and Size of Compensatory Mitigation Site

The mitigation/restoration area is located within an existing vernal pool complex known as the Vernal Pool K8 Group, located in the south-central portion of the Otay Ranch Resort Village property boundaries, City of Chula Vista, County of San Diego, California (Figure 2). The property is situated in U.S. Geological Survey (USGS) 7.5-minute series, Jamul Mountains quadrangle. Elevations within the restoration site are at approximately 620 feet above mean sea level.

The location of the vernal pool mitigation area includes the entire K8 vernal pool complex, including the area within the estimated watershed boundary and a 100-foot buffer (Figure 5). The area is approximately 11.5 acres in size. The area is located on a gently sloping mesa that declines in elevation to the west, south and east.

Vernal pool area required for mitigation totals 0.239 acre or 10,411 square feet. Vernal pool enhancement will consist of weed control within the vernal pools not known to support San Diego fairy shrimp (*Branchinecta sandiegonensis*) in order to avoid direct impacts to this federally listed, endangered species. This includes a total acreage of 0.144 acre. The proposed credit proportion for the enhancement efforts is 30%, therefore enhancement efforts will provide 0.043 acre of the mitigation credit needed. The balance of the mitigation credit (0.196 acre) will come from restoration and/or establishment of additional vernal pools at the K8 mesa.

The average size of the existing vernal pools at the K8 complex is 692 square feet. Based on the average size of the existing vernal pools at this location, restoration of 8 vernal pools comparable in size would achieve the required acreage amount. A total of 8 potential vernal pool restoration basin sites have been identified within the mesa (Figure 5). The 8 potential vernal pool restoration basin sites have high suitability, are within ideal locations with excellent potential, and are within flat areas suitable for ponding and water retention. Some modifications and design work may be required but in general, the locations are suitable for vernal pools.



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AERIAL SOURCE: BING MAPPING SERVICE

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FIGURE 5

Proposed Vernal Pool Mitigation Area (K-8 Group)

Otay Ranch Resort Village Site - Conceptual Vernal Pool Mitigation Plan

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3.3 Functions and Values

As described in Section 2.2, the condition of the K8 mesa site is degraded from previous vehicular access, grazing activities, sediment accumulation from erosion, and other prior site disturbances. The abundance of non-native plant species at the site is indicative of prior site disturbance. The vegetation is composed of a mosaic of patchy coastal sage scrub and non-native annual grassland. Non-native species are predominantly annuals, such as filaree (*Erodium* spp.), wild oat (*Avena* spp.), brome grasses (*Bromus* spp.), annual ryegrass (*Lolium multiflorum*), tocalote (*Centaurea melitensis*), and mustard (*Hirschfeldia incana* and *Brassica nigra*).

A dirt access road bisects the K8 vernal pool complex, which diminishes contiguity of vernal pools, mima mounds and their associated plant and wildlife resources. Additionally, the dirt access road facilitates soil erosion and sediment transport from the north (uphill) towards the vernal pools.

As a result of prior disturbances, the area is currently functioning well below capacity relative to historic conditions.

3.4 Present and Proposed Uses

Prior uses of the mitigation area include off-road vehicular activity and grazing/ranching. Currently, the perimeter of the area is fenced; however the fencing is designed to allow the use of the dirt access road that bisects the site. The site is not currently being used for anthropogenic purposes, other than vehicular access.

Proposed use of the mitigation site will be for plant and wildlife habitat and as a preservation area for mima mound and vernal pool habitat. The restored vernal pool area will be preserved and managed as part of a natural open space area, consistent with the preservation of vernal pool resources and other natural habitat in nearby areas. The elimination and restoration of the road and the enhancement of upland vegetation surrounding the restored vernal pools will also help provide an added buffer to the vernal pool habitat, will link the two portions of the complex that had been bisected by the road and will help eliminate future disturbance. Additional preserve fencing and signage will help preclude future impacts by off-road vehicles

3.5 Reference Sites

Typically, a reference site is selected which provides the conditions against which the mitigation site is compared. Because the proposed vernal pool mitigation site is located within an existing area with vernal pools, the K8 vernal pool site itself serves to function as a reference site.

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4 IMPLEMENTATION PLAN FOR THE COMPENSATORY MITIGATION SITE

The following section describes the necessary implementation measures for restoring the intended habitat and implementing the intended restoration and enhancement program. Final grading plans and revegetation plans for the mitigation area will be prepared at a later date, in coordination with the Project Biologist, in order to implement the biological intent outlined in this document. The Project Biologist will supervise implementation of the mitigation and monitoring program.

4.1 Rationale for Expecting Implementation Success

As observed in previous surveys conducted by Dudek, the vernal pools within the K8 complex experience seasonal inundation for a long enough period to support the establishment of vernal pool conditions (e.g., vernal pool indicators). However, the proposed vernal pool restoration sites consist of insufficient depressions, inadequate hardpan subsoil, or too much disturbance to currently develop vernal pool conditions. Some of the locations are believed to have existed as functioning vernal pools in the past (particularly those locations within the dirt roadway). Further, the overall topographic patterns of the mitigation site are of hummocks (mima mounds) and depressions on a relatively gently sloping mesa.

Through topographical modification (i.e., either mechanical and/or by hand), the drainage patterns within the restoration site will be altered sufficiently to help retain hydrologic input within the restored basins consistent with appropriate vernal pool topography.

The soil conditions are generally appropriate, as evidenced from the existing vernal pools on the mesa and the presence of Olivenhain Cobbly Loam soil series (Bowman 1973). However, to ensure that an adequate clay hardpan exists to form an impermeable soil layer within the restored vernal pools, clay subsoil salvaged from the vernal pools at the K6 mesa will be imported and compacted in the bottom of the basins, if appropriate.

Successful restoration of vernal pools is increased when the pools to be restored are located near existing pools (USFWS 1997). The fact that the proposed vernal pool restoration area is adjacent to existing vernal pool habitat, provides assurance that the site is suitable, and also improves the likelihood that the appropriate vernal pool species will be able to persist at the mitigation site.

A 100-foot buffer from the edge of the approximate watershed boundary will also be enhanced through weed management and native seeding to help improve the adjacent upland habitat areas. Enhancement of this buffer area will help increase the success of the restored vernal pools by limiting the input of non-native plant propagules into the vernal pool complex.

Vernal pools are not homogenous throughout San Diego County due to differences in climate, topography and soils (USFWS 1997). Therefore, the plant species composition of the surrounding

vernal pool habitat will be used as the model for the restoration effort. Native seed and inoculum will be collected from the K6 vernal pools that contain vernal pool species. Seed for the upland habitat enhancement will be collected from local sources for use as propagules for the seeding effort. The use of local seed and inoculum improves the chances for successful restoration because the species are locally adapted to the conditions present at the site. Because the restoration pools are immediately adjacent to existing vernal pools natural recruitment is likely to occur.

4.2 Financial Assurances

The applicant shall post a performance bond or letter of credit jointly with the resource agencies for the full amount of the cost of implementation of the restoration and enhancement program. This shall include the following elements and associated costs: (1) clearing and grubbing; (2) plant salvaging, seed collection and storage; (3) site preparation and grading; (4) salvaged plant and seed installation; (5) 120-day plant establishment maintenance; (6) 5-year maintenance and (7) 5-year biological monitoring. The total actual cost shall be determined at completion of the final revegetation construction documents.

A revegetation agreement shall be signed and notarized by the property owner following approval of this revegetation plan and accompanied by the required security as agreed upon by the County of San Diego.

4.3 Schedule

Maintenance activities described above will be conducted monthly during the initial 120-day plant establishment period and then four times per year thereafter for the remainder of the 5-year maintenance and monitoring period. Maintenance visits will be timed to be conducted during the most productive and effective time of year for weed control (e.g., winter and early spring).

4.4 Site Preparation

Tasks

1. Under the direction of the Project Biologist, the restoration contractor will collect vernal pool inoculum, propagules, clay topsoil and upland plant species seed from the K6 vernal pool and upland mima mound areas. The salvaged material will be stored at an appropriate location (e.g., native plant nursery or seed storage facility) until it can be utilized at the restoration area.
2. As determined appropriate by the Project Biologist, the restoration contractor will salvage some of the perennial plants and bulbs from the K6 area and store/maintain these materials until the appropriate planting period for the adjacent upland areas within the mitigation site.

3. Native vegetation, within the limits of grading for the restored vernal pools will be salvaged and/or cut and mulched as deemed appropriate by the Project Biologist, for reuse in the restoration area.
4. The mitigation site will be weeded prior to grading to control non-native plant species. Following the initial weeding, the thatch and weed material will be removed and disposed of off-site. Weed management procedures will be continued on a monthly basis until deemed by the Project Biologist as being appropriately controlled for seeding.
5. Prior to any grading/excavation, temporary perimeter construction fencing and silt fencing will be installed around the perimeter of the existing vernal pools to prevent inadvertent disturbance and deposition of soil and dust within the existing vernal pools.
6. Prior to excavation of the restored vernal pool basins, the contractor shall perform a soil analysis to determine the soil conditions and whether there is an existing clay pan layer. This would be done to determine whether over-excavation of the basin bottom and importation of clay subsoil to create an appropriate impermeable subsurface are necessary.
7. Excavate (mechanical and/or by hand) the restoration basins and restore/create adjacent mima mound topography. Contour the basins and mima mounds to have a natural form comparable to that of the existing basins and mima mounds on the K8 mesa.
8. Perform soil compaction analysis on restored pools and compare against existing pools. Soil compaction within the restored pool should be similar to the soil compaction within the existing pools (i.e., no more than a 5% variation).
9. After soil compaction analysis, it may be necessary to further compact the soil within the restored vernal pool basins to the appropriate level. Subsequent soil compaction analyses should follow to verify that the appropriate compaction has been achieved.
10. Rip the dirt access road within the mitigation area with the exception of the proposed vernal pool restoration sites. Rip the soils on-contour to 12-inch depth. Ripping shall not run downhill as this can exacerbate erosion. Rips shall be no more than 8-inches apart.
11. Install any salvaged live plant materials from the K6 mesa within the ripped roadway and other open, disturbed areas within the enhancement area as directed by the Project Biologist. Water in any planted live plants using a water truck and hose.
12. Apply native seed mix on newly restored mima mounds. Also, apply native seed mix within designated enhancement areas within the surrounding upland habitat.
13. Apply the salvaged vernal pool inoculum and vernal pool seed mix to the restored vernal pools.
14. Upon successful completion of the initial restoration phase, initiate biological monitoring and maintenance and continue for 5 years as described later in this Mitigation Plan.

Note. The actual dates for implementation of these tasks will be determined based on seasonal weather constraints and through coordination with the resource agencies. All restoration work involving soil manipulation shall be conducted during the dry season prior to the onset of the rainy season. Final dates for the start of construction and the ultimate installation completion are contingent upon the developer's phasing strategies.

4.4.1 Preliminary Design Consideration and Site Modifications

Previous detailed mapping of the existing vernal pools within the K8 vernal pool group was utilized to evaluate the existing spatial distribution of vernal pools and mima mounds within the target mitigation/restoration area (Figure 4). The general location and quantity of the potential vernal pool restoration sites are based upon previous biological surveys of the area conducted by Dudek biologist Vipul Joshi, and Dudek habitat restoration specialist/landscape architect John Minchin. This site was evaluated relative to the mitigation needs and overall site potential.

The site encompasses sufficient area to support the intended restoration effort, and appears to have adequate watershed area to support the additional vernal pool basins, without adversely affecting the existing vernal pools.

The preliminary plan view layout for the vernal pool restoration area with details of basin locations is shown on Figure 5. This plan shows the locations of the proposed vernal pool restoration areas in relation to the existing pools in the K8 Group area. The exact locations, sizes, and shapes of the restored vernal pools will be further analyzed during field review during the design phase. The site encompasses sufficient area to support the intended restoration effort, and has adequate watershed area to support the expanded vernal pool basin, without adversely affecting the adjacent vernal pools. The site would also be protected from future disturbance by the existing fenced boundaries of this portion of the preserve, through the abandonment of the existing road, and through new exclusionary fencing to permanently block-off the area. Photographs of the existing site conditions at the proposed vernal pool mitigation area are shown on Figure 6 (Photos 3–6).

Existing mima mounds between the proposed vernal pool restoration areas may be heightened with the excavated material from the basin bottoms. If not already present, new mima mounds may be created to frame the restored vernal pool locations. An important design consideration for the mima mound alterations is the presence of existing native plant resources. If existing mima mound vegetation is largely native and undisturbed, it will be unmodified. Mima mounds with an abundance of non-native plants and exhibiting a disturbed character may be modified.

1 - View of K6 Vernal Pool Complex looking south (May 2009)

2 - View of K6 Vernal Pool Complex looking southeast (May 2009)

3 - View of K8 Vernal Pool Complex near Vernal Pool 8 looking northeast (May 2009)

4 - View of K8 Vernal Pool Complex near Vernal Pool 11

5 - View of K8 Vernal Pool Complex near Vernal Pool 6 looking south (May 2009)

6 - View looking south of existing access road to be restored (May 2009)

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FIGURE 6

Site Photographs of K-6 and K-8 Vernal Pool Complexes

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Figure 7 provides a typical schematic cross sectional view illustrating the relationship of the existing topography, vernal pool basin excavation, and new mima mound creation/modification. Figure 8 provides an example plan view layout for the proposed revegetation treatments for the modified or newly established mima mounds.

The initial site preparation work necessary to prepare the restoration area will include the removal of weeds and invasive species from the limits of the mitigation site, including the adjacent upland areas. This will include the physical removal of non-native herbs and grasses, exotic plants and all associated debris. Disposal of these materials shall be at an acceptable off-site source or landfill facility. Dudek recommends hand clearing around any desirable native vegetation during the initial weed removal effort. If determined appropriate by the Project Biologist, native perennials within the vernal pool and mima mound restoration areas (i.e., limits of disturbance), would be salvaged prior to grade modification and would later be transplanted into the improved upland mima mound and transitional upland areas.

After the grading of the restored vernal pool and mima mound area has been achieved, hydrological data will be collected the following winter to determine whether additional excavation may be necessary to attain the desired vernal pool hydrology.

4.4.2 Topographic Reconstruction

Prior to final design of the vernal pool restoration effort (i.e., preparation of detailed construction documents), a detailed Global Positioning System (GPS) mapping of the mitigation area will need to be conducted to further document existing site conditions and to help refine a final grading scheme for the restoration effort. Given the fine elevation intervals between vernal pool maximum depths and mima mound peaks, elevation data to within 0.5’ accuracy will be surveyed or otherwise obtained. This information will be used to provide base information for the preparation of the final detailed revegetation construction documents (i.e., plans and specifications) that would be produced at a later date, once this Mitigation Plan is approved. Topographic grading plans for the vernal pool area will be prepared as part of the final revegetation construction document package.

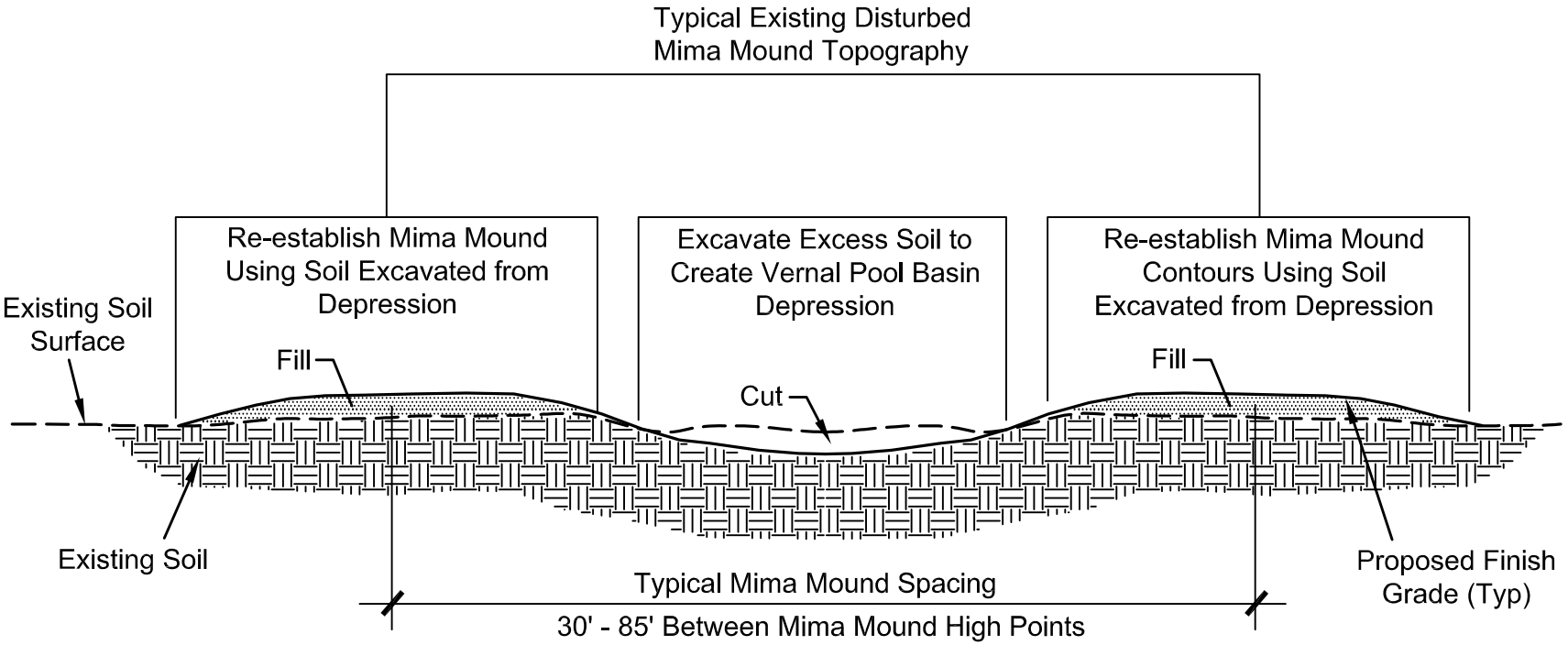
Prior to the start of any site preparation and/or grading work, the perimeter of the existing pools will be staked with pin flags to provide visible demarcation of the existing pool boundaries. One stake shall be clearly labeled at each pool with the corresponding pool number for future identification. Upon completion of the restored pool grading, the perimeter of the restored pool shall also be staked with metal t-bar posts and flagging tape shall be installed between the posts completely surrounding the pool for identification and protection purposes. The roadway shall be completely blocked-off and/or relocated around the vernal pool preserve area if temporary access is still needed. Fencing to secure the area from future disturbance shall be installed and kept in place in perpetuity.

As a result of the past disturbances, such as the bisecting dirt access road, the capacity of the area to capture and store water has been compromised. The dirt road promotes directed surface runoff down slope, as opposed to more desirable dispersed sheet flow across the mesa. Ripping followed by track walking the road may help reduce overall erosion. Restoration of the dirt access road will help achieve greater water retention within the restored vernal pool basins.

In order to create appropriate mima-mound and vernal pool habitat, existing upland areas will be excavated to a level that will promote the appropriate seasonal inundation. Excavation will be accomplished mechanically, and/or by hand where necessary to avoid negative impacts to the adjacent vernal pool habitat and vegetation. The final extent of pool excavation and mima mound creation will be determined by the Project Biologist in the field, based upon the inspection of soil color and texture and through soil test pits to determine if appropriate subsurface compaction conditions exist to allow for the proper water retention. In addition, a final soils analysis shall be conducted by a soil testing laboratory, after rough grading is completed, to verify whether additional soil remedial measures (i.e., amending, conditioning, substrate recreation, etc.) will be required to support the intended native species revegetation program.

Excavation (mechanical and/or hand) of the bottom of the vernal pool restoration areas will function to increase the water holding capacity of the individual basins. In addition, soil compaction analysis will be conducted on the existing pools and the restored pools to determine optimal soil conditions to facilitate the long-term water retention to support the desired vernal pool habitat. In order to restore the water holding capacity of the restored pools to that of the existing pools, the soils within the restored pool may need to be compacted, or sub-grade modification made to create an impervious sub-surface layer, in order to match the soil compaction within the existing pools.

A qualified Project Biologist will supervise the restoration grading activities. Grading of the restoration site will be conducted during the summer and early fall in order to minimize soil disturbance during the rainy season when vernal pools fill with water. The grading plans will identify the limits of grading, as well as those areas of existing habitat that are not to be impacted by the restoration activities and that would be protected/preserved.



NOTE:
1. Height of mima mound fill soil will be directly proportional to the depth & area of excavation.

No Scale

FIGURE 7

Section of Typical Vernal Pool and Mima Mound Grading

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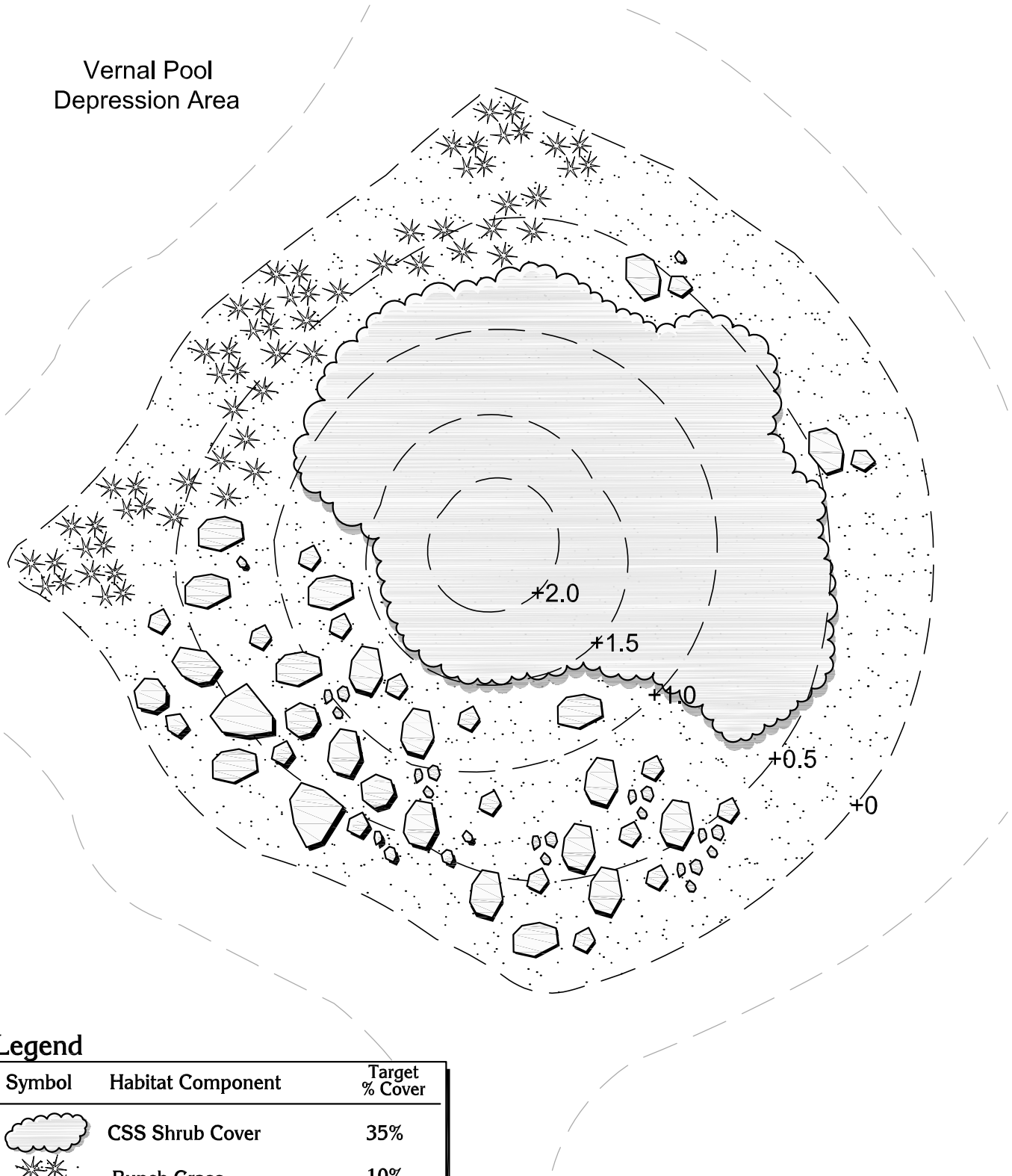

Legend

Symbol	Habitat Component	Target % Cover
	CSS Shrub Cover	35%
	Bunch Grass	10%
	Rock/Bare Ground/Annuals	55%

Scale: 1/4" = 1' - 0"

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FIGURE 8

Mima Mound Habitat Example

Otay Ranch Resort Village Site - Conceptual Vernal Pool Mitigation Plan

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These areas will be defined by temporary barriers (staking, flagging, silt fencing, etc.) prior to initiation of the grading activities.

Silt fencing will be installed around the perimeter of the adjacent existing vernal pools during construction and during the weed eradication procedures, to help protect the pools from windblown seed invasion and siltation. The silt fencing will be removed after all weed eradication and revegetation procedures are complete. Silt fence trenches will be backfilled and compacted to match the adjacent non-disturbed soil and seeded with the appropriate seed mix, as indicated by the Project Biologist.

4.4.3 Fencing and Signage

Exclusionary fencing will be installed and maintained, beginning with the commencement of grading to ensure the exclusion of disturbances including off-road vehicles, foot traffic, and/or mountain bikes through the mitigation/restoration area. The exclusionary fencing will be installed at the 100-foot buffer distance from the edge of the watershed boundary. The fencing will match the existing preserve area fencing and will consist of metal T-Bar stakes and three-strand barbed wire fencing or whatever is acceptable to the County. The existing fencing that generally follows the watershed boundary perimeter may be left in place or relocated as the 100-foot buffer fencing. Fencing shall remain in place in perpetuity. No vehicular access will be allowed through the mitigation/restoration area after completion of restoration work. If vehicular access is needed through this area, then access shall be re-routed around the outside of the perimeter fencing at the 100-foot buffer distance.

Steel signs (12 inches × 18 inches) indicating that habitat restoration is in progress and that the area is an ecological preserve, with no trespassing allowed, will be attached to the fencing at 200-foot intervals along the fence. Penalties for trespassing will also be cited on the signs. Signage text will be provided in both Spanish and English. The Project Biologist shall provide the final wording for the signs, in coordination with the contractor.

4.5 Planting Plan and Final Landscape and Revegetation Plans

A final set of landscape construction documents including a grading plan, fencing plan, planting plan, and details and specifications acceptable for bidding and construction shall be prepared by a registered landscape architect to implement the conceptual guidelines for the restoration and enhancement program outlined in this Mitigation Plan. The final plans shall be submitted to the County of San Diego and the resource agencies prior to implementation of the mitigation/restoration program. Implementation of the landscape construction documents and restoration/enhancement program must be coordinated among the resource agencies, County, Project Biologist, landscape architect, landscape contractor, and plant material suppliers. The contracting nursery and seed collectors should be given the maximum possible lead time (i.e., no less than 12 months prior to actual seed application) to salvage, collect seed, store and to prepare

plant material for the project in order to assure availability and minimize cost. Field coordination shall be provided by the Project Biologist to verify the sources for plant material propagation and for construction of the restoration areas. Coordination also will be essential to affect the successful salvage, storage, and eventual replanting of salvaged native plant materials.

Species to be planted in the restored vernal pool areas are shown on Table 8. The selection of species to be planted in the vernal pools is based on the known native plant species present within the vernal pools at the K6 and K8 mesas (see Tables 4 and 5). Excavation of the vernal pool basin within the proposed limits of grading will result in the removal of some topsoil. If determined appropriate by the Project Biologist, the topsoil will be reserved and redistributed within the new upland mima mound area, as the topsoil may contain a seed bank of upland species. Inoculum from the K6 vernal pools to be impacted by the development project will also be collected, stored, and redistributed within the restored vernal pools when the grading and contouring of the restored basins is complete. All seed collection from existing vernal pools should be overseen by a qualified Project Biologist to ensure the collection of appropriate species from the designated K6 location.

Planting at the site will be accomplished during the late fall through early winter of the implementation year. Any native perennials and bulb species salvaged prior to grading will be transplanted onto the new mima mounds and adjacent uplands. Organic mulch shall be used around all salvaged/relocated plant material. The new and enhanced mima mounds will be hand seeded with seed and bulbs collected from the project area and/or the project vicinity (southwest San Diego County). The species list was compiled based on the composition of existing pools and adjacent native upland vegetation. Seeding and/or planting of the vernal pools, mima mounds, and adjacent uplands should be timed to take advantage of seasonal rainfall patterns and should be performed ideally between November 1 and January 1. The plant species to be seeded within the restored vernal pools and mima mounds are listed in Tables 8 through 9 and the coastal sage scrub seed mix for the upland enhancement area is shown in Table 10.

A seed supplier specializing in native species, such as S&S Seeds in Carpinteria, or a County and agency approved equal, should be contracted with to collect, store, and supply the necessary seed. The applicant or the designated contractor shall make these arrangements a minimum of 12 months prior to actual implementation.

Table 8
Vernal Pool Plant Species to be Seeded in Restored Vernal Pools

Species		Source
Scientific Name	*Common Name*	
Alopecurus howelli [=*saccatus*]	Howell's foxtail	Seed from K6 and K8
Brodiaea jolonensis	Dwarf brodiaea	Salvaged corms and seed from K6
Crassula aquatica	pygmy weed	Seed from K6 and K8
Deschampsia danthonioides	annual hairgrass	Seed from K6 and K8
Eleocharis macrostachya	Pale spike-rush	Salvaged plants and seed from K6 or from local source
Juncus bufonius	Toad-rush	Seed from K6 or from local source
Myosurus minimus var. *apus*	Mouse-tail	Seed from local source; although originally recorded in K6 in 1990, this species has not been detected in the K6 pools.
Plagiobothrys spp.	popcorn flower	Seed from K6 or from local source
Psilocarphus brevissimus	wooly marbles	Seed from K6

* All species requiring special collection from local sources or from on site.

Table 9
Species to be Seeded on Mima Mound Areas

Species		Source
Scientific Name	*Common Name*	
Castilleja exserta	owl's clover	Seed from local source
Eriogonum fasciculatum	California buckwheat	Seed from local source
Deinandra fasciculata	fascicled tarweed	Seed from local source
Gnaphalium californicum	California everlasting	Seed from local source
Hazardia squarrosa ssp. *grindelioides*	saw-toothed golden bush	Seed from local source
Lasthenia californica	coast goldfields	Seed from local source
Nassella lepida	foothill needle-grass	Seed from local source
Nassella pulchra	purple needle-grass	Seed from local source
Plagiobothrys spp.	popcorn flower	Seed from local source
Plantago erecta	dot-seed plantain	Seed from local source
Selaginella cinerascens	ashy spike-moss	Salvaged clumps from K6
Viguiera laciniata	San Diego sunflower	Seed from local source

Table 10
Coastal Sage Scrub Seed Mix for Upland Enhancement Areas

Botanical Name	Common Name	Min. % PLS	Lbs./acre
Artemisia californica	California sagebrush	10%	2.0
Baccharis sarothroides	chaparral broom	3%	4.0
Castilleja exserta	owl's clover	25%	1.0
Cneoridium dumosum	bushrue, coast spicebush	40%	1.0
Eriogonum fasciculatum	California buckwheat	10%	6.0
Helianthemum scoparium	rock rose	80%	2.0
Isocoma menziesii	coast goldenbush	15%	1.0
Isomeris arborea	bladderpod	60%	4.0
Lupinus bicolor	Pigmy-leaf lupine	90%	2.0
Lotus scoparius	deerweed	85%	1.0
Mimulus aurantiacus	sticky monkeyflower	2%	2.0
Nassella lepida (de-awned)	valley needlegrass	65%	2.0
Nassella pulchra (de-awned)	purple needlegrass	75%	2.0
Phacelia parryi	Parry's phacelia	80%	1.0
Plantago erecta	dwarf plantain	85%	4.0
Salvia apiana	white sage	25%	2.0
Sisyrinchium bellum	blue-eyed grass	80%	2.0
Viguiera laciniata	San Diego sunflower	20%	2.0
		Total lbs. per acre:	**41.0**

Note Additional native upland plant species may be salvaged from areas within the grading limits of the project and may be transplanted to the perimeter upland areas

4.5.1 As-Built Conditions

The applicant will submit a report to the County, USFWS, and CDFG within 6 weeks of completion of the installation, describing the as-built conditions of the mitigation site. The report will include a marked-up duplicate copy of the planting plan drawing showing the final configuration of the restoration area. Photographs also will be included to document the final "as-built" field conditions. A final GPS map showing the final boundaries of all restoration areas shall also be provided. This map would also be used as a reference figure during the long-term maintenance and monitoring period.

4.6 Irrigation Plan

Irrigation will be temporary and will be surface mounted and removed upon success of the planting of the mitigation area. Irrigation plans will be prepared in conjunction with the preparation of the construction plans and specifications. Plans will show the point of connection, the available pressure, controller location, valves, piping, and head locations. The irrigation plans also will provide the required backflow protection at the point of connection and will identify the power source for the irrigation controller. Low precipitation rate heads and soil moisture sensors are recommended to avoid runoff and/or inappropriate ponding.

5 MAINTENANCE DURING MONITORING

The purpose of the maintenance program is to provide guidelines for maintenance of the restored habitats during an initial 120-day plant establishment period and then throughout the 5-year maintenance and monitoring period. Because the goal of the restoration program is to create a natural system that can ultimately support itself with little or no maintenance, the primary effort of the maintenance program is concentrated in the first few seasons of growth to control non-native plant species and to help the desired species become established. Maintenance will focus initially on addressing remedial measures to help achieve the success standards. Maintenance of the fencing and signage surrounding the site will be required throughout the 5-year maintenance period.

5.1 Maintenance Activities

5.1.1 Pest Management

Non-native plant species are currently common within the proposed restoration area. The predominant maintenance work effort will be related to management and control of non-native plant species. Weed control efforts will include a combination of physical removal, and/or herbicide applications where appropriate and legal according to herbicide restrictions. Any herbicide use shall be coordinated with the Project Biologist to ensure that desirable vegetation is not inadvertently damaged from herbicide overspray.

The non-native plant species in Tables 4 and 5 are documented as being present within the K6 and K8 mesa vernal pools. All of these species are annuals; therefore, effective control will rely on minimizing the seed production. Many of these species are ubiquitous, and complete control will not be feasible (e.g., filaree, brome grasses, rattail fescue). Further, some of these species may not pose a considerable threat to the establishment and successful function of the vernal pool and mima mound habitat (e.g., smooth cat's-ear, narrow-leaf filago, sand spurrey). While maintenance efforts will attempt to address all non-native species, the focus of the weed control efforts shall be on those species that present the greatest threat to the success of the project. Those species include those listed on the California Invasive Plant Council's (Cal-IPC) California Invasive Plant Inventory Database (Cal-IPC 2006) that have a moderate to high rating for threat to natural lands (see Table 11).

Weed control efforts should be conducted early in the growing season prior to seed set and dispersal. Thus, the maintenance visits will be closely spaced during the winter and early spring when the annual weed species are developing seed. Weed control efforts will likely be minimal in summer and fall when the annual weeds have died.

Any rodent infestations (i.e., squirrels, gophers, etc.) which impact the mima mound vernal pool habitat should be controlled using acceptable pest management methods, as recommended by a Pest Control Advisor.

The fencing and signage will be checked and repaired as necessary and any trash and debris present in the mitigation area will be removed on a quarterly basis.

Table 11
Non-native Plant Species Documented at K6 and K8 Vernal Pools

Scientific Name	Common Name	Cal-IPC Rating
Avena barbata	Slender wild oat	Moderate
Bromus hordeaceus	Soft chess	Limited
Bromus madritensis ssp. *rubens*	Foxtail chess	High
Cotula australis	Australian brass-buttons	Not listed
Erodium botrys	filaree	Not listed
Erodium cicutarium	Filaree	Limited
Filago gallica	Narrow-leaf fillago	Not listed
Gastridium ventricosum	nitgrass	Not listed
Hordeum spp. (*H. murinum, H. marinum*)	barley	Moderate
Hypochaeris glabra	Smooth cat's-ear	Limited
Lolium multiflorum	Annual ryegrass	Moderate
Lythrum hyssopifolia	Hyssop loosestrife	Limited
Polypogon monspeliensis	rabbit's foot grass	Limited
Spergularia bocconii	Sand spurrey	Not listed
Vulpia myuros	Rattail fescue	Moderate

5.1.2 Trash Removal

Trash will be removed from the mitigation areas by hand during maintenance visits. Trash consists of all man-made materials, equipment, or debris dumped, thrown, washed, blown, and left within the mitigation areas. Trash and inorganic debris washed or blown onto the mitigation sites will be removed regularly. Deadwood and leaf litter of native trees and shrubs will not be removed. Downed branches and leaf litter provide valuable micro-habitats for invertebrates, reptiles, small mammals, and birds. In addition, the decomposition of deadwood and leaf litter is essential for the replenishment of soil nutrients and minerals.

5.1.3 Irrigation Maintenance

The majority of the sites will be irrigated to promote plant survival during the drier parts of the year, primarily the summer months. Irrigation may be used in winter months to simulate an average or above-average rain season if natural precipitation is lacking. Irrigation is expected to last for a maximum of 3 years. The irrigation system shall be programmed, scheduled and monitored to avoid run-off. Low precipitation rate heads allowing improved percolation and reduced run-off should be utilized. The irrigation system should include a soil moisture sensor and master valve to

prevent overwatering. Once the plants have become established, irrigation will be gradually reduced over time to acclimate plants to a non-irrigated condition prior to complete cessation of irrigation. Irrigation from June to November may be minimized to allow plants to experience normal drought cycles and to promote appropriate root growth. The Restoration Contractor will maintain the irrigation system at the optimum level of operation.

Consultation with the Project Biologist will be necessary to determine the timing for the cessation of irrigation. Irrigation should stop at the earliest possible date without risking significant plant loss. It is expected that the irrigation system will be abandoned no earlier than the end of year one of the 5-year monitoring and maintenance period. Irrigation is expected to be diminished in years two and three and discontinued at the end of year three.

5.2 Maintenance Schedule

Maintenance activities described above will be conducted monthly during the initial 120-day plant establishment period and then four times per year thereafter for the remainder of the 5-year maintenance and monitoring period. Maintenance visits will be timed to be conducted during the most productive and effective time of year for weed control (e.g., winter and early spring). Irrigation will be determined at a later date but will generally be dependent on winter rains. Irrigation will be removed after the third year after the mitigation has been installed.

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6 MONITORING PLAN FOR THE COMPENSATORY MITIGATION SITE

The final success criteria and performance standards outlined herein will be used to determine fulfillment of Alternative H's mitigation obligations. Fulfillment of these criteria and standards should help demonstrate that the mitigation area is progressing toward the habitat types, functions, and values that constitute the long-term goals of the mitigation effort. Specific performance standards are outlined in Section 6.1. The mitigation area will become part of the open space preserve area for Otay Ranch and will be managed over the long-term by the Otay Ranch Preserve Owner/Manager, pursuant to the Otay Ranch RMP and the MSCP Subarea Plans of the County.

6.1 Performance Standards for Target Dates and Success Criteria

Due to the variability of seasonal rainfall patterns in the project region and the dependence of the vernal pool communities on precipitation and inundation for an appropriate period to encourage plant growth, it is difficult to establish rigid annual performance standards for an initial 5-year program. The annual performance standards proposed herein are both quantitative and qualitative, with an emphasis on vernal pool hydrology and achievement of vernal pool plant associations similar to the conditions of the existing pools at the K8 mesa. At the completion of each field season, hydrology and species cover will be evaluated to determine the progress towards plant establishment and the achievement of the final success criteria. The final assessment of the success of the restored vernal pool and mima mound habitat will be based on the achievement of the target performance criteria/standards and a determination of plant establishment within the mitigation area. This approach represents an adaptive restoration strategy that would be responsive to natural variation. The mitigation, maintenance, and monitoring program would be altered as necessary to respond to changing conditions and to help guide the project in an appropriate direction to help assure success.

The following target performance standards are guidelines to assess the success of the restored vernal pool and mima mound habitat. These performance standards may be modified as the mitigation, maintenance, and monitoring program evolves.

Year One Target Performance Standards

- The percent cover of non-native plant species within the restored vernal pool and mima mound habitat should not exceed 50%.

Year Two Target Performance Standards

- The percent cover of non-native plant species within the restored vernal pool and mima mound habitat should not exceed 40%.

Year Three Target Performance Standards

- The percent cover of non-native plant species within the restored vernal pool and mima mound habitat should not exceed 30%.

Year Four Target Performance Standards

- The percent cover of non-native plant species within the restored vernal pool and mima mound habitat should not exceed 20%.

Year Five Target Performance Standards

- The percent cover of non-native plant species within the restored vernal pool and mima mound habitat should not exceed 10%.

An average of 4.3 vernal pool indicator plant species must have been documented within the restored vernal pools during the 5-year monitoring period (see Tables 4 and 5 for examples of vernal pool indicator species).

The pool hydrology, (i.e., water retention and water depth) of the restored vernal pools should be similar to that of the existing vernal pools within the K8 mesa. For example, length of inundation within the restored pools should be similar to that of the existing pools. (Note: A 10% variation between the restored pools and the existing pools will be acceptable.)

The basis for the percent cover standards for non-native plant species is somewhat arbitrary, but assumes that if the vernal pools are composed of 10% non-native plant species cover or less by the end of the 5-year maintenance and monitoring period, that there is a high likelihood that they will be able to withstand invasion pressure from non-native plant species in the future. The basis for the threshold quantity of vernal pool indicator species is derived from analyzing the data from the existing vernal pools. On average, the vernal pools on the K6 and K8 mesas support 3.3 indicator species (see Tables 4 and 5 for species considered to be indicator species for these complexes of vernal pools). The average is higher (4.3 indicator species) if only the vernal pools that are considered to meet the criteria previously used by the ACOE to evaluate vernal pools (ACOE 1997) are used. The higher value was used based on the fact that many of the vernal pools have been subjected to disturbance, and may have a somewhat diminished presence of indicator species. The rationale for the pool hydrology performance standards is that the restored vernal pools are considered to be exhibiting sufficient hydrological characteristics for functioning vernal pools, as determined relative to existing vernal pools within the K8 mesa.

For the vernal pools subject to enhancement efforts, performance standards are the same as the restored vernal pools in terms of percent non-native cover. Performance standards for vernal pool indicator species and hydrology do not apply to the vernal pools to be enhanced.

Specific annual performance standards for the upland enhancement areas have not been established because the approach of the enhancement effort is focused on non-native species management to keep weeds from inhibiting the success of the vernal pool restoration. The upland coastal sage scrub enhancement areas shall be qualitatively evaluated each year for native and non-native cover. The goal of the enhancement effort in the uplands buffer area is to maintain non-native species cover to below 30% annually.

6.2 Target Functions and Values

The goal of the restoration and enhancement effort is to create a self-sustaining vernal pool and mima mound habitat which exhibits similar characteristics to the existing vernal pools in the K8 Group. The mitigation program intends to restore habitat with appropriate topography and vernal pool hydrology to support the intended vernal pool target species, as well as transitional upland species.

6.3 Target Hydrological Regime

Previous habitat disturbances, including off-road vehicular activity, grazing, erosion and sediment dispersal and non-native plant invasion, have reduced the extent and biological functions of the assumed former vernal pool and mima mound area at the K8 mesa. The degraded areas at the intended restoration sites do not currently retain sufficient water, nor stay in an undisturbed condition for a sufficient period, to support vernal pool plant species. As described in Section 4.4.2, the existing depressions will be excavated to remove sediment and the excavated material will be used to supplement or form new mima mounds adjacent to the restored vernal pools. It is anticipated that the restoration of the vernal pool basins and adjacent mima mound topography will result in improved hydrologic conditions, with better retention of surface water within the restored basins for a period sufficient to sustain the vernal pool target species.

6.4 Target Vernal Pool Mitigation Acreage

Total vernal pool mitigation acreage required for Alternative H is 0.239 acre. Mitigation for this impact will include a combination of enhancement of existing vernal pools and restoration or establishment of additional pools at the K8 mesa. Vernal pool enhancement will consist of weed control only within the vernal pools not known to support San Diego fairy shrimp in order to avoid direct impacts to this federally listed, endangered species. This includes a total acreage of 0.144 acre. The proposed credit proportion for the enhancement efforts is 30%, therefore enhancement efforts will provide 0.043 acre of the mitigation credit needed. The balance of the mitigation credit (0.196 acre) will come from restoration and/or establishment of approximately eight additional vernal pools at the K8 mesa.

6.5 Monitoring Methods

The following monitoring methods shall be implemented as part of the long-term biological monitoring program.

6.5.1 Hydrology

Depth, duration, and frequency of inundation will be monitored within a representative sample of at least five of the existing pools (reference pools) and compared with the restored pools. Precipitation data will be determined from the closest regional location. Hydrological monitoring field methods shall be as follows:

The five reference pools and the restored pools will be mapped with a GPS unit to determine the extent of potential water inundation. In addition, a depth gauge will be temporarily installed at the lowest elevation of the reference pools and restored pools to measure maximum retained water depth. The gauge will be marked so that water depth can be read from the pool edge. Within 48 hours of each rainfall event of more than 0.5 inch, the pool water depth will be recorded, unless additional rainfall occurs within the 48-hour period. While the basins are inundated, the water depth will be recorded weekly until the pools dry-out. Each year a water-depth versus time graph will be prepared for each of the reference pools and the restored pools. This should provide an adequate comparison regarding the hydrological functioning of the existing and restored pools and provide an average of the period of typical inundation.

6.5.2 Flora

Plant species presence and relative cover will be monitored within the reference and restored pools and the presence of vernal pool indicator species will be assessed. Each pool will be assigned a unique code, marked in the field, and mapped using a GPS unit. Two square-meter quadrats shall be randomly placed over the vegetation within each of the reference and restored vernal pool basins. Percent cover by species shall be estimated within the square meter quadrat to the nearest 5%.

Permanent photo documentation stations will be located at the reference and restored pools, and color photographs will be taken throughout the monitoring period to record establishment in accordance with the following schedule:

- Immediately after planting/seeding
- After the first heavy rain leading to vernal pool ponding/inundation
- During the flowering period of vernal pool indicator species
- During the dormant season.

These photographs will be included in the annual reports.

6.6 Monitoring Schedule

The annual reports will be prepared by the end of each monitoring year, based upon the start date of the 5-year period.

6.7 Monitoring Reports

Annual reports will include information regarding all persons involved in the collection of data and the preparation of the reports. The report shall include a copy of all pertinent permits which may be required, including any special conditions and/or modifications. The reports will contain analysis of all monitoring data, copies of the on-site photos, and copies of the GPS maps/figures showing the mitigation site.

Any significant issue or contingency that arises on the job site (e.g., plant survival issues, fire, or flooding) shall be reported in writing to the County of San Diego within two weeks from the date of the incident. Accompanying the report shall be a plan for remediation, with an implementation schedule and a monitoring schedule.

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7 COMPLETION OF COMPENSATORY MITIGATION

7.1 Notification of Completion

Upon completion of the 5-year maintenance and monitoring period, if the target success criteria and performance standards have been achieved, notification of completion will be included within the final annual report and request for release from the permit conditions will be requested from the resource agencies and the County. The final report also will include documentation that the vernal pool restoration success criteria have been met.

7.2 Resource Agency Concurrence

After receiving the final annual report, representatives from the County and the resource agencies will be invited to a site visit to confirm the success of the restoration project and to confirm/authorize successful completion of the mitigation program and release from the permit obligations.

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8 CONTINGENCY MEASURES

8.1 Initiating Contingency Procedures

In the event that the annual performance standards are not achieved for all or a portion of the restoration project during the monitoring period, or if the final success standards are not achieved, the project applicants, or their designated representative, will submit to the County and the resource agencies an analysis of the deficiency and the cause thereof and, if required by the resource agencies, will propose remedial action. The monitoring period will be extended if the restoration site has not reached the final success standards by the end of the 5-year period and monitoring will continue until such time as the County and the resource agencies confirm completion of the mitigation program.

8.2 Alternative Locations for Contingency Compensatory Mitigation

No alternative sites have been evaluated at this time. The K8 mesa is available, has adequate space for restoration of pools, has suitable soils and access. If it is deemed necessary to use other sites for the mitigation, there are vernal pools areas within the Proctor Valley Parcel north of Alternative H.

8.3 Funding Mechanisms

The project applicants will be responsible for funding contingency restoration measures, if necessary, until the County and the resource agencies confirm completion of the mitigation program. The project applicants will turn over perpetual management of the restoration site to the Otay Ranch Preserve Owner/Manager (POM) pursuant to the Preserve conveyance process and requirements of the Otay Ranch RMP. The mitigation site is within the ownership of one of the partner entities which comprises the project applicant, and as required by the RMP, will be transferred in fee title ownership to the POM, which is an entity comprised of the County of San Diego, for those areas located within the County jurisdiction, that was established to accept such offers of dedication. The POM is also responsible for management and maintenance in perpetuity of the approximately 11,375 acres of lands scheduled to be conveyed into the Otay Ranch Preserve.

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APPENDIX C

Quino Checkerspot Butterfly Management/Enhancement Plan

APPENDIX K

QUINO CHECKERSPOT BUTTERFLY MANAGEMENT/ENHANCEMENT PLAN
For ALTERNATIVE H
for the
OTAY RANCH RESORT VILLAGE
GPA 04-003; SPA 04-002; R04-009; TM 5361RPL; S08-028;
ER#04-19-005; KIVA#03-1004387

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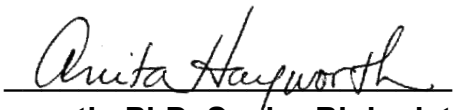

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Quino Checkerspot Butterfly Management/Enhancement Plan for the Otay Ranch Resort Village – Alternative H

INTRODUCTION

The Otay Ranch Resort Village Alternative H Specific Plan area (i.e., project area) is located in southwestern San Diego County, approximately 13 miles east of the Pacific Ocean and 6 miles north of the international border with Mexico (Figure 1). The site comprises approximately 1,869 acres and is designated for residential and resort development and open space by the Otay Subregional Plan (SRP; Otay Ranch 1993). The site is located in the Proctor Valley Parcel of Otay Ranch, approximately one-quarter mile east of the City of Chula Vista (Figure 2). As part of the planning of Otay Ranch, several villages and planning areas were designated for various types of development while other areas were reserved for preservation of multiple species and habitats. An effort was undertaken to plan development of the Otay Ranch so as to conserve sensitive/protected species and habitats in the region, connect important wildlife corridors and set up a fully funded and managed preserve system.

The County of San Diego, in conjunction with the wildlife agencies (U.S. Fish and Wildlife Service [USFWS] and California Department of Fish and Wildlife [CDFW]), are in the process of developing a regional mitigation strategy for the Quino checkerspot butterfly (*Euphydryas editha quino*). In anticipation of this, a proposed amendment to the County's Multiple Species Conservation Plan (MSCP) Subarea Plan 10(a)(1)(B) permit and Natural Community Conservation Planning (NCCP) approvals in being developed to add Quino checkerspot butterfly to the covered species list and exempt incidental take of this species under ESA for County authorized projects (i.e. Quino Addition). Since the County of San Diego Quino Amendment (Quino Addition) (County of San Diego 2010) is in draft form, and the contents of the "regional strategy" are unknown, this document has been developed as a project specific mitigation and monitoring strategy to ensure the continued occupation of the project site by the federally listed endangered Quino checkerspot butterfly. Implementation of this plan provides mitigation for on-site impacts associated with the construction of Alternative H and, when combined with an adopted Quino Addition and subsequent regional mitigation strategy, will assist in the recovery of Quino checkerspot butterfly throughout the County. This management plan describes the on-site preserve complex and history, biological resources, the management and monitoring strategy, area-specific management directives, including restoration, methods for conducting pre- and post- development surveys for the Quino checkerspot butterfly and associated habitat, coordination between land owners and agencies, property stewardship, and fire management. Costs and associated funding for the plan are also discussed.

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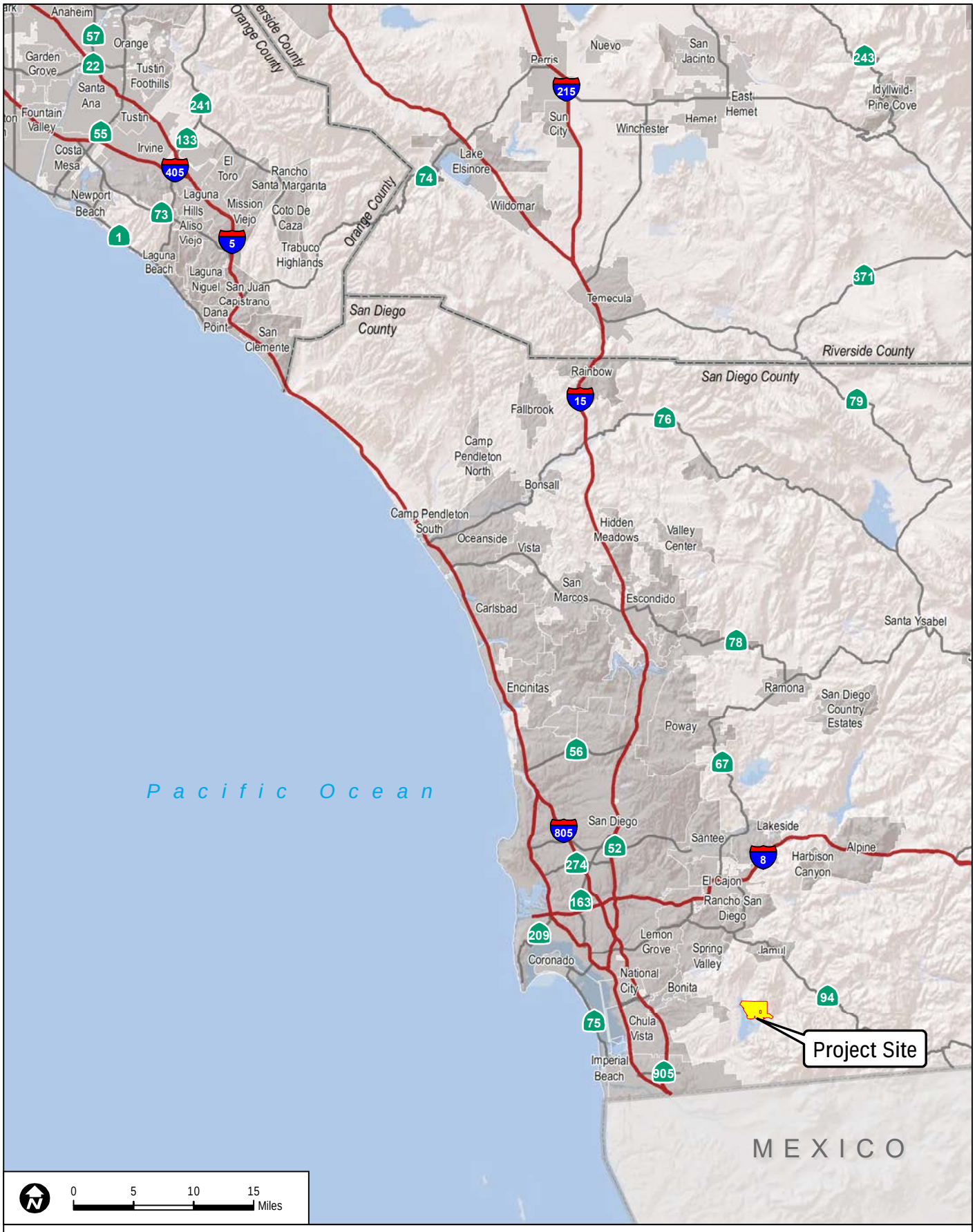

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FIGURE 1

Regional Map

Otay Ranch Resort Village Site - Quino Checkerspot Butterfly Management/Enhancement Plan

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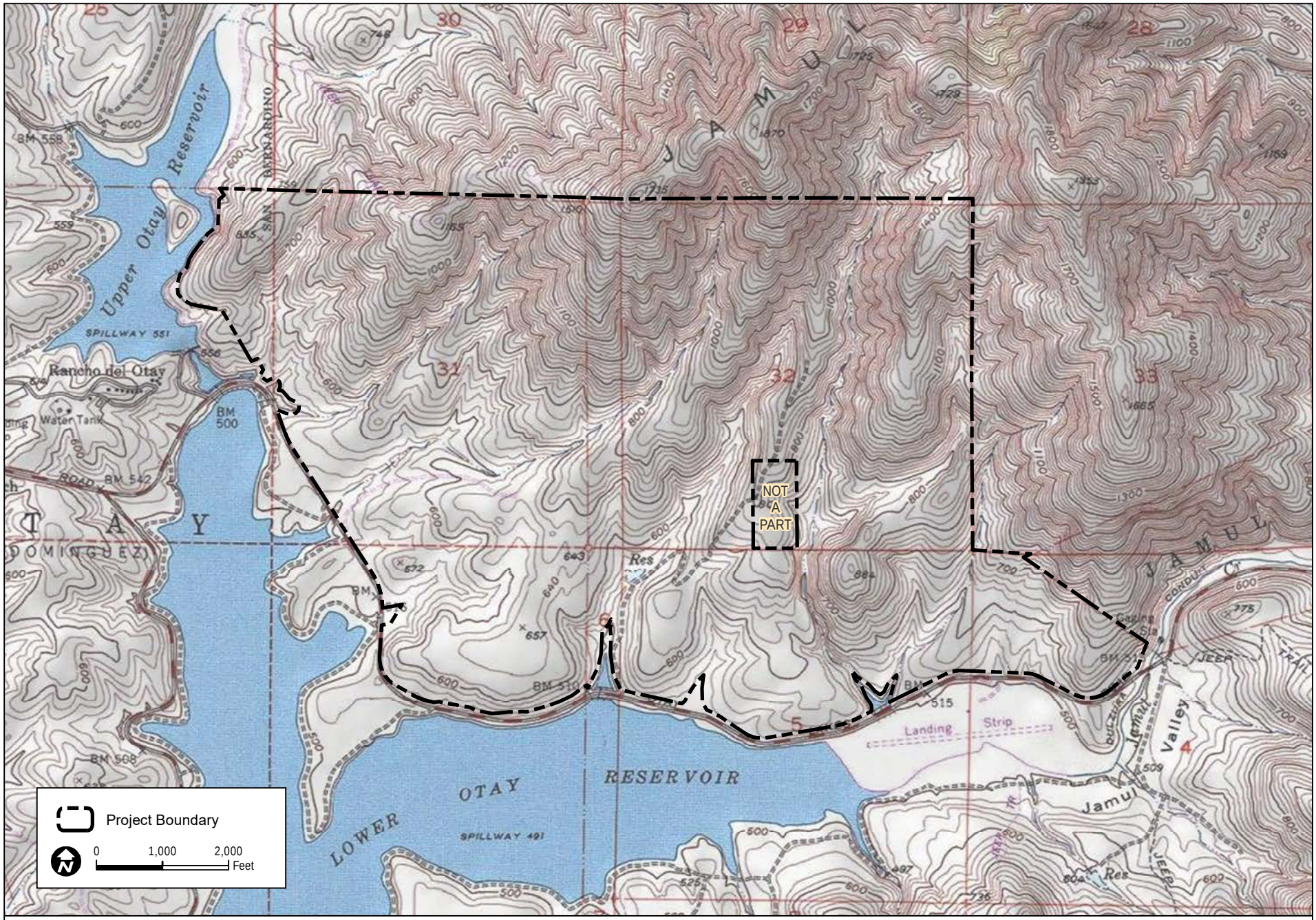

SOURCE: USGS 7.5 Minute Series, Jamul Mountains Quadrangle

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FIGURE 2
Vicinity Map

Otay Ranch Resort Village Site - Quino Checkerspot Butterfly Management/Enhancement Plan

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1 PRESERVE COMPLEX DESCRIPTION AND HISTORY

1.1 Geographic and Functional Setting and Regional Ecological Significance

1.1.1 NCCP Name, Name of Preserve Complex, and MU

Alternative H is located within the San Diego County MSCP Subarea Plan South County Segment (South County MSCP). The site includes an approximately 1,177 acre Otay Ranch RMP Preserve plus Conserved Open Space generally in the northern and north-eastern portions of the project site. A total of 787 acres will be conveyed as part of the approval of Alternative H and the entire onsite Otay Ranch RMP Preserve will be protected by a biological open space easement. The Conserved Open Space will be provided a conservation easement to protect in perpetuity. More specifically, the proposed Otay Ranch RMP Preserve plus Conserved Open Space is located within the Janal Management Unit 3 (MU3) as described in the Management Strategic Plan for Conserved Lands in Western San Diego County (SDMMP 2013a). MU3 encompasses the largest area of conserved lands within the Management Specific Plan Area (MSPA) and spans 126,253 acres over the eastern portion of San Diego County (See Figure 3-1, Map of MUs with corresponding numbers and names; SDMMP 2013a). The proposed preserve contained within the project area is not related to any existing preserve complex or Natural Community Conservation Plan (NCCP).

According to the Draft Quino Checkerspot Butterfly Amendment to the County of San Diego Multiple Species Conservation Program Subarea Plan (October 2010), Alternative H is located within the South County Quino Management Unit.

1.1.2 Relationship to Core Areas and Linkages and Management Strategic Plan

On-Site Cores and Linkages

The site currently functions as part of a large habitat block and would not be considered a habitat linkage or wildlife corridor. However, a portion of the project site was previously identified as a habitat linkage or movement corridor (Ogden 1992). This linkage is situated in a north–south direction through the eastern portion of the site and is identified as the R2 linkage. As shown in Figure 3, this linkage connects the open space areas of the Jamul Mountains to the north with Lower Otay Lake. This "north-south" connection to the lake should be considered a general guideline within the context of the property and surrounding land uses. Because Alternative H is consistent with the MSCP, there is no change to the analysis for the wildlife movement and the alternative complies with what the study has recommended.

Regardless, the goal is to allow the focal species to cross Otay Lakes Road; maintain suitable dimensions for the movement of these species; and enable movement of Quino checkerspot butterfly to resources

within the project site and to off-site areas. The project applicant has proposed to provide a wildlife culvert to encourage safe crossing of Otay Lakes Road.

Project Relationship to Management Strategic Plan

The Management Strategic Plan for Conserved Lands in Western San Diego County (MSP) identifies Quino checkerspot butterfly as a species management focus group within MU3 and considers the movement corridor in the Otay Lakes/Rancho Jamul occurrence complex areas (located southwest and northeast of the project area) as critical for the dispersal of the species (SDMMP 2013a). The site has been identified as a Quino checkerspot butterflyoccurrence complex and preservation of Quino checkerspot butterfly within the site is on par with the goals outlined in the MSP.

1.1.3 Relationship to Conserved Lands

As shown in Figure 3, the site is surrounded by a variety of public lands: at least 22,000 acres of the Otay Ranch RMP Preserve, U.S. Bureau of Land Management (BLM), and USFWS lands to the north; at least 9,000 acres of the Otay Ranch RMP Preserve, USFWS, Multiple Species Conservation Program (MSCP) Preserve, BLM, and California Department of Fish and Wildlife (CDFW) lands to the east; and at least 31,000 acres including the Otay Ranch RMP Preserve, CDFW, and BLM lands to the south. Combined, this is a total of 62,000 acres of open space in the form of preserves and public lands.

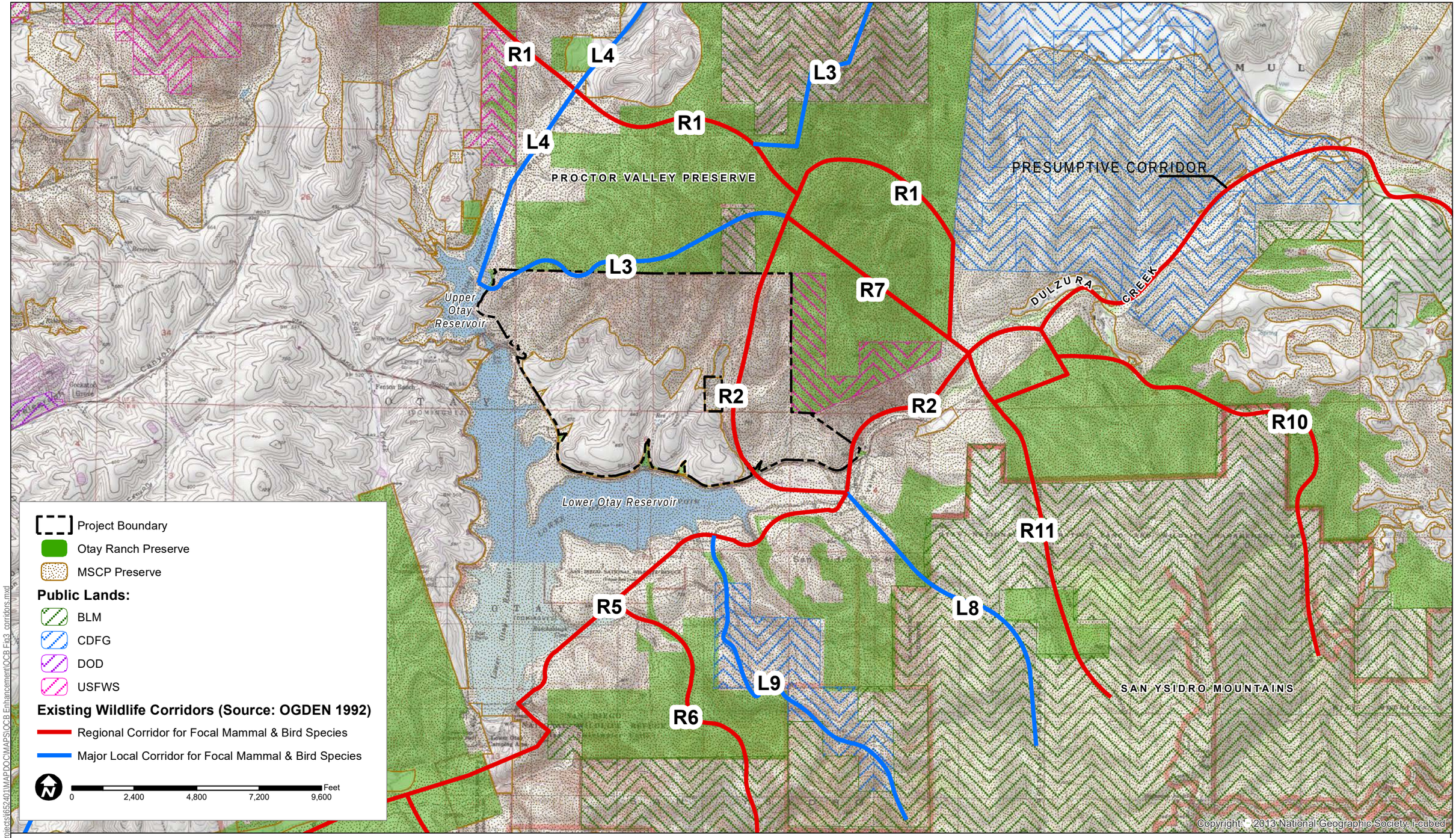

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FIGURE 3

Existing Habitat Linkages/Movement Corridors

Otay Ranch Resort Village Site - Quino Checkerspot Butterfly Management/Enhancement Plan

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The Resort Village Alternative H is part of the Otay Subregional Plan (SRP; Otay Ranch 1993). The Otay SRP established the overall development program for Otay Ranch, including the Otay Ranch Preserve. The Otay Ranch Preserve was identified as an 11,375-acre preserve which set aside the most important biological resources in a fully funded and managed system. As part of the development of the County of San Diego MSCP, the Otay Ranch RMP Preserve boundaries were incorporated; thus, the Otay Ranch RMP Preserve is generally contiguous with the County MSCP.

1.1.4 Preserve Complex Location within Watershed and Hydrologic Processes

MU3 contains the headwaters of the Otay River and mid-regions of the Sweetwater and Tijuana Rivers (SDMMP 2013a). The site lies within the watershed of the Otay River, a westerly flowing stream which drains an area of approximately 145 square miles. The site is upstream of Savage Dam, which creates Lower Otay Lake. Drainages bisect the mesas and generally run north to south, with the exception of one drainage which runs east to west from the center to the western edge of the property. Several stock ponds have been intentionally created along the drainages on the property.

1.1.5 Level of Fragmentation within Management Unit

MU3 is comprised primarily of undeveloped lands, of which 41% is either conserved lands in preservation or open space parks (SDMMP 2013a). With the largest area of conserved lands within the MSPA, MU3 consist of large blocks of open space with little to no fragmentation. As described above in Section 1.1.3, and shown in Figure 3, large contiguous areas of preserved lands abound the site. These include the Otay Ranch RMP Preserve and portions of the San Diego National Wildlife Refuge.

1.1.6 Jurisdiction, Land Owners, and Management Agencies for Preserve Complex

The site is currently owned by Baldwin & Sons LLC and Moller Otay Lakes, LLC and is wholly within the County of San Diego. On a region-wide basis, the site is within the boundaries of the County MSCP Subarea Plan South County Segment. More specifically, the site is within the Otay SRP. As part of the Otay SRP, Alternative H is subject to the requirements of the Otay Ranch Resource Management Plan (RMP), which establishes the Otay Ranch RMP Preserve, goals and policies for Preserve management and requirements for implementation of the Otay Ranch RMP Preserve.

Through the RMP requirement for preserve conveyance, Alternative H will convey the designated Preserve land at the required amount to the Otay Ranch Preserve Owner Manager (POM), which is currently made up of the County of San Diego and City of Chula Vista. A biological open space easement will be designated for the entire onsite Otay Ranch RMP Preserve as well as the Conserved Open Space. In addition, Alternative H is required to participate in preserve management funding, which provides that a Communities Facilities District (CFD) will be established on the developed

portions of the project area. This CFD charges a special tax against the developed portions of the site to perpetually fund the management and maintenance of the Otay Ranch Preserve.

These requirements have resulted in offers for conveyance of preserve land of approximately 3,200 acres (as of October 2014) within Otay Ranch and the establishment of the POM to monitor, manage and maintain these preserve areas. The conveyance and management of the preserve is being actively coordinated between the City of Chula Vista and the County of San Diego (as the POM) in consultation with the resource agencies. Relative to other portions of MU3, the other management agencies include Bureau of Land Management, California Department of Fish and Wildlife, and U.S. Fish and Wildlife Service National Wildlife Refuge lands as shown in Figure 3.

1.1.7 Role of MU and Contributions of Preserve Complex to this MU – Relationship to Regional Goals and Objectives

MU3 has several plant and wildlife species that are targeted for management focus, one of which is the Quino checkerspot butterfly. The SDMMP regional and unit management goal for this species states: "Within the identified USFWS Recovery Units (USFWS 2003) or 'Possible Future' Recovery Units in the MSPA, protect, restore, and enhance Quino checkerspot butterflyhabitat within currently occupied and historically occupied sites and the landscape connections between them to create resilient occurrences and to allow for potential reintroduction to ensure persistence over the long-term (>100 years)" (SDMMP 20113b). Specific goals related to MU3 include the following:

- Prepare five year implementation plan for management of multiple sites in MU3 that have diverse array of microclimates and are within 1 km of areas with larval host plants and that enhance connectivity between the Otay Lakes/Rancho Jamul occurrence and occurrences to the north in MU3;
- Support South County Grassland project development and testing of best management techniques to restore Quino checkerspot butterfly habitat;
- Establish seed bank for host and larval food plants and bulk as necessary for occurrence enhancement;
- Implement applicable pre-fire strategic plan actions;
- Implement high priority actions in implementation plan to maintain landscape connectivity between Otay Lakes/Rancho Jamul occurrence and complexes to the north in MU3 (SDMMP 2013b).

Preservation of habitat within the project area will conserve important habitat values within the region, and enhance connectivity to other preserves and open space areas within the vicinity (Figure 4).

The MSCP Subarea Plan identifies a "hard line" preserve/development boundary for the Otay Ranch Resort Village that reflects an agreement reached among the wildlife agencies and the Baldwin Company (the applicants' predecessor in interest) at the time that the MSCP Subarea Plan was approved. That hard line preserve/development boundary is closely followed with the design of Alternative H. In addition, the area that includes San Diego thornmint (*Acanthomintha ilicifolia*) and fairy shrimp occupied vernal pools have been included as Conserved Open Space. An area designated as development that is a narrow "finger" of development in the northwestern portion has been eliminated since it results in edge effects into the preserve, and the previously designated roadway that is an allowable use in the preserve has been eliminated. These areas are also Conserved Open Space. Overall, the development is consolidated to be consistent with the MSCP hardline and compared to the proposed project, will reduce edge effects. For the Quino checkerspot butterfly, the Otay Ranch RMP Preserve including Conserved Open Space contains hilltops and ridgelines for the male butterflies to do "hill-topping" to seek mates, contains populations of the larval hostplant and nectar source, vegetation with relatively open areas, and is a large unfragmented area that is adjacent to other areas occupied by the species.

1.2 Biological Resources

The Otay Ranch Resort Village consists of a broad mesa sloping to the south, broken by several steep canyons draining from north to south. Portions of the relatively flat mesa extend north into the Jamul Mountains, becoming part of steeper slopes. Site elevations range from approximately 500 feet above mean sea level (AMSL) at the southern end of the property to approximately 1,500 feet AMSL in the northeastern portions. The southern half of the site contains three large mesas (K6, K8, and K9 from west to east), an expansive relatively flat area in the west, and increasing elevations with steep canyons to the north

Prior to 2001, the southern half of the project area was used for ranching, specifically cattle grazing, and possibly crop cultivation purposes. In addition, crop cultivation likely occurred on the southwestern corner of the property decades ago. The site is bounded on the west and south by Otay Lakes Road; Jamul Creek intersects the site in the eastern portion. Lower Otay Lake (which is owned by the City of San Diego) is located south of the site; open space in the Jamul Mountains is adjacent to the site in the north and east (which is owned by the UBLM and private parties).

1.2.1 Summary of Rapid Ecological Assessment

Biological surveys of the project site have been conducted by Dudek biologists from spring 1998 to spring 2016 to assess the existing conditions of biological resources on site and quantify the impacts that are proposed based on the current development plan. Surveys included vegetation mapping, plant and wildlife inventories, focused surveys, and a jurisdictional wetland delineation,

which was updated in 2014. Additionally, a focused survey was conducted for the Quino checkerspot butterfly in 2016 to provide more population information and provide detailed density mapping of the host plant (Dudek 2016). This description of existing conditions summarizes the results of these surveys, which are described in greater detail in the Otay Ranch Resort Village Biological Resources Technical Report (Dudek 2015) and the focused survey report (Dudek 2016).

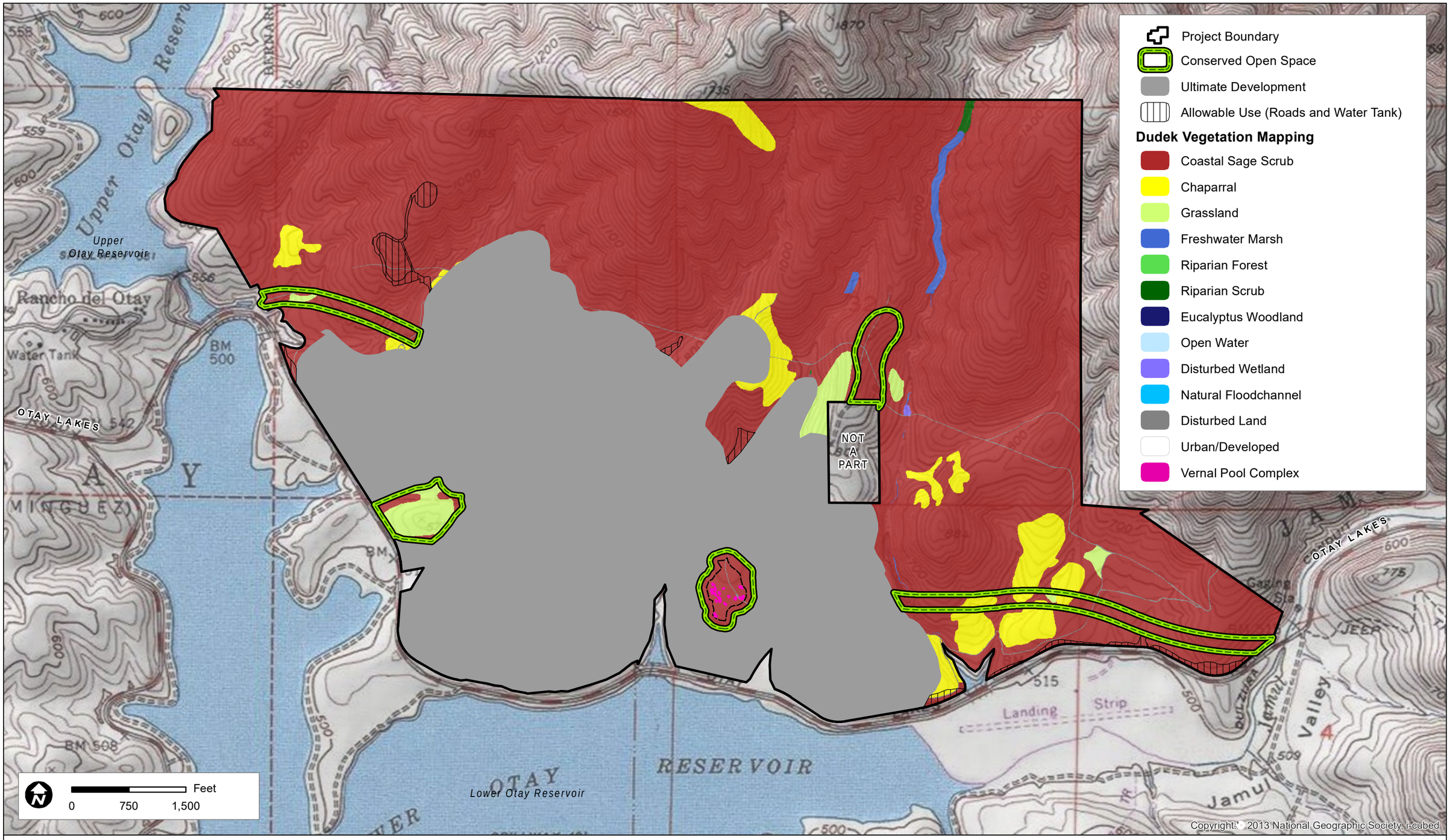

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FIGURE 4

Ultimate Preserve Vegetation

Otay Ranch Resort Village Site - Quino Checkerspot Butterfly Management/Enhancement Plan

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Based on previous visits and surveys of the site and to be conservative with the focused surveys, the entire 1,869-acre site was considered to be potentially suitable for Quino checkerspot butterfly and no exclusion areas were drawn; thus, the entire site was surveyed for Quino checkerspot butterfly during each survey effort. Based on the results of these surveys, it has been determined that there are areas that are not suitable including non-native grasslands that are fully closed canopy dense grass or are mapped as non-native grassland but are fully closed canopy with species of *Erodium*. A habitat assessment for Quino checkerspot butterfly was conducted in spring 1998 and 1999 by biologists at Dudek. These assessments were the basis for where the Phase II adult flight surveys were conducted on the site for the first time in spring 1999. The entire site was covered over a 2-year period in spring 1999 and 2000. A modified protocol survey of the Otay Ranch RMP Preserve area was conducted in 2004 and was defined as "treasure hunt" survey with the goal of maximizing survey time within areas of highest potential for Quino checkerspot butterfly detection. The entire site was surveyed again in 2008 to refresh the surveys and because the conditions seemed ideal for the species. In addition, in 2008, Dudek conducted surveys for a total of 30 points selected by the USFWS as part of the Quino checkerspot butterfly range-wide study. The results for both the focused presence/absence survey and the range-wide study were included in the 2008 focused survey report (Dudek 2008).

Focused surveys of the entire site in 1999 and 2000 resulted in the observation of 48 individuals. The 2004 surveys of the proposed Preserve resulted in observation of 1 individual in the northwestern corner. This resulting number of observations was low and was not surprising because the conditions were very poor for development of the host plant due to a low rainfall year.

In 2008, when environmental conditions were ideal for development of host plant and the ensuing development of the Quino checkerspot butterfly, focused protocol surveys were conducted for the entire site. The survey area again included the entire approximately 1,869 acres of the property including those areas currently proposed for development. This 2008 survey provides the baseline survey information for the pre-construction analysis of the Quino checkerspot butterfly population as well as the suitable habitat for the species. The USFWS also located range-wide survey points outside of the property. The results from these points provide information on adjacent use of the off-site areas by the species.

The focused survey for the Quino checkerspot butterfly was conducted on the site from March 12 through April 18, 2008, by Dudek biologists Anita M. Hayworth, Ph.D. (TE-781084), Brock A. Ortega (TE-813545-5), Dave W. Flietner (TE-008031-1), Jeff D. Priest (TE-840619-2), Kam J. Muri (TE-051250-0), Jun Rong Powell (TE-006559-3), Tricia Wotipka (TE-840619-2), Paul M. Lemons (TE-051248-2), and Vipul R. Joshi (TE-019949-0).

The site was divided into 23 survey polygons, each representing a single day survey effort (i.e., 4 to 6 survey hours to be in accordance with USFWS protocol) (Table 1). These survey areas were

numbered and assigned to Dudek's permitted biologists. The biologists were provided with 300-scale aerial photographs for mapping Quino checkerspot butterfly and 200-scale aerial photographs for mapping host plant populations. The survey maps included previous vegetation mapping, topography lines, and survey area boundaries. Binoculars were used to aid in detecting and identifying butterfly and other wildlife species. Global Positioning System (GPS) units also were available for recording locations of Quino checkerspot butterfly and host plant populations.

Table 1
2008 Quino Checkerspot Butterfly Survey Polygons

Survey Area Number	Acreage of Survey Area
1	85.7
2	82.7
3	81.6
4	68.4
5	80.8
6	85.0
7	95.8
8	89.0
9	81.6
10	83.7
11	84.7
12	81.4
13	88.3
14	70.3
15	57.8
16	90.6
17	93.6
18	88.0
19	85.7
20	86.3
21	75.3
22	71.7
23	81.5

The survey methodology consisted of slowly walking a meandering transect throughout all Quino checkerspot butterfly potential habitat areas within the survey assignment. The adult surveys were conducted under generally favorable weather conditions: typically between the hours of 0900–1600, variable skies, 60°F–80°F, and light breezes. For each survey visit, the biologist recorded the survey conditions.

Aerial photographs of each survey area were provided to each biologist and the locations of host plants were recorded directly onto the 200-scale map. Locations were also recorded using GPS. For each location recorded as a point, attributes also were recorded that indicated if the population was dense (plants touching) or sparse (plants not touching). For patches larger than 1 acre, a polygon was drawn on the map or recorded using GPS and the same attribute was recorded.

A total of 87 Quino checkerspot butterfly were observed and recorded during the Quino checkerspot butterfly focused survey on the property (Figure 5). A number of these observations took place in the same location from one week to the next, and photographs documented that the individuals were likely the same based on review of wing damage and coloration, thus a number of these observations were considered duplicate counts and the total number of unique observations was determined to be 71.

Quino checkerspot butterfly were especially observed on hilltops and along the ridgelines in the eastern and central portions of the site. Numerous observations of Quino checkerspot butterfly were recorded in weeks 1 through 3 of the focused survey. No Quino checkerspot butterfly were observed during surveys conducted in the fourth week, from April 6 through April 12, 2008. The presence/absence survey was stopped after four full survey weeks. However, the survey of the range-wide Quino checkerspot butterfly survey points was continued into the fifth week. No observations of Quino checkerspot butterfly were made in either week 4 or week 5 of the survey. Stopping the presence/absence survey after four weeks was discussed extensively with Alison Anderson, USFWS. Based on the reduced numbers observed with each succeeding week, the lack of any observations within Week 4, and the overall drying of the host plant, the USFWS concurred that stopping the survey was acceptable.

Host plant locations were recorded over much of the site as illustrated on Figure 5. Large polygons of dot-seed plantain were observed within survey areas 12, 13, 16, and 17. Smaller patches of plantain, recorded as a point location, were observed scattered throughout much of the site and were especially noted in survey areas 5, 7, 9, 10, 16, 18, and 19. The other host plant species that was recorded for the site, owl's clover, was observed in areas 11, 16, and 17 as sparse large polygons. Smaller patches of owl's clover were recorded as point locations and were observed in survey areas 11, 16, 17, 18, and 23.

In 2016, focused surveys were conducted on the entire site in accordance with the description in the most recent Quino checkerspot butterfly survey guidelines (December 15, 2014) as modified by the 2016 Building Industry Association (BIA) deviation with the additional deviation of conducting three weeks of surveys. So the methods for the survey included much of the 2014 protocol, as modified by the 2016 BIA deviation, with an added deviation specific for Otay Ranch Resort Site.

According to the December 15, 2014 USFWS protocol, the first weekly survey shall begin during the third week of February and the survey season will end the second Saturday in May. Surveys shall be conducted weekly and spaced no closer than 4 days apart. To avoid starting the survey effort prior to the onset of the flight of the butterfly, Dudek conducted the 2016 surveys in accordance with the protocol outlined in the negotiated *Proposed 2016 Quino Checkerspot Survey Protocol* (BIA 2016). This proposed protocol was prepared in conjunction with the USFWS. The proposed protocol combines elements of the 2002 and 2014 (early and late) protocols with key modifications to the 2014 FWS Quino survey guidelines (December 15, 2014) including:

- A reference site was surveyed to determine the life stage of Quino and define the flight season.
- Surveys were initiated within one week of observed Quino flight at the reference site(s).
- Host plant were mapped as a separate effort following the methods used in 2014 by Helix Environmental for the Village 14 project with the exception that density was mapped rather than absolute number: host plant species will be mapped in patches of low density (11 - 100 plants), medium density (100 – 1,000 plants), and high density (1,000 –10,000 plants) with the addition of a very low category (1-10 plants) which can be collapsed into the low density category per the BIA protocol if warranted. In addition, the units for mapping will be based on plants per square meter and *Castilleja exserta* will be included. High density patches of host plant were mapped as polygons if they are in areas larger than approximately 250 square feet. If observed, Quino larvae will be recorded and a permitted biologist will be present to document the observation.

Dudek submitted a notification asking for permission to deviate from the 2014 USFWS protocol and the 2016 BIA protocol. Dudek was approved by USFWS to follow the deviation for the Otay Ranch Resort Site on February 10, 2016. From the 2016 Revised Notification of Survey, Quino checkerspot butterfly surveys at Village 13 were conducted for three weeks following the initial observed Quino checkerspot butterfly flight at the reference site as discussed in the notification.

Focused Quino checkerspot butterfly surveys were conducted over 103 surveys within a 3-week period between February 29, 2016 and March 16, 2016 per the Quino Checkerspot butterfly Survey Guidelines published on January 11, 2016, including an additional survey on March 31, 2016 and April 4, 2016 to confirm Quino checkerspot butterfly was no longer in flight.

Surveys were conducted by Quino-permitted biologists Anita Hayworth (TE781084-8), Paul Lemons (TE051248-5), Erin Bergman (TE813545-5), Tricia Wotipka (TE840619-2), Vipul Joshi (TE019949-3), Travis Cooper (TE170389-5), Alicia Hill (TE06145B-0), Garrett Huffman (TE20186A-1), Antonette Gutierrez (TE-50992B-0), Brian Lohstroh (TE-063608-5), Crysta Dickson (TE-067347-5), Darin Busby (TE-115373-3), David King (TE-785148-11), Erika

Eidson (TE-051236), Erik LaCoste (TE-027736-5), Greg Chatman (TE-075112-2), Gretchen Cummings (TE-031850-4), Nicole Kimball (TE-053598), Monica Alfaro (TE-051242-2), and Diana Saucedo (TE-811615-6.1). Dudek biologists Patricia Schuyler (TE-27502B-0), Callie Ford (TE-36118B-0), Marshall Paymard, and Janice Wondolleck, and biological consultants, Emily Mastrelli accompanied Quino-permitted biologists during some visits. County Biologist Korey Klutz accompanied Dr. Hayworth for a final visit to the site.

The site was divided into 32 survey polygons for weeks 1 through 3, each representing a single-day survey effort at a rate no greater than 5 to 10 acres per hour (i.e., in accordance with USFWS 2014 protocol) (Table 2). One closed canopy chamise chaparral area totaling 19.9 acres within the site was excluded during the 2016 survey in order to avoid damaging habitat during surveys. These survey areas were numbered and assigned to Dudek's permitted biologists and independent investigators. The biologists were provided with 200-scale (1 inch = 200 feet) aerial photographs of each survey polygon. These photographs were used for mapping additional host plant populations and Quino checkerspot butterfly, if observed, although the task of the host plant mapping was separate from the adult surveys. Plant species also were recorded and potential nectar plants were included. Binoculars were used to aid in detecting and identifying butterfly and other wildlife species. GPS units also were available for recording locations.

Table 2
2016 Quino Checkerspot Butterfly Survey Polygons

Survey Area	Acreage of Survey Area
1	59.7
2	57.6
3	58.8
4	58.1
5	59.7
6	60.0
7	58.1
8	57.9
9	57.8
10	58.7
11	55.6
12	60.2
13	58.6
14	60.0
15	59.5
16	59.2
17	59.8

Table 2
2016 Quino Checkerspot Butterfly Survey Polygons

Survey Area	Acreage of Survey Area
18	55.8
19	42.0
20	56.1
21	59.4
22	56.6
23	60.3
24	60.1
25	59.7
26	59.8
27	59.8
28	60.4
29	58.8
30	53.6
31	50.5
32	56.9

The survey methods consisted of slowly walking roughly parallel transects spaced approximately 30 feet (10 meters) apart throughout all habitats within the approximately 1,826-acre survey area (excluding the 19.9 closed canopy chamise chaparral area). Survey routes were arranged to thoroughly cover the survey area at a rate of approximately 5-10 acres per person hour.

Surveys were conducted only during acceptable weather conditions (i.e., surveys were not conducted during fog, drizzle, or rain; winds greater than 15 miles per hour measured 4–6 feet above ground level for more than 30 seconds; temperature in the shade at ground level less than 60°F on a clear, sunny day with less than 50% cloud cover; or temperature in the shade at ground level less than 70°F on an overcast or cloudy day with 50% or more cloud cover. Survey times, personnel, and conditions during the Quino checkerspot butterfly survey can be provided under separate cover.

1.2.2 Covered Species in Preserve Complex

As indicated in Table 3, several covered species are present within the Otay Ranch RMP preserve. However, most of these species are covered species under the County MSCP Subarea Plan and long term management strategies exist to ensure their continued survival. The focal point of the Village 13 Otay Ranch RMP Preserve plus the Conserved Open Space is the preservation and management of existing Quino checkerspot butterfly locations and habitat, and the restoration of additional Quino checkerspot butterfly habitat. Although Quino checkerspot butterfly (and San

Diego fairy shrimp) is not a covered species, it is a federally listed species and therefore included within Table 3. For the San Diego fairy shrimp, although the MSCP County Subarea Plan identifies San Diego fairy shrimp as a Covered Species, the County has taken the position that, based on a 2006 federal court decision, the plan's protections for this species are inadequate for purposes of providing FESA take coverage. Therefore, impacts to San Diego fairy shrimp or its habitat must be assessed and mitigated on a project-specific basis. Since the focus of this plan is preservation and management of Quino checkerspot butterfly within the on-site preserve, Table 3 is only provided for context and these species will not be discussed further within this plan. The Otay Ranch POM, through the collection of CFD tax revenues, will continue to monitor and manage all species within the Otay Ranch RMP Preserve. Tasks that are provided by the Otay Ranch POM include basic stewardship tasks and conduct the required biological surveys and monitoring for the Preserve. Stewardship tasks include conducting regularly scheduled site visits to document access issues and illegal dumping; performing fence repairs; identifying and treating invasive plant species; conducting endangered species surveys and general surveys for plant and wildlife species; mapping vegetation communities within specific parcels; and restoring sensitive habitats. The Otay Ranch POM is also responsible for ongoing coordination with land managers and agencies such as Caltrans and the California Department of Fish and Wildlife in order to maintain consistency with regional monitoring and management.

Table 3
Alternative H Impacts to Special-Status Plant Species Present on Site

Species Scientific Name	Regulatory Status Federal/State CRPR MSCP Coverage County List	Basis for Impact Evaluation	Number/ Acre(s) impacted	% impacted	Number/ Acre(s) Not Impacted
San Diego thornmint (*Acanthomintha ilicifolia*)	FT/SE 1B.1 Covered Narrow Endemic A	A total of 3.4 acres of the species have been mapped on site.	0.1 acres	3	3.3 acres
California adolphia (*Adolphia californica*)	None/None 2B.1 Not Covered B	A total of <20 individuals present at two locations. For purposes of evaluation, it is assumed that a total of 20 are currently present on site.	20 individuals	100	0
Small-flowered morning-glory (*Convolvulus simulans*)	None/None 4.2 Not Covered D	A total of 120 individuals observed on site.	0 individuals	0	120 individuals
Western dichondra (*Dichondra occidentalis*)	None/None 4.2 Not Covered D	A total of 0.5 acre occupied by this species on site.	0.4 acre	80	0.23 acre
Variegated dudleya (*Dudleya variegata*)	None/None 1B.2 Covered – Narrow Endemic A	A total of 5,833 individuals observed on site.	4145 individuals	71	1688 individuals
San Diego barrel cactus (*Ferocactus viridescens*)	None/None 2.1 Covered B	A total of 217 individuals observed on site.	62 individuals	29	155 individuals

Table 3
Alternative H Impacts to Special-Status Plant Species Present on Site

Species Scientific Name	Regulatory Status Federal/State CRPR MSCP Coverage County List	Basis for Impact Evaluation	Number/ Acre(s) impacted	% impacted	Number/ Acre(s) Not Impacted
Palmer's grapplinghook (*Harpagonella palmeri*)	None/None 4.2 Not Covered D	A total of 298 individuals observed on site.	68 individuals	23	230 individuals
San Diego marsh-elder (*Iva hayesiana*)	None/None 2B.2 Not Covered B	A total of 5.4 acres occupied by this species on site.	2.9 acres	53	2.5 acres
Southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*)	None/None 4.2 Not Covered D	A total of 30 individuals observed on site.	1 individuals	3	29 individuals
Small-flowered microseris *(Microseris douglasii* ssp. *platycarpha)*	None/None 4.2 Not Covered D	A total of 1,270 individuals observed on site.	270 individuals	21	1,000 individuals
San Diego goldenstar (*Bloomeria clevelandii*)	None/None 1B.1 Covered A	A total of 2,546 individuals observed on site.	1,494 individuals	59	1,052 individuals
Little mousetail (*Myosurus minimus* ssp. *apus*)	None/None 3.1 Not Covered C	Although observed in 1990, this species has not been observed recently.	0	0	0

Table 3
Alternative H Impacts to Special-Status Plant Species Present on Site

Species Scientific Name	Regulatory Status Federal/State CRPR MSCP Coverage County List	Basis for Impact Evaluation	Number/ Acre(s) impacted	% impacted	Number/ Acre(s) Not Impacted
California adder's-tongue (*Ophioglossum californicum*)	None/None 4.2 Not Covered D	Has not been observed in recent years and likely is not present.	0	0	0
Golden-rayed pentachaeta (*Pentachaeta aurea* ssp. *aurea*)	None/None 4.2 Not Covered D	A total of 91 individuals observed on site.	51 individuals	56	40 individuals
Nuttall's scrub oak (*Quercus dumosa*)	None/None 1B.1 Not Covered A	A total of 6.2 acres are occupied by this species on site.	6.2 acres	100	2 patches acres
Coulter's matilija poppy (*Romneya coulteri*)	None/None 4.2 Not Covered D	Single location observed.	0	0	1 individual
Munz's sage (*Salvia munzii*)	None/None 2B.2 Not Covered B	A total of 295 acres of areas that are occupied by this species on site.	109 acres of areas that include the species. A total of 6.5 acres dominated by the species within coastal sage scrub will be impacted	37	186 acres

Table 3
Alternative H Impacts to Special-Status Plant Species Present on Site

Species Scientific Name	Regulatory Status Federal/State CRPR MSCP Coverage County List	Basis for Impact Evaluation	Number/ Acre(s) impacted	% impacted	Number/ Acre(s) Not Impacted
San Diego County viguiera (*Viguiera laciniata*)	None/None 4.2 Not Covered D	A total of 1,071 acres of coastal sage scrub that include San Diego County viguiera.	174 acres of areas that include the species. A total of 2.5 acres dominated by the species will be impacted.	16	897 acres

Federal Designations:
BCC U.S. Fish and Wildlife Service Bird of Conservation Concern
FE Federally listed Endangered
FT Federally listed as Threatened
State Designations:
CSC California Special Concern Species
P CDFW Protected and Fully Protected Species
SE State-listed as Endangered
ST State-listed as Threatened
WL Watch List.
MSCP Designations:
Covered: Listed as Covered Species in Appendix B of Implementing Agreement between CDFW, USFWS, and County of San Diego (March 1998)
Not Covered: Not Listed as Covered Species in Appendix B of Implementing Agreement between CDFW, USFWS, and County of San Diego (March 1998).
County Designations:
Group 1: High level of sensitivity, either because listed as threatened or endangered or because species has very specific natural history requirements that must be met
Group 2: Species is becoming less common, but is not yet so rare that extirpation or extinction is imminent without immediate action. These species tend to be prolific within their suitable habitat types.

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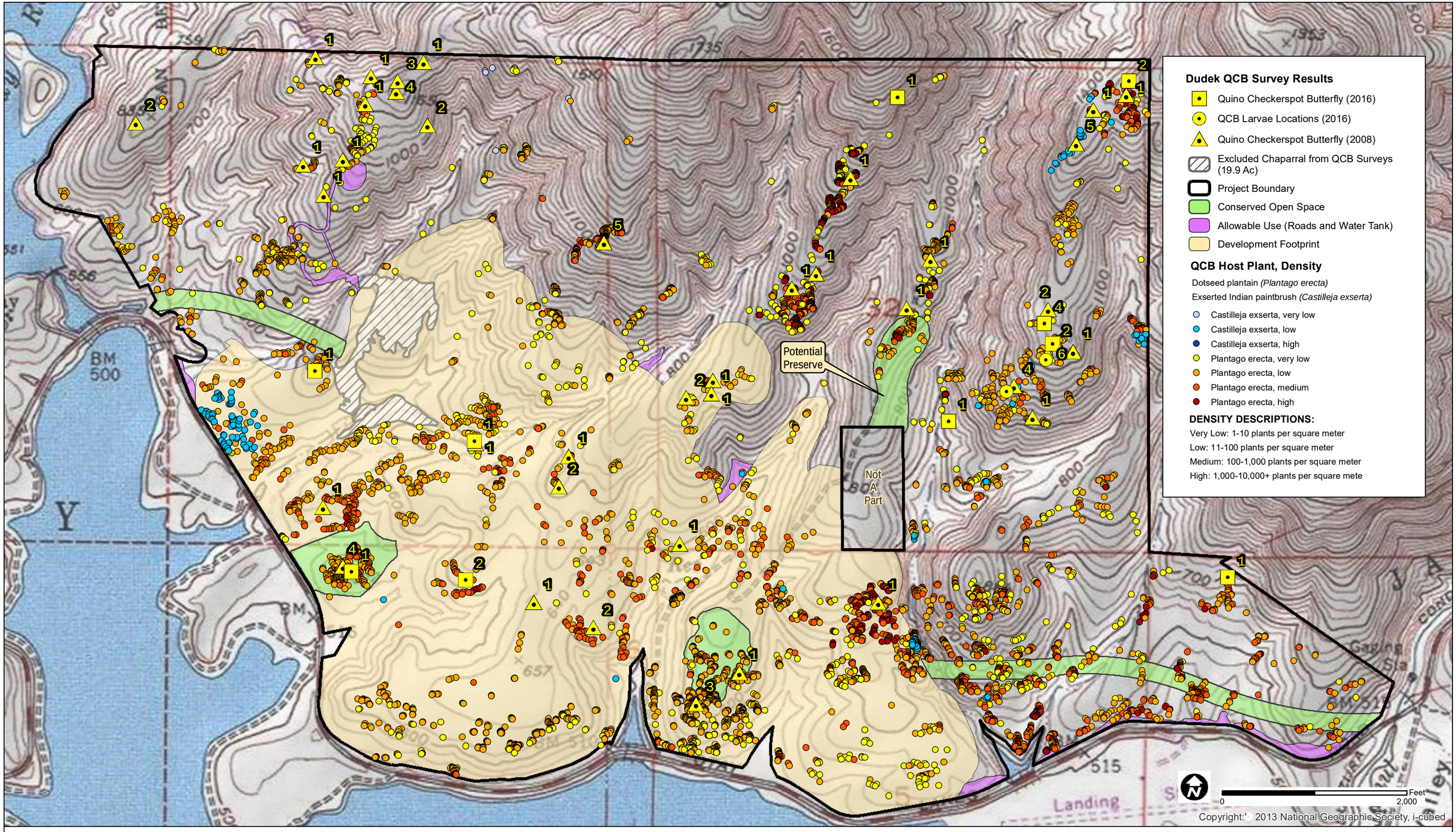

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FIGURE 5

Quino Checkerspot Butterfly Observations and Host Plant Locations

Otay Ranch Resort Village Site - Quino Checkerspot Butterfly Management/Enhancement Plan

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Quino Checkerspot Butterfly Context

The Quino checkerspot butterfly is the southernmost subspecies of a widely distributed butterfly (*Euphydryas editha*) that ranges from British Columbia to northern Baja California, Mexico (Bauer 1975). It was formerly widespread in the coastal plains and inland valleys of Southern California, including Los Angeles, Orange, Riverside, San Diego and San Bernardino counties, and northern Baja California, Mexico (Mattoni et al. 1997).

As recently as the 1950s, collectors described the Quino checkerspot butterfly as occurring on every coastal bluff, inland mesa top, and lower mountain slope in San Diego County and coastal northern Baja California (USFWS 2003). Throughout most of Southern California, the native habitats of this butterfly have disappeared incrementally as development has progressed and undeveloped areas have been invaded by non-native plant species. Quino checkerspot butterfly has more recently shifted in distribution from the coast into foothills and mountains and the newly discovered higher elevation populations experience more precipitation and are buffered from drought (Preston et al. 2012).

Quino checkerspot butterfly show a preference for relatively open areas with cryptogamic crust and few vascular plants, surrounded by low-growing vegetation (Osborne and Redak 2000). Appropriate generalized habitat types include early and middle successional grasslands, open scrub communities, broken chaparral, and vernal pools (Murphy 1990). The host plant species for the Quino checkerspot larvae includes: dot-seed plantain, desert plantain (*Plantago patagonica*), thread-leaved bird's beak (*Cordylanthus rigidus*), white snapdragon (*Antirrhinum coulterianum*), owl's clover and Chinese houses (*Collinsia* spp.). In conducting site assessments for the species, areas that should be surveyed for the species included: sage scrub, open chaparral, grasslands, and vernal pools. Within these communities Quino checkerspot butterfly are usually observed in open or sparsely vegetated areas (including trails and dirt roads), and on hilltops and ridgelines. As described in the USFWS survey protocol (USFWS 2002), the following areas are not recommended for butterfly surveys since these areas do not seem to be preferred for use by the species:

- Orchards, developed areas, or small in-fill parcels largely dominated by non-native vegetation
- Active/in-use agricultural fields without natural or remnant inclusions of native vegetation
- Closed-canopy forests or riparian areas, dense chaparral, and small openings completely enclosed within dense chaparral.

Areas of dense chaparral and dense non-native grasslands are present onsite.

Normally, larvae consume the plant on which they hatch, and then migrate in search of new plants. Due to the limited ability of larvae to move among host plants, high local host density is necessary

for larval survival (Osborne and Redak 2000). If larvae have accumulated sufficient reserves by the time their host plants become inedible, they are able to enter diapause (USFWS 2003), a low-metabolic resting state that enables larvae to survive for months during the summer without feeding. While in diapause, larvae are much less sensitive to climatic extremes. Larvae are able to re-enter diapause several times before maturing, which may extend their life cycle for several years (Singer and Ehrlich 1979). Because Quino checkerspot butterfly larvae can re-enter diapause, it is possible that an adult flight period may only include a portion of the original larval population or may not occur at all in some occupied sites under adverse conditions. From the perspective of judging whether a population has been extirpated, it is important to recognize that a robust population may generate no adults at all under poor environmental conditions (USFWS 2003).

Adults are typically active during a 4- to 6-week flight period beginning between late February and May, depending on weather conditions (Emmel and Emmel 1973). Most *Euphydryas editha* subspecies exhibit generally sedentary behavior, with adults frequently remaining in the same habitat patch in which they developed as larvae (Ehrlich 1961, 1965; Boughton 1999, 2000). Data from mark-recapture studies indicate that long distance dispersal (greater than 0.6 mile) in *Euphydryas editha* is rare (USFWS 2003). Quino checkerspot butterfly generally fly close to the ground in a relatively slow, meandering flight pattern, and tend to avoid flying over trees, buildings, or other objects taller than 6 to 8 feet. Their thermodynamic requirements and natural avoidance of shaded areas deters flight in densely wooded areas and other types of closed-canopy vegetation (USFWS 2003).

Murphy (1990) suggested that the human-induced decline in the distribution and abundance of the Quino checkerspot butterfly is exacerbated by the complex "metapopulation dynamics" which affect the persistence of this butterfly. In metapopulation dynamics, butterflies exist in an assemblage of individual demographic units or populations that periodically exchange individuals. Metapopulation dynamics occur when (1) patches of habitat support local breeding populations; (2) no single population is large enough to ensure long-term survival; and (3) habitat patches are not too isolated to preclude simultaneous extinction of all populations. Metapopulation stability requires a minimum number of habitat patches connected by dispersal corridors (landscape connectivity) (USFWS 2003). Some habitat areas that would not be considered essential if geographically isolated are, in fact, essential when situated in locations where they facilitate continued connectivity between surrounding populations or play a significant role in maintaining metapopulation viability (66 FR 9475).

Quino checkerspot butterfly populations have been reduced in number and size by more than 95% range wide primarily due to direct and indirect human impacts including habitat loss and fragmentation, invasion of non-native plant species, and disrupted fire regimes. Conversion from native vegetation to non-native annual grassland will be the greatest threat to Quino checkerspot butterfly reserves based on observations of the large-scale invasions throughout the range

(Freudenberger et al. 1987, Minnich and Dezzani 1998, Stylinski and Allen 1999). An evaluation of population extinctions determined that precipitation and topographical variability were not important predictors (Preston et al 2012). The increased dominance of non-native species is reducing the abundance of Quino checkerspot butterfly food plants, and habitat fragmentation exacerbates vegetation type conversion. Studies on the changing distribution of the Quino checkerspot butterfly indicate that wildflower host plants and nectar sources have declined across the butterfly's range because of invasive plants and habitat loss. Corridors of human activity through unfragmented natural areas such as unpaved roads, trails, and pipelines are also conduits of non-native seed dispersal (Zink et al. 1995).

Reserves should be designed to provide sufficient numbers of habitat patches such that (1) only a small number of habitat patches will likely be extirpated in a single year and (2) patches are close enough so that natural recolonization can occur at a rate sufficient to maintain a relatively constant number of patches occupied by larvae. Linkage areas must be free of dispersal barriers (artificial structures, dense stands of trees or tall shrubs) and mortality sinks (e.g., high-traffic roads[1]). Habitat networks should also be buffered (i.e., embedded in natural areas as large as possible) to reduce indirect impacts of development and the need for future or ongoing restoration in occupied habitat.

1.2.3 Natural Communities in the Preserve Complex

Proposed Preserve vegetation community acreages are shown in Table 4 and include those areas not impacted by grading or fuel modification zones as well as areas proposed to be restored to native habitat and areas that are allowed uses within the Preserve (i.e. – allowed infrastructure). These land uses include the water tank, and the road that provides access to the water tank, the natural drainage bypass facilities, and the slope grading for Otay Lakes Road. Of the approximately 1,869 acres of the project site, a total of approximately 1,177 acres (63% of the project site) is proposed to be preserved on site with a biological open space easement within the ultimate Otay Ranch RMP Preserve and the Conserved Open Space. Within the Otay Ranch RMP Preserve and Conserved Open Space, a total of approximately 1,107.72 acres of suitable, restored, or occupied coastal sage scrub for Quino checkerspot butterfly will be preserved by a biological open space easement on site. A vegetation map with the proposed development footprint is provided in Figure 6.

[1] High traffic roads are defined as those greater than 10,500 average daily trips

Table 4
Alternative H Development Impacts, Otay Ranch RMP Preserve, and Conserved Open Space Vegetation Communities

Vegetation Community	Total Project Site (Acres)	Development	Preserve and Conserved Open Space		Total
		Development Impacts (Includes Fuel Modification, Detention Basins, Manufactured slopes) (Acres)*	*Total Onsite Otay Ranch RMP Preserve (Acres)*	*Conserved Open Space. (Includes San Diego Thornmint, Vernal Pools, Realigned Otay Lakes Road and Development Area with No Access) (Acres)*	*Total Preserve and Conserved Open Space (Acres)*
Coastal sage scrub	1126.83	115.76	981.70	29.37	1,011.07
Disturbed coastal sage scrub	348.69	273.09	51.24	24.36	75.60
Chamise chaparral	143.14	89.95	49.49	3.70	53.19
Disturbed chamise chaparral	15.67	14.09	1.58		1.58
Scrub oak chaparral	22.45	22.10	0.35		0.35
Southern mixed chaparral	4.95	0.00	4.95		4.95
Disturbed Valley needlegrass grassland	110.46	102.94	7.52		7.52
Non-native grassland	79.02	64.49	3.11	11.42	14.53
Cismontane alkali marsh	1.73	0.06	1.67		1.67
Disturbed cismontane alkali marsh	0.37	0.19	0.18		0.18
Mulefat scrub	0.15	0.06	0.09		0.09
Open water	0.17	0.17	0.00		0.00
Southern willow scrub	0.27	0.01	0.26		0.26
Developed Land	0.87	0.79	0.08		0.08
Disturbed Habitat	13.46	7.79	4.72	0.95	5.67
Stock pond	0.79	0.50	0.29		0.29
Total	1,869.02	691.99	1107.23	69.80	1,177.03

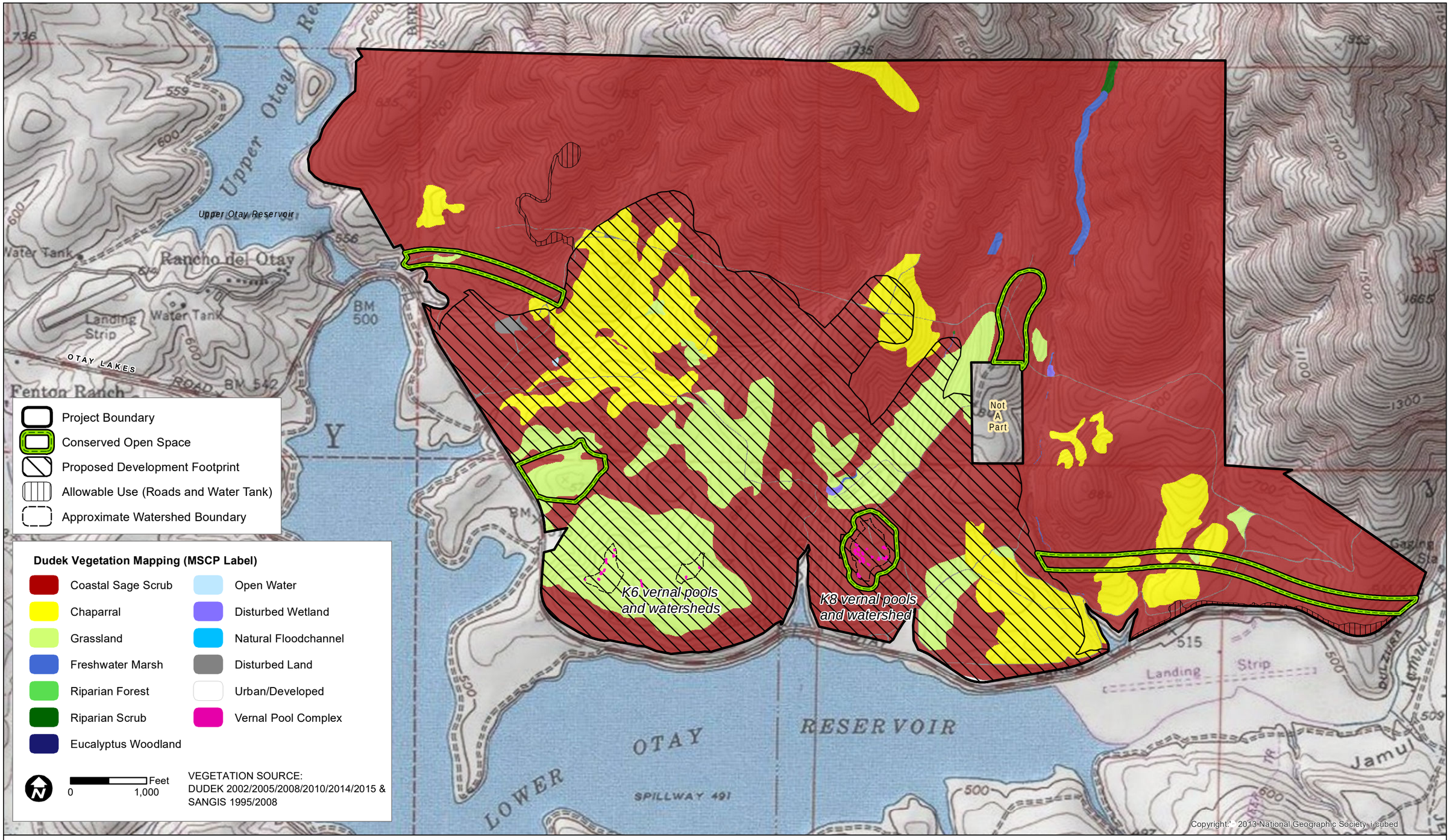

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FIGURE 6

Vegetation Map with Proposed Development Footprint

Otay Ranch Resort Village Site - Quino Checkerspot Butterfly Management/Enhancement Plan

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1.2.4 Connectivity with Other Preserve Complexes

The preserve provides connectivity for Quino checkerspot butterfly to off-site occupied areas to the north, east, and south. As described in Section 1.1.2, provisions are included in the project design to provide for connectivity within the site as well as to off-site areas. Adjacent preserve complexes include: Otay Lakes Cornerstone lands immediately to the south, west and northwest; BLM lands, including Otay Mountain Wilderness Area to the southeast; CDFW lands to the north, south and east; USFWS lands immediately to the east; and Otay POM lands to the south in addition to those immediately to the north. Although there are still lands to the northwest which have the potential to be developed, the proposed project preserve will provide corridors which can connect on site Quino checkerspot butterfly habitat and occurrences to future conserved and already conserved areas to the northeast. In addition, the proposed project preserve will extend to the north an already established contiguous block of conserved lands from the Mexico border to Otay Lakes.

1.2.5 Primary Threats and Stressors for Preserve Complex

According to the draft County of San Diego Quino Addition (County of San Diego 2010), conversion from native vegetation to non-native annual grassland is likely the greatest threat to Quino checkerspot butterfly within preserves. Therefore, a primary focus (at least initially) of management for the Otay Ranch Resort Village Preserve will be maintaining native vegetation communities suitable for Quino checkerspot butterfly occupancy. The Otay Ranch RMP provides the guidelines for general preserve management and will continue to be used.

Due to the metapopulation dynamics of Quino checkerspot butterfly, it will be important to maintain the quality and quantity of both occupied and unoccupied Quino checkerspot butterfly habitat. Based on the results of site-specific surveys it is assumed that Quino checkerspot butterfly use nearly the entire Preserve; however, no Quino checkerspot butterfly were observed in grassland and chaparral habitats and there may be some very steep slopes in the northern part of the Preserve that are used strictly for movement of butterflies and that do not contain suitable habitat requirements for the larvae. As such, of the 1,177 acre-Preserve, approximately 1,107.72 acres are considered suitable Quino checkerspot butterfly habitat not including the acreage of non-native grassland that is proposed to be restored to suitable Quino checkerspot butterfly habitat. If the coastal sage scrub on site degrades and becomes dominated by non-native weeds, maintenance may be required. Currently it is not anticipated that any action is required for areas other than the patches shown on Figure 7. Vegetation restoration and monitoring in described further in Section 2.1.

1.3 Management and Monitoring Strategy

1.3.1 Summary and Vision Statement

The purpose of this document is to provide guidance for the management and continued occupation of the Otay Ranch Resort Village site by the Quino checkerspot butterfly and to facilitate movement of the species to and from other off-site conserved areas. This plan is required as mitigation for on-site impacts associated with the construction of the Resort Village project area.

1.3.2 Biological Priorities and Priority Management Actions

The goal of this plan is to document the continued persistence and conserve the population of the Quino checkerspot butterfly within the Preserve of the Resort Village through a combination of management, monitoring, and restoration actions. The analysis provided by Longcore et al (2003) on the life history features that describe the relationship between the Quino checkerspot butterfly and its environment in San Diego County was presented as an envirogram. The factors that affect the status of the Quino checkerspot butterfly are categorized as:

- availability of resources;
- direct causes of mortality;
- availability of mates; and
- impacts from predators and parasites.

The "centrum" for Quino checkerspot butterfly encompasses the proximate determinants of population dynamics and while it includes multiple features, management for the species focuses on the habitat conditions or availability of resources since the other features are either not under control of management, or are clearly handled with the designation of the Preserve. For the Resort Village Preserve, the inputs to the resources centrum focus on exotic plants and the native plant community since other inputs such as edge effects, grazing, agricultural activities, trail usage, disturbance are all controlled or curtailed with the proposed development and conditions of approval. Specifically, the project includes a Preserve Edge Plan to reduce and minimize edge effects. Grazing and agricultural activities are not permitted on the project site.

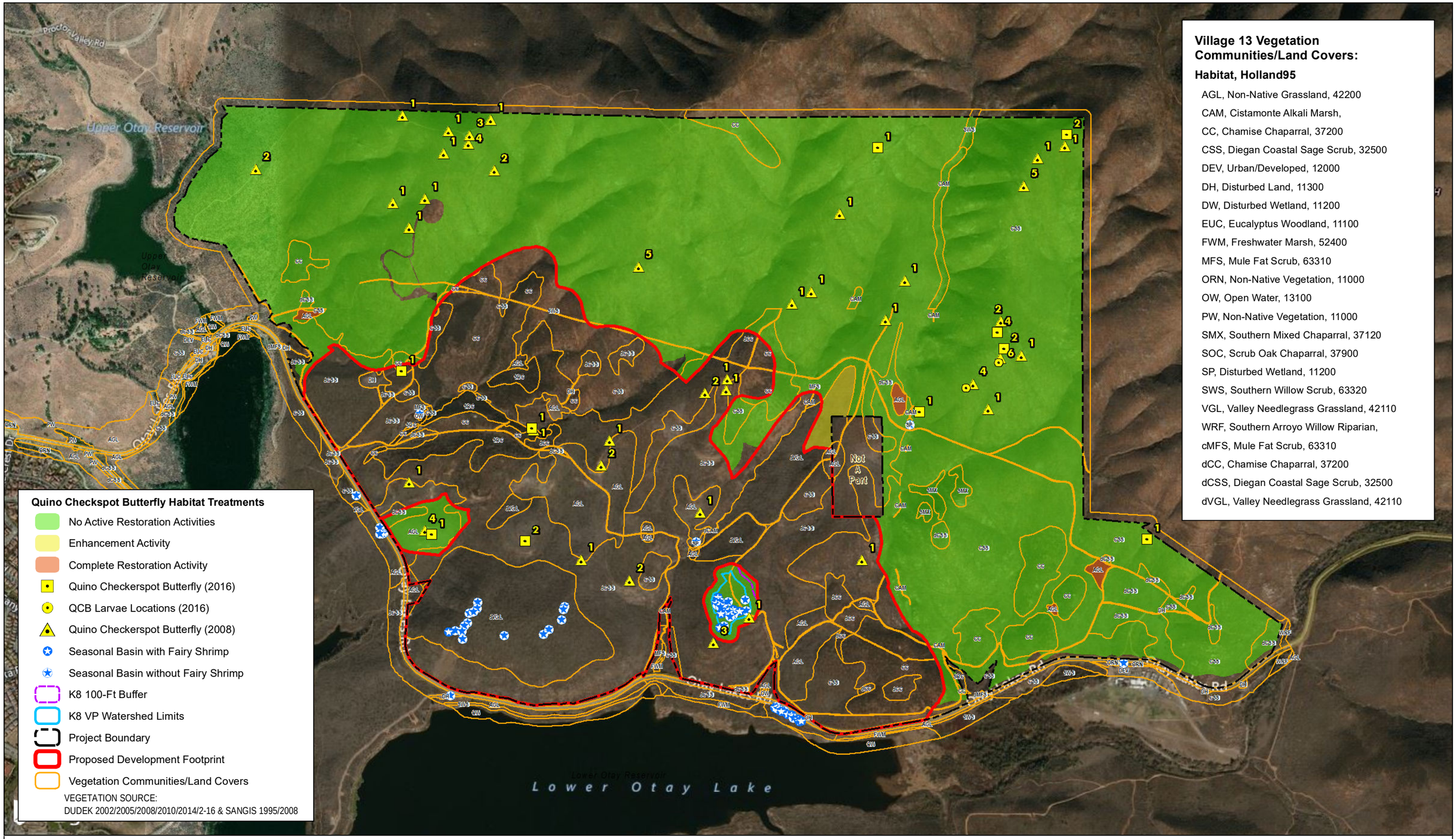

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FIGURE 7

Proposed Restoration Treatment Levels for Habitat Management

Otay Ranch Resort Village Site - Quino Checkerspot Butterfly Management/Enhancement Plan

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To determine the management actions and the types of habitat restoration (level of effort), the site was surveyed as described in Section 1.2.1 and the various areas within the proposed preserve were generally categorized as requiring: 1) complete restoration; 2) enhancement; or 3) management (Figure 7). The total acreage of habitat currently present within the proposed Otay Ranch RMP Preserve and Other Conserved Lands is approximately 1,177 acres (Figure 4) of which 1,107.72 acres would be considered to be suitable habitat for Quino checkerspot butterfly composed of coastal sage scrub and disturbed coastal sage scrub. Much of this Preserve and Other Conserved Lands area is high quality habitat for Quino checkerspot butterfly and has been documented to be occupied by the species. Areas that are composed of chaparral, although dense and generally not suitable, are important habitat features. The disturbed grassland areas, however, have become grassland with dense cover and not suitable and provide opportunities for enhancement treatment. Much of the focus of this management plan is on the maintenance of the condition of the coastal sage habitat since it is predominantly already in good condition and occupied.

1.3.3 Authorized Land Uses and Potential Conflicts

Otay Ranch was organized so that several villages and planning areas were designated for various types of development while other areas were reserved for preservation of multiple species and habitats. An effort was undertaken to plan development to conserve species and habitats in the region and maintain wildlife corridors. The Otay Ranch Resort Village is designated for residential and resort development and for open space by the Otay SRP.

Under Alternative H, the 1,869-acre Project site would be developed in accordance with the approved MSCP and hardline boundary while achieving the majority of the Project objectives. Development of the Project site would consist of 1,881 single-family homes and 57 multi-family homes for a total of 1,938 homes for a total residential development footprint of roughly 692 acres. Resort uses would encompass roughly 16.5 acres in the southeast portion of the Project site and includes up to 200 rooms and 20,000 square feet of ancillary retail/commercial uses. A community homeowner facility site of roughly 6 acres, which includes meeting space and fitness center, recreation courts, swimming pool and picnic areas, is located in close proximity to the village core. A total of about 25 acres of public parks is designed around a central park in the village core which is augmented by a series of neighborhood parks within convenient walking distance from all homes. Adjacent to the central park is a 10 acre elementary school site. While no public safety site was included within Village 13 in the Otay SRP, which located a fire station in Village 15, as with the Proposed Project this alternative would include a 2.3 acre Public Safety Site. Other land uses include 32.5 acres for internal circulation and 77 acres of non-preserve open space, comprised primarily of homeowner association maintained manufactured slopes, fuel management zones, and water quality basins. Otay Lakes Road would not be realigned from its existing location on the western and southern edge of the Project site to the approximate middle of the site which is what was originally shown in the MSCP. However, the road would undergo improvements including

a widening from two to four lanes. Alternative H includes a conveyance obligation of 787 acres to the Otay Ranch Preserve, which is part of the MSCP Preserve. All required conveyance will be located within the Otay Ranch Resort Village property; no conveyance land will be offsite. The additional Preserve land (320 acres) within the site would be conveyed in the future as needed for other mitigation and/or future projects or to provide additional mitigation for project impacts. Alternative H would also include 69.8 acres of Conserved Open Space (Table 5) which will be protected by a conservation easement, conveyed to the Otay Ranch RMP Preserve, or transferred to the Otay Ranch RMP Preserve at a later date. The entire onsite Otay Ranch RMP Preserve and Conserved Open Space will be protected by a biological open space easement. No fuel modification zones or privately owned lots are located in the Preserve or on restored areas that are designated as Otay Ranch RMP Preserve.

Table 5.
Summary of Land Use Designations for Alternative H Project Site

Land Use Designation	Acreage
Development	692
Total Otay Ranch RMP Preserve	1,107
Conserved Open Space*	70
Total Preserve including Conserved Open Space	1,177
Total Site Acreage	1,869

*To be protected by a conservation easement or by transfer to the Preserve

1.3.4 Preserve-level and Regional-level Monitoring Strategy

To determine if the management for the Quino checkerspot butterfly is providing long-term occupation of the Preserve, surveys should be conducted after the construction of the project. Previous Baseline surveys, as discussed in Section 1.2.2, delineated Quino checkerspot butterfly habitat within the proposed Preserve.

The results of pre-construction surveys have been used to develop a sampling scheme for Quino checkerspot butterfly occupancy and habitat monitoring upon completion of the project. Quino checkerspot butterfly occupancy monitoring will track Quino checkerspot butterfly population trends over time. Quino checkerspot butterfly habitat monitoring will track changes in habitat quality and quantity.

The monitoring program is a science-based program that includes the following features:

- **Population monitoring:** estimate butterfly population densities based on field counts of adults across habitat range within the Preserve;

- **Habitat characterization:** assess biotic factors (host plants, invasive species, etc.) and abiotic factors (microclimate, slope orientation, etc.) of local habitat within the Preserve;
- **Habitat modeling:** simulate population dynamics as influenced by prevailing climate, microclimate (solar exposure, temperature, etc.), slope orientation, host plant availability, and larvae development;
- **Human impacts:** assess and mitigate the impacts of human development on and near butterfly habitat and prohibit or limit these impacts to the extent practical;
- **Adaptive management:** implement site-specific management plans, with periodic review of success based on results of continued monitoring.

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2 AREA-SPECIFIC MANAGEMENT DIRECTIVES AND TIMELINE FOR THE PRESERVE COMPLEX

Critical environmental factors that threaten the species include those physical and biological factors that may result in population extirpations. Management and monitoring will benefit from a concrete analysis of the risks to the population and identification of the threats (Longcore et al. 2003). The dominant causes of population declines result from reduction and loss of the resources that are critical for the species. Hence the size, configuration, and distribution of habitat patches are the primary determinants of the likelihood of species persistence (Longcore et al. 2003). The Quino checkerspot butterfly is threatened primarily by urban and agricultural development, invasion by nonnative species, off-road vehicle use, grazing, and fire management practices USFWS 2003). Other factors contributing to the species' population decline likely have been, and will continue to be, enhanced nitrogen deposition, elevated atmospheric carbon dioxide concentrations, and climate change (USFWS 2003). As a result, careful planning that ensures maintenance of existing Quino checkerspot butterfly metapopulations will be the key to long term conservation of the species. Any activity resulting in habitat fragmentation or removal of host or nectar plants from habitat reduces habitat quality and increases the probability of extinction of the Quino checkerspot butterfly.

The methods for the vegetation communities area-specific management directive is derived from the adaptive management program described in the County of San Diego Quino Addition (2010). The success of this area-specific management directive/adaptive management program, both for the Preserve and the County in general, will depend on the development of techniques that can efficiently restore native plant species on a large scale.

2.1 Vegetation Communities

A primary goal of the preserve complex will be maintaining and enhancing vegetation communities suitable for Quino checkerspot butterfly occupancy through habitat restoration and enhancement and especially including weed control and removal as determined by monitoring the vegetation. Preservation and enhancement of on-site habitat will maintain connectivity between the Otay Lake/Jamul occurrences and other occurrences adjacent to the preserve. These efforts will prevent conversion from native vegetation to dense, non-native annual grassland with few host plants, which is one of the greatest threats to Quino checkerspot butterfly.

2.1.1 Vegetation Goals

Goals

- Maintain the existing quality and quantity of occupied and unoccupied Quino checkerspot butterfly habitats.

- Enhance additional vegetation communities suitable for Quino checkerspot butterfly occupancy through habitat restoration.

2.1.2 Vegetation Objectives

Objectives

- Restore 4.2 acres which are devoid of any of the required resources (i.e. suitable coastal sage scrub) for the Quino checkerspot butterfly
- Enhance 7.5 acres where the vegetation is dominated by grasses but otherwise include sparse shrub cover and bare patches of soil
- Monitor for conversion of habitat types

Habitat restoration and enhancement should be done in the most efficient and effective method to allow for long-term implementation. Initial focus should be to enhance existing degraded habitat prior to restoration. This will provide for more immediate results. The specific design of this program will be coordinated with the Wildlife Agencies, the County, and the POM, which will be responsible for implementing this monitoring program.

Coastal sage scrub restoration, in order to provide suitable habitat for Quino checkerspot butterfly, may need to focus on providing more diverse habitat, sparser vegetation with more opening for basking, suitable host and nectar plant species, and the establishment of cryptobiotic crusts. Prior to initiating a restoration program, a conceptual plan should be developed that identifies timing, species composition, site preparation, and methods of implementation. In addition, the results of the quino checkerspot butterfly habitat restoration effort will be reviewed annually to determine which methods are most effective. The design currently includes two methods, the seed ball and hand-broadcast seeding techniques (SDMMP 2013c). The results from these studies will be used to determine methods.

Restoration

Areas within the Resort Village Preserve that require complete restoration are those areas that are completely devoid of any of the required resources for the Quino checkerspot butterfly. The actions may include dethatching, herbicide treatments, mowing and or weeding, and extensive seeding. These areas include the slope grading areas that are proposed for complete restoration (see Conceptual Upland Restoration Plan; Dudek 2018) as well as the areas mapped as non-native grassland with no shrubs or forbs present. These areas are a dense and complete cover of non-native grasses with no soil exposure or potential to all Quino checkerspot butterfly host plant growth. There are a total of 4.2 acres assigned as complete restoration treatment.

Enhancement

Areas within the Resort Village Preserve that require enhancement include areas with vegetation that is dominated by grasses but otherwise include sparse shrub cover and bare patches of soil. Some of these areas are mapped as disturbed valley needlegrass grassland and others are mapped as disturbed coastal sage scrub. The actions for these areas may include some dethatching and no other action or limited application of herbicide. It is important to note that the vernal pool area, while it could be designated as an enhancement area, has its own restoration plan that includes restoration of new vernal pools and enhancement of existing vernal pools and mima mounds as documented in the Conceptual Vernal Pool Mitigation Plan (Dudek 2018). There are a total of 7.5 acres assigned to enhancement treatment.

Monitoring

Areas within the Resort Village Preserve that require monitoring and no other restoration/enhancement activities are those areas currently occupied by butterflies or that are occupied by host plant and nectar sources. These areas are composed of sparse shrub cover and native grasses. In some cases, butterflies have not been observed; however, this may be due to the overall steep topography and not due to the habitat condition since the habitat has not been grazed, farmed or otherwise involved in other human-related land use. No actions are proposed for these areas other than monitoring of populations of butterflies and the host plant populations. Actions to take place in these areas would be potentially triggered by the results of the monitoring (i.e. – adaptive management) and weed control.

2.1.3 Vegetation Implementation Tasks

Three different levels (high, moderate, and low intensity) of restoration/enhancement may occur within the Preserve. High-intensity restoration/enhancement involves de-thatching, weeding and spraying, as well as planting/relocation of native plant species, annually over a 5-year period. The high intensity restoration/enhancement program (described below) is based on the De-thatch and Repeat Spray Method developed by Recon and outlined in Appendix II of the Recovery Plan (USFWS 2003). It would be employed in areas that have significant numbers of native plant species present but contain moderate to high levels of non-native plants. The moderate and low intensity programs would be used for areas that have significant numbers of native plant species present, but contain moderate or low levels of non-native plants.

The moderate and low intensity program costs were developed specifically to address the individual requirements of a Quino checkerspot butterfly program in the City of Chula Vista. The moderate-intensity restoration/enhancement program, if appropriate for adaptive management, would occur annually over a 5-year period with perpetual maintenance

commencing in year six, while the low-intensity restoration/enhancement program would occur annually over a 4-year period with perpetual maintenance commencing in year five.

Appropriate timing of non-native plant removal should result in decreasing effort over a period of years. All areas that have been subject to restoration/enhancement will eventually be included as areas targeted for focused weeding on an appropriate rotating basis (i.e., every 2 to 6 years as needed).

High-Intensity Restoration/Enhancement Program

The following outlines the high-intensity restoration/enhancement program, representing the maximum amount of effort that is expected to be undertaken. This methodology may be modified or scaled back to suit the conditions at the selected site.

Thick thatch associated with dead mustard or annual grasses can prevent native species from germinating and/or competing successfully for light and space with non-natives. In areas with this problem, dethatching will be used to enhance the areas. This will include removal of dead plant thatch using hand tools, and "weed eaters," and return visits for spraying with glyphosate. Timing of non-native plant control efforts is crucial to success. Non-native plants will be killed prior to seed set, so that removal effort and cost will decrease over time.

Another crucial component of the non-native plant removal method described below is that workers must be trained to distinguish between native and non-native plants for restoration/enhancement to be successful.

The high-intensity restoration/enhancement program is as follows:

a. Cut thatch and dead non-native plants with "weed eaters." This cutting can be done during the summer or early fall;
b. Rake up and collect non-native plant thatch;
c. Remove thatch from site and dispose of it in dumpsters, a landfill, or an area where it can be composted nearby to reduce disposal costs;
d. Return to site and spray Roundup (or more selective herbicide, or selective weed-whacking) on non-native plant seedlings after sufficient rains have fallen in winter and spring;
e. Repeat spraying (or selective weed-whacking) as necessary to prevent seed set. Other options include the use of pre-emergent herbicide prior to the first significant rain; and
f. Repeat spraying (or selective weed-whacking) as necessary to maintain non-native plant density to a low level.

Frequent site visits are necessary during the growing season to assess nonnative plant removal efforts and to determine whether changes are needed in the strategy being used or the intensity of non-native plant removal efforts. In particular, the non-native plant removal process must be carefully monitored to ensure that new, non-native plant species do not flourish as the formerly dominant non-native species are removed. Up to five herbicide (or weed eating) applications per season may initially be required. The amount of spray will be reduced as the season progresses and fewer non-native plants are present. After the first two years, weeding requirements decrease each year if the spraying program is timed to kill non-native plants before they set seed. Removal of non-native plants by hand may be required around small populations of herbaceous natives.

Populations of native annuals (larval host plants and nectar resources) may be enhanced or re-established in and between existing habitat patches by hand seeding. According to the Recovery Plan, restoration/enhancement plantings should include nectar-producing plant species with overlapping flowering periods that extend throughout the typical Southern California growing season. Seeds of native plant species used in each restoration/enhancement project should be collected within five miles of the site, or as close as possible within the same general climate zone. To ensure that adequate seed is available, seed bulking (growing seed in cultivation to increase the amount of seeds) of annuals, including host and nectar plants, may be necessary.

To support a diverse assemblage of potential pollinators and native plant species, the Recovery Plan calls for areas of open ground within associated native plant communities to be restored to support ground nesting bees and other invertebrates. The goal of having open ground for pollinators is compatible with Quino checkerspot butterfly restoration/enhancement efforts because Quino checkerspot butterfly larval food and adult nectar plants require open ground for successful reproduction and long-term persistence. Brush piles, scattered sticks, branches, and rock cobbles can be brought to the restoration/enhancement site to increase the available cover for many animals, and will provide potential diapause and pupation sites for Quino checkerspot butterfly.

2.1.4 Performance Standards

Performance standards have been established for the restoration areas based on expected vegetative development within properly functioning habitat. The performance standards listed herein do not apply to the restoration of the off-site temporary impact areas because of their small size and because they will not be part of the Preserve.

Native plant cover criteria are based on the assumption that the greatest contribution to native plant cover will be provided initially by hydroseeded and container plants, but that in later years, natural recruitment and/or seeds from adjacent native areas and the growth of individual container plants will contribute more to plant cover. Lower performance standards for chaparral are based on the

assumption that container plants used will grow more slowly and contribute less to overall vegetation cover. Maximum non-native plant cover criteria for each vegetation type are identical, as listed under "% Maximum Non-native Plant Cover" in Table 6.

Table 6
Performance Standards

Year	% Native Plant Cover			% Maximum Non-native Plant Cover	% Container Plant Survival
	Coastal Sage Scrub	*Chaparral*	*Grassland*	*All Restoration Areas*	*All Restoration Areas*
Year 1	20	10	30	10	95
Year 2	40	20	50	10	90
Year 3	55	40	60	10	85
Year 4	70	60	70	5	85
Year 5	80	70	80	5	85

Performance standards consist of the "% Native Plant Cover" and "% Maximum Non-native Plant Cover" standards listed in Table 11. Even if overall success criteria are achieved, if any subarea misses any performance criterion by more than 15% (e.g., native plant cover in a coastal sage scrub area in Year 2 is less than 40% in one subarea), specific remedial measures will be developed for that subarea.

Container plant survival performance criteria will be assessed during the final monitoring visit of the calendar year (November), and native and non-native plant cover criteria will be assessed during the latter portion of the growing season (i.e., late spring or summer) through the 5-year maintenance and monitoring program.

These performance criteria shall be used to assess the annual progress of the restoration areas and are regarded as interim project objectives designed to reach the final goals. The Project Biologist will also provide an annual qualitative assessment of the species composition of each subarea to assure that the vegetation is appropriate for the target plant community; for instance, a site dominated by early-successional native plant species and with small surviving container plants may not be considered to meet performance standards even if the criteria listed above were attained.

Fulfillment of these criteria will indicate that the uplands restoration areas on the project site are progressing toward the habitat types and functions that constitute the long-term goals of the plan. If the restoration efforts fail to meet the performance standards in any one year, the Project Biologist may recommend remedial action to be implemented the following year that will enhance the vegetation to a level of conformance with the original standard. These remedial actions may include re-seeding, applying soil amendments, additional weed control measures, erosion control, or adjustments to the irrigation and maintenance practices.

Monitoring Methods

The Project Biologist will conduct qualitative monitoring visits throughout the 5-year monitoring period. Qualitative monitoring will include reviewing the health and vigor of container plants and seed plantings, checking for the presence of pests and disease, reviewing soil moisture content and the effectiveness of the irrigation system, erosion problems, invasion of weeds/invasive species, and the occurrence of trash and/or vandalism. Contractor maintenance will be reviewed as well. Each monitoring visit will be followed by a written summary of observations, recommendations, and conclusions to be forwarded to the landscape maintenance contractor and applicant within 2 weeks of completion of the visit.

Attainment of percent native and non-native cover success criteria in the first year will be measured by visual estimation coupled with photo-documentation. To document overall site conditions, a minimum of one permanent photo point (for the duration of the 5-year monitoring program) will be established in each restoration area that is at least 0.5 acre in size.

Starting in Year 2, quantitative data collection will begin. Quantitative data collection will consist of transect data collection using the point-intercept methodology. Transects will be established in restoration areas that are at least 0.5 acre in size. The transect locations shall be spaced throughout the restoration areas, and their exact locations shall be randomly determined. The transect locations shall be mapped using a global positioning system and shown on a figure in the annual reports. The transects shall be marked with metal t-posts at each end so the same locations can be sampled each year. Transect data shall be collected in late spring or early summer each year to show native cover by species, weed/invasive cover by species, total vegetated cover, and total unvegetated cover. In addition, a comprehensive plant species list shall be compiled for the restoration area.

Quantitative evaluation of container plant survival shall be determined through counts of dead container plants. The fall site visit shall assess plant mortality and recommend container plant replacement, if needed.

2.2 Quino Checkerspot Butterfly

The Quino checkerspot butterfly was federally listed as endangered on January 16, 1997 (62 FR 2313). A Quino checkerspot butterfly Recovery Team was assembled by USFWS in September 1999 to analyze existing information and new data collected from more recent surveys. On February 7, 2001, the USFWS issued a proposed Critical Habitat designation for the species and a Quino Checkerspot Butterfly Final Recovery Plan was issued by the USFWS in January 2003. On April 15, 2002, the final Critical Habitat designation was issued. The Critical Habitat designation was revised on June 17, 2009, and was reduced by approximately 110,000 acres. The proposed project is within critical habitat for Quino checkerspot butterfly (Figure 8).

The recovery actions are based on the recommendations contained in the Quino Checkerspot Butterfly Draft Recovery Plan (January 2003), prepared by USFWS in consultation with the Recovery Team. The Draft Recovery Plan presents the tasks necessary to ultimately reclassify the Quino checkerspot butterfly to threatened and ensure the species' long-term conservation based on the best available scientific information and expert opinions. The Recovery Plan represents the best available direction on the actions required for the conservation and recovery of the species.

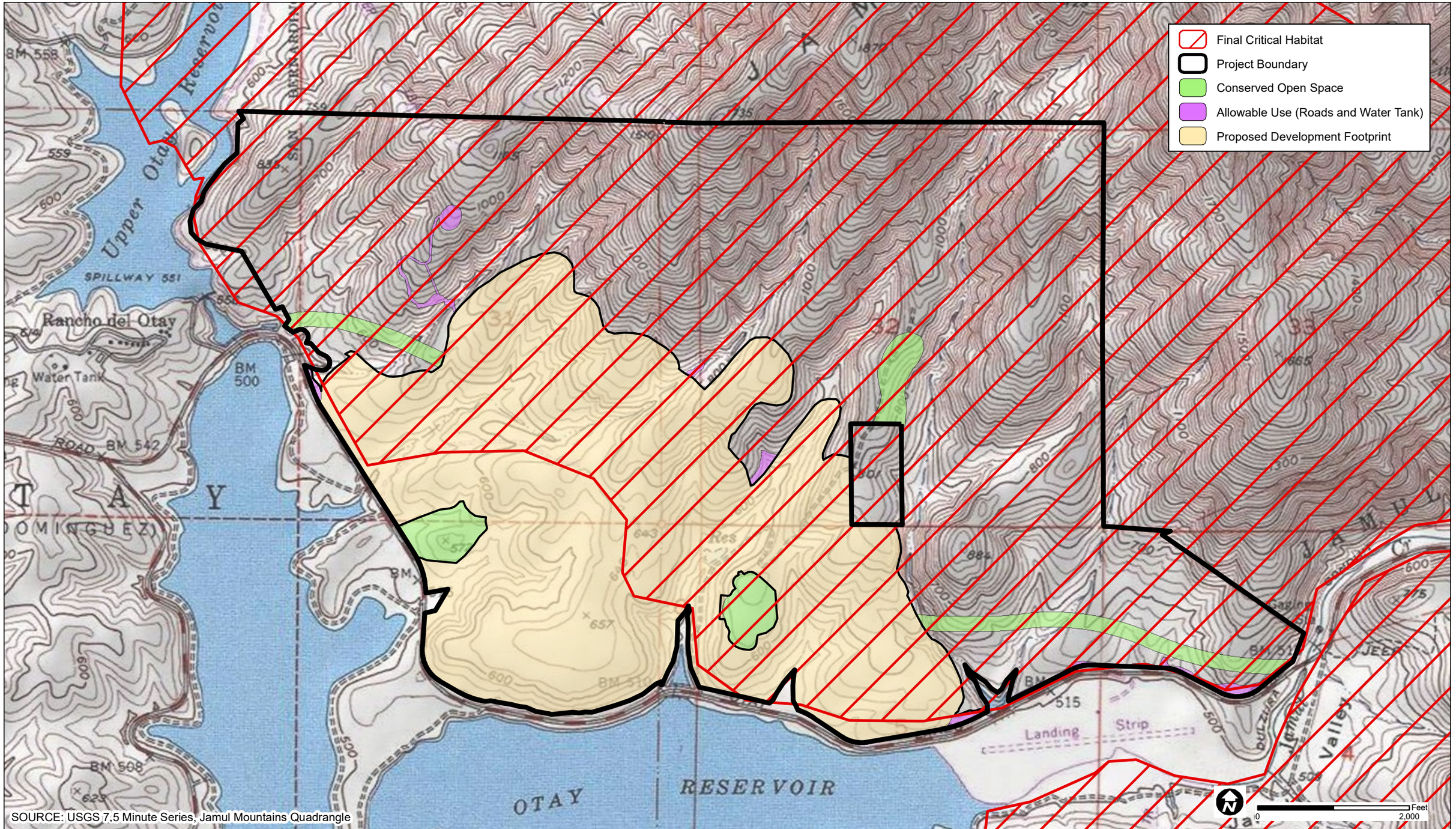
2.2.1 Quino Checkerspot Butterfly Goals

Goal: Maintain viable populations of Quino checkerspot butterfly on site which will in turn expand viable and interconnected Quino local subpopulations and ultimately restore and establish connections between regional Quino populations.

2.2.2 Quino Checkerspot Butterfly Objectives

The proposed Otay Ranch Resort Village Project will contribute to implementation of the recovery actions by working towards the following objectives:

- Preserve suitable habitat and known locations of Quino checkerspot butterfly on site
- Maintain connectivity along key habitat linkages within the property
- Minimize project impacts to Quino checkerspot butterfly and their suitable habitat.
- Fund the management of the Preserve for the benefit of the Quino checkerspot butterfly (along with other special status species and sensitive habitats)
- Restore/enhance Quino checkerspot butterfly habitat where necessary; and
- Monitor areas currently occupied by butterflies or that are occupied by host plant and nectar sources



SOURCE: USGS 7.5 Minute Series, Jamul Mountains Quadrangle

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FIGURE 8

QCB Proposed Critical Habitat

Otay Ranch Resort Village Site - Quino Checkerspot Butterfly Management/Enhancement Plan

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2.2.3 Quino Checkerspot Butterfly Implementation Tasks

Preservation, Connectivity, and Impacts

The MSCP Subarea Plan identifies a "hard line" preserve/development boundary for the Otay Ranch Resort Village that reflects an agreement reached among the wildlife agencies and the Baldwin Company (the applicants' predecessor in interest) at the time that the MSCP Subarea Plan was approved.

Alternative H, with a combination of Otay Ranch RMP Preserve and Other Conserved Lands, ultimately provides preservation of 1,177 acres of Preserve dominated by currently suitable Quino checkerspot butterfly habitat. The preserve design includes significant larval host plant populations, known occurrences of the Quino checkerspot butterfly from multiple years of surveys, suitable habitat for the species, and ridgelines and hilltops where the species has been recorded (Figure 5). There also is connectivity to off-site occupied areas to the north, east, and south, and provisions are included in the project design to provide for connectivity within the site as well as to off-site areas. Thus the project includes preservation of occupied Quino checkerspot butterfly habitat within the same region and ensures connectivity to suitable off-site habitat.

Funding

Funding is discussed in Section 3.0, Staffing, Management Costs and Funding, and outlined in Table 7.

Restoration/Enhancement

Restoration and enhancement are discussed under Section 2.1, Vegetation Communities.

Quino Occupancy Monitoring

A qualified project biologist shall be retained for the post-construction surveys and monitoring of the Quino checkerspot butterfly within the Resort Village Preserve. The purpose of the surveys is to monitor the population and habitat of the Quino checkerspot butterfly in an effort to ensure the long-term success of this management/enhancement plan. The population surveys will track Quino checkerspot butterfly population trends over time. Quino checkerspot butterfly habitat monitoring will track changes in habitat quality and quantity.

Monitoring and management for Quino checkerspot butterfly for the Resort Village is based on the information presented in the County of San Diego Quino Addition as well as documentation on the species in San Diego County (County 2010; Longcore et al. 2003). The monitoring program includes two phases: baseline surveys and long-term monitoring for the butterfly and its habitat. Surveys conducted in 2008 serve as baseline surveys for the Resort Village since the numbers of

the species that were recorded were the highest of any of the surveys that have been conducted. The 2008 season was exceptionally good for detecting Quino checkerspot butterfly due to the rainfall and subsequent development of the host plant.

The long-term monitoring of the Quino checkerspot butterfly and its habitat will be conducted on an annual basis within the Resort Village Preserve. General habitat monitoring will be performed to determine if changes occur in habitat quality and quantity. The population size and variation, changes in habitat condition and occupancy of the species will be monitored as required. The Resort Village Preserve is considered to be a single "macrosite", per the Amendment, and it is composed of multiple microsites (County 2010).

The location of monitoring points will be randomly selected from potential Quino checkerspot butterfly habitat in the Preserve. Presence/absence surveys for Quino checkerspot butterfly will be done at these locations. The sampling framework will involve both sentinel sites (i.e., sites to be surveyed every year) and panel sites (i.e., sites that will be surveyed less frequently). During some years, Quino checkerspot butterfly do not exhibit an adult phase and cannot be adequately detected. In such a case, the survey schedule will be delayed until the next year when Quino checkerspot butterfly can be adequately surveyed. By conducting Quino checkerspot butterfly occupancy and habitat monitoring at the same locations, information regarding Quino checkerspot butterfly habitat requirements within the Resort Village Preserve will be generated.

As described above, the occupancy monitoring method will be used to monitor population trends for Quino checkerspot butterfly. Occupancy monitoring requires the presence or absence of the species to be determined at each sampling location. Five surveys for Quino checkerspot butterfly should detect, with a probability of 0.95, populations with more than 10 observable individuals (Zonneveld et al. 2003). Observable individuals account for search efficiency; if search efficiency is 10%, a population of 100 Quino checkerspot butterfly will have 10 observable individuals. Such survey protocol is used by the USFWS and will be applied to sentinel and panel sites.

Walking surveys that cover the sample site will be conducted. When Quino checkerspot butterfly is found, a point count system can be established. Zonneveld et al. (2003) suggest that the five presence surveys for Quino checkerspot butterfly should be completed on the last day of February, March 16, March 30, April 14, and May 1, which may be amended to reflect weather circumstances. To avoid a situation in which an individual adult Quino checkerspot butterfly that has immigrated to a site is counted as presence of the species at that location, more than one individual must be observed to be considered indicative of presence for quantitative analysis. Additionally, sites where adults have been observed for the first time should be surveyed to locate pre-diapausal larvae to confirm recruitment and presence for quantitative analysis.

Monitoring is summarized in the following table (Table 7) which is adapted from the County of San Diego Quino Addition (County 2010).

Table 7
Quino Checkerspot Butterfly Monitoring Summary

Site	Description	Data Collected	Frequency of Data Collection
Habitat Monitoring			
Macrosite	Contiguous blocks of habitat. Size can be from 25 acres to the entire preserve.	Distance to nearest occupied macrosite located off site; average elevation; topographic diversity; average climate; slope; aspect; distance to roads; distance to the development; time elapsed since fire.	Year 1 as baseline. Update as land use changes and butterfly occupancy changes.
Microsite	Points within macrosites that correspond with butterfly survey sites.	Vegetation cover, abundance of larval host plants, nectar plant populations, percent bare ground, presence of cryptogamic soils.	Year 1 as baseline. Update every four years in rotation.
Butterfly Monitoring			
Sentinel	3-4 occupied sites	Five visits to estimate presence and numbers.	Yearly
Panel	Up to 20 sites within the macrosite to be studied over a four year period. Thus five sites will be study each year. They can be occupied or unoccupied.	Five visits to estimate presence	Every year over a four year rotation.

Quino Habitat Monitoring

The Quino checkerspot butterfly habitat monitoring program is intended to improve the current understanding of the habitat and environmental correlations to Quino checkerspot butterfly population size and stability, and provide the basis for adaptive management strategies. Variables measured at each patch will include structure and composition of the plant community; presence and density of larval host plants, nectar plants, and other plants that co-occur with Quino checkerspot butterfly; amount of bare ground; and other correlates of Quino checkerspot butterfly occupancy, such as the presence of cryptobiotic soil crusts. Topographic analysis will also be conducted as determined after setting up a grid system over the densest population area. Features to be recorded include the azimuth and tilt. This analysis can be used to provide a stratified sampling method that is determined by the degree of insolation (Murphy and Weiss 1988b). This method can be used to develop a stratified random sampling method that can correlate with the results of the butterfly population surveys. While the Murphy and Weiss (1988b) method uses the results of larvae as part of the analysis, the proposed

monitoring will use results from adult surveys in order to be cost effective. The habitat monitoring goal is to maintain the 1,107.72 acres of currently and potential occupied upland habitat as suitable habitat for the species. The continued condition of habitat as shown on Figure 5 is acceptable since the disturbed coastal sage scrub is generally categorized as disturbed due to low shrub cover with areas of exposed soil with some non-native cover including grasses and forbs; however, open ground is still present and Quino checkerspot butterfly has been recorded. Enhancement and restoration, as described above, will improve other habitat areas such as the non-native grassland patches and the non-native grass dominated valley needlegrass and coastal sage scrub patches.

Adaptive Management

The following adaptive management triggers are provided (with minor revisions to apply to the specific project area) from the County of San Diego Quino Addition (County of San Diego 2010) and will be applied to the Resort Village site:

- **Trigger 1: Significant Declining Occupancy Trend.** A logistic regression of the presence-absence data over a six year period will be analyzed. The analysis should be performed across the Resort Village Preserve. If statistically fewer sites are occupied than in the past, then the distribution of the sites should be considered to determine whether dispersal, habitat quality, or weather conditions are likely to be explanatory. These can be investigated by using appropriate dependent variables to test each explanation (e.g., distance to nearest patch, vegetation variables, and rainfall). If declines are uniform across the Resort Village Preserve, and can be attributable to low rainfall, then no action is triggered. If vegetation variables are explanatory, then active management actions will occur where Quino checkerspot butterfly have been extirpated. If dispersal seems to be the key, (i.e., sites with extirpation are statistically more distant from other sites), then analyze using Trigger 2.
- **Trigger 2: Site Extirpation.** If a site has experienced a population extirpation without butterflies returning for three years during which the population size at sentinel sites was equal to or greater than the mean population size (e.g., three "good" years), then one of two actions will be considered for the site:
    - If the percent cover of larval host plants and nectar sources at the site have diminished since the site was last occupied, then the Active Management Program will focus on restoration at the site.
    - If habitat quality does not appear to be the cause of extirpation, then the POM will initiate other actions, such as performing additional research studies or reintroducing the species through translocation of wild or captive stock, in coordination with the Wildlife Agencies.

- **Trigger 3: Stability in Occupied Sites.** When occupancy remains constant through time (i.e., three sampling periods or longer), this shows that populations appear stable. In this situation, the Active Management Program will focus on restoration or creation of Quino checkerspot butterfly habitat in unoccupied areas. In this manner, available resources will be directed to creation of new habitat only when declines in existing habitat have been addressed.

2.3 Coordination

On a region-wide basis, the Otay SRP and RMP are being implemented through the RMP requirements of preserve conveyance and preserve management funding. These requirements have resulted in offers for conveyance of preserve land within Otay Ranch and the establishment of the POM to monitor, manage and maintain these preserve areas. The conveyance and management of the preserve is being actively coordinated between the City of Chula Vista and the County of San Diego (as the POM) in consultation with the Resource Agencies.

2.3.1 Coordination Goals

The POM will establish coordination goals; however, these goals should be focused around the aforementioned vegetation and species goals. Examples include:

- Coordinate with other land managers with Quino checkerspot butterfly and the SDMMP to compare enhancement and restoration successes, monitoring data and adaptive management practices;
- Coordinate with US Border Patrol to limit the use of the Resort Village Preserve for potential disruptive activities.
- Coordinate with the Resource Agencies to provide results of ongoing monitoring, updates on enhancement and restoration activities and needed adaptive management.

2.3.2 Coordination Objectives

The POM will establish coordination objectives.

2.3.3 Coordination Implementation Tasks

The POM will establish coordination implementation tasks.

2.4 Property Stewardship

The Biological Resources Technical Report Supplemental Analysis - Otay Ranch Resort Village – Alternative H (Dudek 2019) outlines several long-term edge effects that might occur due to project

construction. Long-term edge effects could include intrusions by humans and domestic pets and possible trampling of individual plants, invasion by exotic plant and wildlife species, exposure to urban pollutants (fertilizers, pesticides, herbicides, and other hazardous materials), soil erosion, litter, fire, hydrologic changes (e.g., surface and groundwater level and quality), lighting, and noise.

2.4.1 Property Stewardship Goals

Goal: Reduce potential long-term edge effects on the preserve.

2.4.2 Stewardship Objectives

- **Objective:** Limit the ability for the proposed project to have indirect impacts on the preserve through the creation of project design features within the Specific Plan and Tentative maps.
- **Objective:** Implement the Resort Village Preserve Edge Plan

2.4.3 Stewardship Implementation Tasks

Currently, the entire project area is gated and fenced along west and south sides. Access from the north is through a City of San Diego gate in Proctor Valley that is currently fenced and locked. Property to the East is owned by the CDFW and there is no access to the project area from that land.

As the Resort Village project is constructed, the designated preserve area which abuts proposed development will be fenced and signs will be placed along the fencing to discourage entrance into the preserve. Once the land is dedicated and the POM takes over stewardship, preserve enforcement will be tasked to the POM. Within the preserve there are existing dirt roads; however, none of these areas will be designated as trails. Border patrol currently uses these existing roads and will likely continue to do so after project completion. However, there will be no scheduled maintenance for the roads within the Preserve. One facility within the preserve, a water tank, will be fenced and will not require regular maintenance.

As stated in the Biological Resources Technical Report Supplemental Analsis - Otay Ranch Resort Village – Alternative H (Dudek 2019), the Project applicants shall implement the following Project design features as conditions of the Specific Plan and Tentative Maps to avoid indirect impacts to natural vegetation communities and sensitive species (i.e. edge effects):

- No invasive, non-native plant species shall be introduced into areas immediately adjacent to the Preserve. All slopes immediately adjacent to the Preserve shall be planted with native species that reflect the adjacent native habitat.

- Grading and/or improvement plans shall include the requirement that a fencing and signage plan be prepared and that permanent fences or walls be placed along the open space boundaries. Placement of permanent fencing or walls is required at the conclusion of the grading activity and prior to Record Plan approval.
- Submit to the director of the Department of Planning and Development Services evidence that permanent signs have been placed to protect all open space easements in accordance with the open space signage exhibit that will be placed on file with the Department of Planning and Development Services as Environmental Review Number 04-19-005.
- A hydroseed mix that incorporates native species, is appropriate to the area, and is without invasives shall be used for slope stabilization in transitional areas.
- Peruvian pepper trees and other invasive vegetation would not be planted in streetscapes, or within 50 feet of the Preserve, where they could impact native habitat.
- Lighting of all developed areas adjacent to the Preserve shall be directed away from the preserve, wherever feasible and consistent with public safety. Where necessary, development shall provide adequate shielding with non-invasive plant materials (preferably native), berming, and/or other methods to protect the preserve and sensitive species from night lighting.
- Uses in or adjacent to the preserve shall be designed to minimize noise impacts. Berms or walls shall be constructed adjacent to commercial areas and any other use that may introduce noises that could impact or interfere with wildlife utilization of the preserve.
- During Project operation, all recreational areas that use chemicals or animal by-products, such as manure, that are potentially toxic or impactful to sensitive habitats or plants shall incorporate methods on-site to reduce impacts caused by the application and/or drainage of such materials into Preserve areas.

2.5 Fire Management

A Fire Protection Plan has been created for the development portion of the proposed project (Dudek 2018). That plan designates the fire risk assessment for the project area, fire safety requirements, fire and emergency services as well as a community protection and evacuation plan. A 100’ fuel modification zone is included around the project site which, in addition to protecting the developed portions of the project site from potential wildland fires, serves the opposite purpose of preventing home fires from spreading to the Preserve. In addition, the Fire Protection Plan includes recommendations for fuel modification adjacent to roadways within or adjacent to the Preserve to prevent or minimize the risk of vehicle-related ignition. However, the plan does not address fire management within the preserve. Fire management within the preserve will be handled by the POM.

2.5.1 Fire Management Goals

Fire management goals will be at the discretion of the POM and in accordance with the MSCP. Examples include:

- Minimize the threat of fire through fuel management practices as permitted in the MSCP and Otay Ranch RMP.

2.5.2 Fire Objectives

The POM will designate fire objectives for the preserved portion of the project. Examples

- Coordinate with the Fire Authority Having Jurisdiction during the summer and fall months to assess annual fire threats and take appropriate actions.
- Limit the extent to which any fuel management activities occur within higher quality Quino habitat areas.
- In the event of a fire, coordinate with the Resource Agencies to develop a Post-Fire Resource Recovery Plan

2.5.3 Fire Implementation Tasks

Implementation tasks will be at the discretion of the POM and in accordance with the MSCP.

3 STAFFING, MANAGEMENT COSTS AND FUNDING

Monitoring and maintenance cost estimates for the various actions within the Preserve are summarized in Table 8. For the purposes of this cost estimate, it is assumed that a maximum of four Sentinel locations will be selected within the Resort Village Preserve. For the Resort Village, it is assumed that five panel sites will be established for the monitoring conducted every year with rotation of a four-year period to ultimately cover 20 panel sites.

Table 8
Quino Checkerspot Butterfly Monitoring and Management Cost Estimate

Task	Frequency	Number of Visits	Number of Days to Cover	Method	Acreage	When	Purpose	Cost per Year
Short Term Management and Monitoring								
Surveys								
Pre-construction survey Completed	1	5	115	USFWS protocol	1,869 (entire site)	2008	Set baseline population and host plant occurrence	Done
Habitat Restoration and Enhancement								
Enhancement	As needed			Limited herbicide, mowing		After project initiation	Enhance areas of shrub cover that have some weed cover	$10,000 acre/year
Complete Restoration	As needed			Dethatch, herbicide, mowing, seeding		After project initiation	Restore areas with no host plant and dense grass	$25,000 acre/year
Long Term Management and Monitoring								
Habitat Restoration and Enhancement								
Maintenance and enhancement	yearly	As required	As required	Seed collection; Seed redistribution; Weed removal beyond that conducted by the POM	15 acres per year	After project initiation	Enhance habitat suitable for Quino checkerspot butterfly	$30,000

Table 8
Quino Checkerspot Butterfly Monitoring and Management Cost Estimate

Task	Frequency	Number of Visits	Number of Days to Cover	Method	Acreage	When	Purpose	Cost per Year
Butterfly monitoring								
Butterfly monitoring sentinel	yearly	4 sites 1 day to cover the 4 sites	5 visits total per year	Standard USFWS protocol	1 occupied sites; 50 m radius	Upon dedication to County	Population trend	$8,000
Butterfly monitoring Panel	yearly	5 1 day to cover the 5 sites	5 visits total per year		4 sites; rotate from year to year; 50 m radius		Population trend (samples 0.2% of the site for the total of 24 points)	$8,000
Long-term Habitat Monitoring								
Habitat monitoring macrosite	Year 1 of dedication of preserve, as needed based on changes in land use or population of quino; assume every 5 years	1		GIS exercise	1	Upon dedication to County	Distance to nearest occupied macrosite located off site; average elevation; topographic diversity; average climate; slope; aspect; distance to roads; distance to the development ; time elapsed since fire.	$1200 /5 = $240

Table 8
Quino Checkerspot Butterfly Monitoring and Management Cost Estimate

Task	Frequency	Number of Visits	Number of Days to Cover	Method	Acreage	When	Purpose	Cost per Year
Habitat monitoring microsite	Year 1 of dedication of preserve then every 4 years	1		50 m point intercept transects; possibly two quadrats (0.5 m2)	5 locations	Upon dedication to County	Structure and composition of the plant community; presence and density of larval host plants, nectar plants; amount of bare ground; presence of cryptobiotic soil crusts	$6,000 / 4= $1,500
Actions based on triggers								
Adaptive management	Yearly as needed	--	--	Dethatch, herbicide treatment, mowing and seeding as determined based on monitoring	1,076.5 (965.1) acres of Quino checkers pot habitat.	As indicated by monitoring	Restoration to address declines in population; if no declines then just low level restoration to improve the habitat each year.	As needed

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APPENDIX D

Conceptual Upland Restoration Plan

APPENDIX H

CONCEPTUAL UPLAND RESTORATION PLAN
for the
OTAY RANCH RESORT VILLAGE – ALTERNATIVE H
GPA 04-003; SPA 04-002; R04-009; TM 5361RPL; S08-028;
fTER#04-19-005; KIVA#03-1004387

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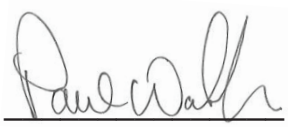

County Approved Preparer: Paul Walsh

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EXECUTIVE SUMMARY

The Otay Ranch Resort Village Alternative H Specific Plan area is located in southwestern San Diego County County, approximately 13 miles east of the Pacific Ocean and 6 miles north of the international border with Mexico (Figure 1). The site is located in the Proctor Valley Parcel of the Otay Subregional Plan (SRP), approximately 0.25 mile east of the City of Chula Vista (Figure 2). As part of the planning for the development of Otay Ranch, several villages and planning areas were designated for various types of development, while other areas were reserved for preservation of multiple species and habitats. An effort was undertaken to plan development of the ranch to conserve species and habitats in the region. The Otay Ranch Resort Village Alternative H (Alternative H) site comprises approximately 1,869 acres, is located in an unincorporated portion of the County, and is designated for residential and resort development and for open space by the Otay Ranch *Subregional Plan* (Otay Ranch 1993). Off-site improvements to Otay Lakes Road associated with the project required analysis of an area south and west of the project area.

Alternative H includes approximately 522.6 acres designated for 1,881 single-family detached homes and 57 multi-family homes. Five single-family neighborhoods are planned with average densities ranging from 3.2 to 4.4 dwelling units per acre.

Implementation of Alternative H would result in the direct impacts to sensitive vegetation communities. Impacts would occur as the result of grading and fuel management. Impacts also include the installation of a water tank within the northern open space area.

The purpose of this *Conceptual Uplands Restoration Plan for Otay Ranch Resort Village Alternative H* (Restoration Plan) is to provide site-specific instructions for upland habitat restoration as mitigation for on-site impacts associated with the construction of Alternative H of Otay Ranch. This Restoration Plan provides guidance for on-site restoration of sensitive upland vegetation communities that will be impacted for slope grading associated with allowable uses within the preserve but that will remain within the preserve and will not be subject to brush management activities or long term irrigation.

In accordance with County guidelines, this Restoration Plan presents information on project impacts and mitigation goals, existing conditions, responsible parties, site preparation methods, proposed mitigation, planting and seeding methods, maintenance requirements, monitoring procedures, success criteria, and contingency measures.

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1 DESCRIPTION OF THE DEVELOPMENT PROJECT/IMPACT SITE FOR WHICH COMPENSATORY MITIGATION IS REQUIRED

The purpose of this *Conceptual Uplands Restoration Plan for Otay Ranch Resort Village* (Restoration Plan) is to provide site-specific instructions for upland habitat restoration as mitigation for on-site impacts associated with the construction of the Otay Ranch Resort Village Alternative H (Alternative H) project of Otay Ranch. This Restoration Plan is prepared in accordance with the Otay Ranch Resort Village Biological Resources Technical Report (Dudek 2015; see Section 5.3) and the Biological Resources Technical Report Supplemental Analysis Otay Ranch Resort Village – Alternative H.

1.1 Responsible Parties

The project applicants (Moller Otay Lakes Investments LLC and Baldwin & Sons LLC) are responsible for initiating and funding all maintenance and monitoring requirements during the 5-year program. They shall be responsible for hiring a qualified landscape maintenance contractor to carry out all maintenance work and for hiring a qualified Project Biologist to carry out the monitoring program for the duration of the 5-year period.

1.2 Location of the Development Project

The Otay Ranch Resort Village Alternative H Specific Plan area is located in southwestern San Diego County, approximately 13 miles east of the Pacific Ocean and 6 miles north of the international border with Mexico (Figure 1). The site is located in the Proctor Valley Parcel of the Otay Subregional Plan (SRP) approximately 0.25 mile east of the City of Chula Vista (Figure 2). As part of the planning for the development of Otay Ranch, several villages and planning areas were designated for various types of development while other areas were reserved for preservation of multiple species and habitats. An effort was undertaken to plan development of the ranch to conserve species and habitats in the region. The Otay Ranch Resort Village project area comprises approximately 1,869 acres, is located in an unincorporated portion of the County, and is designated for residential and resort development and for open space by the Otay Ranch *Subregional Plan* (SRP; Otay Ranch 1993). Associated with the project, off-site improvements to Otay Lakes Road required analysis of an area south and west of the project area. These impacts are anticipated to be the same as those reported in the Otay Ranch Resort Village Biological Resources Technical Report (Figure 3; Dudek 2015).

1.3 Summary of Overall Development Project with Proposed Compensatory Mitigation

The Alternative H site comprises approximately 1,869 acres located in the unincorporated portion of San Diego County (County) and is designated for residential and resort development and for open space in the current Otay *Subregional Plan, Volume 2* (Otay SRP; 1993). The proposed land uses for the Otay Ranch Resort Village project consist of single-family neighborhoods, a mixed use residential and commercial use neighborhood, a resort hotel with associated ancillary facilities, an elementary school site, a site for public safety facilities, open space, Otay Ranch Preserve (Preserve) land, conserved open space, and parks and recreational uses. Alternative H includes approximately 522.6 acres designated for 1,881 single-family detached homes and 57 multi-family homes. Other areas of impacts such as temporary, fuel modification, detention basins and off site are included in the total impact analysis.

1.3.1 Topography

Alternative H consists of a broad mesa sloping to the south, broken by several steep canyons draining from north to south. Portions of the relatively flat mesa extend north into the Jamul Mountains, becoming part of steeper slopes. Site elevations range from approximately 500 feet above mean sea level (AMSL) at the southern end of the property to approximately 1,500 feet AMSL in the northeastern portions. The project area lies within the watershed of the Otay River, a westerly flowing stream which drains an area of approximately 145 square miles. The site is upstream of Savage Dam, which creates Lower Otay Reservoir.

The southern half of the site contains three large mesas (K6, K8, and K9 from west to east), an expansive and relatively flat area in the west, and increasing elevations with steep canyons in the north. Drainages bisect the mesas and generally run north–south, with the exception of one drainage running east–west from the center to the western edge of the property. Several stock ponds have been intentionally created along the drainages on the property.

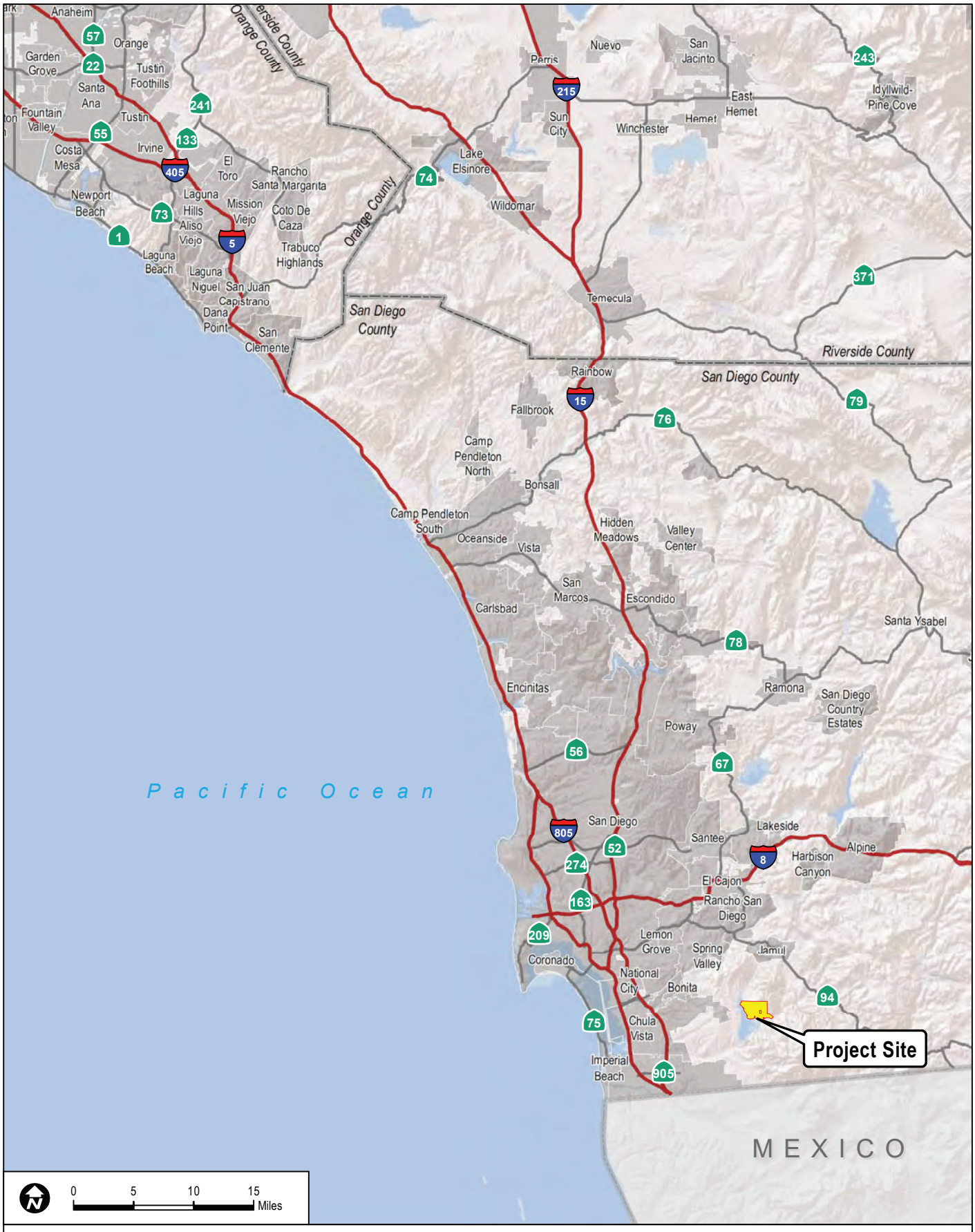

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FIGURE 1
Regional Map

Otay Ranch Resort Village Site - Conceptual Uplands Restoration Plan

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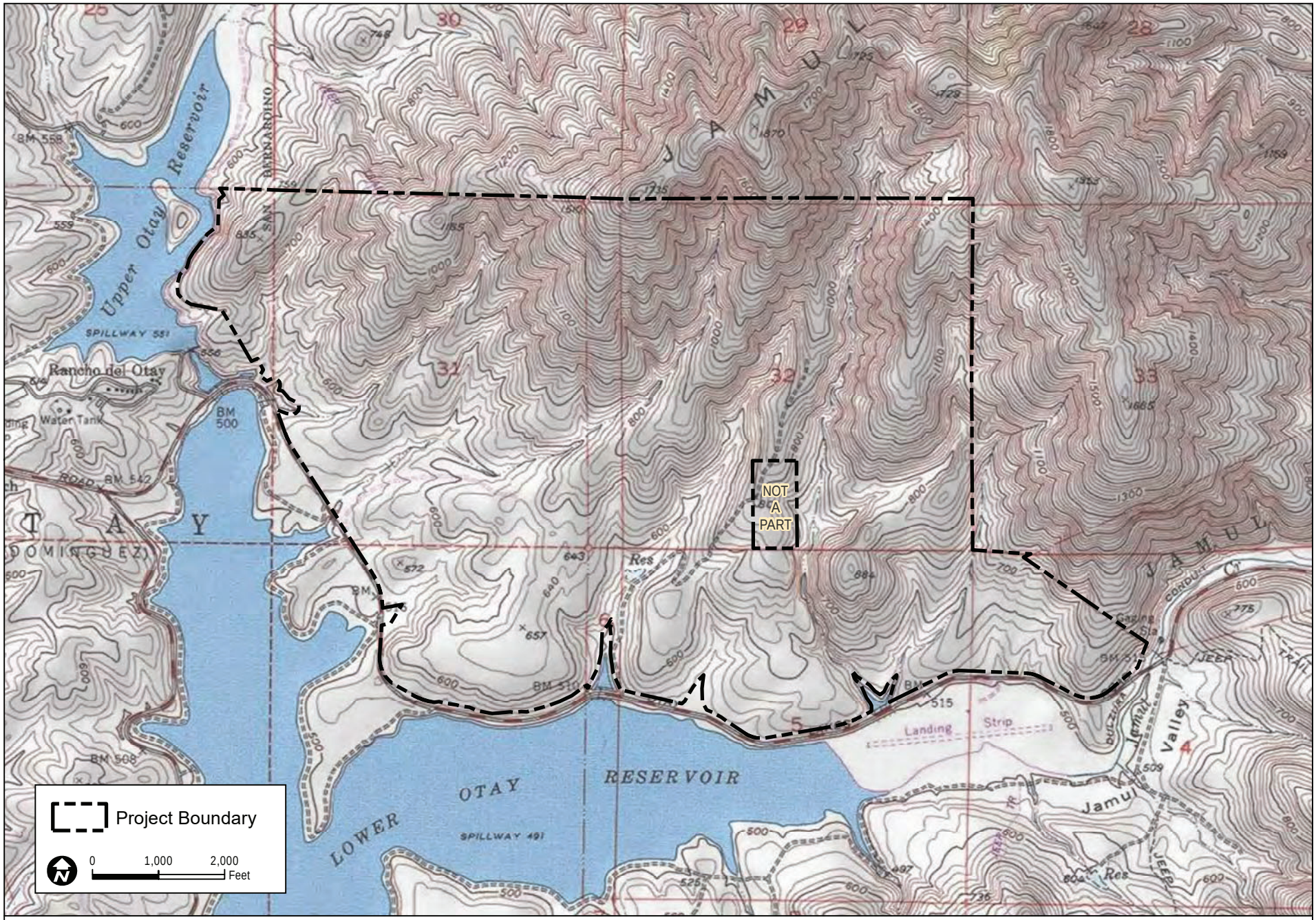

SOURCE: USGS 7.5 Minute Series, Jamul Mountains Quadrangle

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FIGURE 2
Vicinity Map

Otay Ranch Resort Village Site - Conceptual Uplands Restoration Plan

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1.3.2 Vegetation Types

The Alternative H site is dominated by sage scrub, with substantial representation of grassland and chaparral (Table 1). Various wetland plant communities also occur on the site. Portions of the site have been historically mechanically disturbed by farming and grazing activity, reducing the presence of natural vegetation. In total, 13 plant communities and land cover types were mapped within the project area on site and off site, consisting of coastal sage scrub, chamise chaparral, southern mixed chaparral, scrub oak chaparral, valley needlegrass grassland, non-native grassland, cismontane alkali marsh, open water, mulefat scrub, southern willow scrub, stock pond, disturbed habitat and developed land. The coastal sage scrub and chamise chaparral were subdivided as the non-disturbed versus disturbed forms depending on the percent native shrub cover and dominance of non-native species.

Table 1
Acreages of Plant Communities

Plant Community Type	Holland Code	On Site
Coastal Sage Scrub	32500	1,126.83
Disturbed Coastal Sage Scrub	32500	348.69
Chamise Chaparral	37210	143.14
Disturbed Chamise Chaparral	37210	15.67
Scrub Oak Chaparral	37900	22.45
Southern Mixed Chaparral	37121	4.95
Disturbed Valley Needlegrass Grassland	42110	110.46
Non-Native Grassland	42200	79.02
Cismontane Alkali Marsh	52310	1.73
Disturbed cismontane alkali marsh	11200	0.37
Mulefat Scrub, all jurisdictions Mulefat Scrub, CDFW and County only	63310	0.15
Open Water	64140	0.17
Southern Willow Scrub	63320	0.27
Developed Land	12000	0.87
Disturbed Habitat	11300	13.46
Stock Pond	18000	0.79
	Total	**1,869.02**

The following provides a description of the vegetation communities that would be temporarily impacted and restored. The condition of the habitats that would be impacted would be restored to the pre-existing condition or better and hence provide the type, function, and value of the habitats that are impacted.

1.3.2.1 Coastal Sage Scrub/Disturbed Coastal Sage Scrub (CSS/dCSS)

Within the project area, coastal sage scrub occurs in relatively distinct subassociations. Shrub cover in disturbed coastal sage scrub may vary from 5%–50% and typically consists of California sagebrush (*Artemisia californica)*, California buckwheat (*Eriogonum fasciculantum*), deerweed (*Lotus scoparius*), rock-rose (*Helianthemum scoparium*), and laurel sumac (*Malosma laurina*). In addition to these native shrub species, a large percentage of the ground cover is taken up by broad-leaved filaree (*Erodium botrys*) and fascicled tarplant (*Deinandra [Hemizonia] fasciculata*). Other non-natives include grasses such as slender wild-oat (*Avena barbata*), soft chess (*Bromus hordeaceus*), black mustard (*Brassica nigra*), and star-thistle (*Centaurea melitensis*).

Another subassociation occurs in many of the northwestern areas, where coastal sage scrub consists of nearly monotypic stands of Munz's sage (*Salvia munzii*). This subassociation contains a typical shrub cover of 80%– 90%, with Munz's sage comprising approximately 60%–70% of the overall cover. Other species present include San Diego County viguiera (*Viguiera laciniata*), California buckwheat, and occasionally laurel sumac and chamise (*Adenostoma fasciculatum*). The typical non-disturbed coastal sage scrub on site, occurring throughout the site but concentrated in the northern portions, consists of 50%–90% shrub cover with a relative co-dominance of California sagebrush, California buckwheat, and San Diego County viguiera. The density of shrub cover within this sub-type varies with exposure, with denser cover often associated with laurel sumac and white sage (*Salvia apiana*) occurring in more mesic areas and sparser cover often associated with San Diego barrel cactus (*Ferocactus viridescens*) occurring in more xeric conditions. In the eastern portion of the project site shrub cover is relatively low, however, because the percent cover of non-native species is very low it is likely that the low shrub cover is a natural condition due to exposure, slope, and/or soil. There are also small occurrences of coastal sage scrub dominated by broom baccharis (*Baccharis sarothroides*). This form often is the result of historic disturbance or occurs in association with a drainage.

1.3.2.2 Chamise Chaparral/Disturbed Chamise Chaparral (CC/DCC)

A predominant chaparral type found in Ventura, Los Angeles, San Bernardino, Riverside and San Diego counties, chamise chaparral is a plant community overwhelmingly dominated by chamise (*Adenostoma fasciculatum*; Holland 1986). Typically 1–4 meters in height, stands of chamise are adapted to repeated fires because the species is capable of stump-sprouting following wildfire. Associated species may include manzanita (*Arctostaphylos* spp.), ceanothus (*Ceanothus* spp.), California buckwheat, deerweed, scrub oak (*Quercus berberidifolia*), lemonadeberry (*Rhus integrifolia)*, sages (*Salvia* spp.), ashy spike-moss (*Selaginella cinerascens*), and yucca (*Yucca*

spp.). However, associated species do not comprise a significant portion of the overall cover, and mature stands contain very little herbaceous understory or litter.

Chamise chaparral occurs in the north-central portion of the site, often on mesic exposures, and in the southeastern portion on relatively flat topography. Covering relatively large areas, these habitat patches consist of nearly monotypic stands of chamise. In habitat edges, usually adjacent to either coastal sage scrub or scrub oak chaparral, components of those habitats will also be present. For example, California buckwheat, scrub oak, and chaparral broom occur along with chamise in habitat edge areas. Very little understory is present in this community, with the exception of ashy spike-moss and fringed spineflower (Chorizanthe fimbriata) occurring in many of the chamise patches in the eastern areas, and non-native grasses that have filled gaps in a few areas where chamise chaparral occurs as a disturbed community.

1.3.2.3 Scrub Oak Chaparral (SOC)

Regionally, scrub oak chaparral is a dense chaparral up to 20-feet-tall, dominated by scrub oak. Occurring on more mesic areas than other chaparrals, associated species may include manzanitas, ceanothus, bedstraw (*Galium angustifolium*), toyon (*Heteromeles arbutifolia*), honeysuckle (*Lonicera* spp.), holly-leaf cherry (*Prunus ilicifolia*), redberry (*Rhamnus* spp.), and western poison oak (*Toxicodendron diversilobum*) (Holland 1986).

Scrub oak chaparral occurs on north-facing slopes in the west-central and eastern portions of the project site. In the west-central areas, the main component of this vegetation community is Nuttall's scrub oak (*Quercus dumosa*). In more steeply sloped areas, shrub density reaches 100% with the predominant species being Nuttall's scrub oak, mission manzanita (*Xylococcus bicolor*), chamise, and lemonadeberry. In more gently sloped areas, which appear to have been disturbed due to exposure to grazing activity, shrub density is approximately 60%, nearly all of which is composed of Nuttall's scrub oak with the other shrubs occurring only occasionally. This area has an understory of mainly non-native grass species (*Avena barbata*, *Bromus* spp.). The single scrub oak chaparral patch in the eastern portion of the site is dominated by scrub oak, mission manzanita, and chamise.

1.3.2.4 Disturbed Valley Needlegrass Grassland (VGL)

Valley needlegrass grassland is a native grassland dominated by perennial bunchgrasses such as needlegrass (*Nassella* spp.). This plant community typically occurs as a mosaic with coastal sage scrub on heavy or clay soils, often on more mesic exposures and at the bases of slopes, but also may occur in large patches.

On the Alternative H site, Valley needlegrass grassland often occurs on more mesic exposures in the southwestern and central portions of the site. Native and non-native species both are present and include the following species: purple needlegrass (*Nassella pulchra*), foothill needlegrass (*N. lepida*), blue-eyed grass (*Sisyrinchium bellum*), shooting star (*Dodecatheon clevelandii*), checker mallow (*Sidalcea malvaeflora*), Johnny jump-up (*Viola pedunculata*), and California melic (*Melica imperfecta*), as well as non-native grasses (such as *Avena barbata, Bromus madritensis, Vulpia myuros*, and *B. hordeaceus*) and non-native annual forbs (e.g., *Erodium botrys* and *Filago gallica*). Native shrubs also are present to varying degrees, from approximately 2% –10% cover, and mainly include California sagebrush, coastal goldenbush (*Ericameria* sp.), and California buckwheat.

All native grasslands on site appear disturbed, presumably due to past grazing and invasion of non-native species in recent years. Disturbance is indicated by the abundance of invasive non-native species and lower percentage of native grass cover. Grasslands in which at least 10% of the cover consisted of Nassella and other native species were considered Valley needlegrass grasslands; all others were mapped as non-native grasslands. It should be noted that native grassland species including needlegrasses and native annuals are found throughout the site within coastal sage scrub and non-native grassland communities. Densities of native grasses were generally below 10% with the exception of small patches of high density native grasses usually within disturbed coastal sage scrub. The patches were considered too small for mapping purposes.

1.3.2.5 Non-Native Grassland (NNG)

Where the native habitat has been disturbed frequently or intensively by grazing, fire, agriculture, or other activities, the native community usually is incapable of recovering. These areas often are characterized by weedy, introduced annuals, primarily grasses, including especially slender wild oat, bromes, mustards, filaree, and Russian-thistle (*Salsola tragus*).

On the project site, non-native grassland occurs in distinct patches where extensive grazing and possibly mechanical disturbance have reduced the cover of native shrub and grass species to below 5%. These areas typically are dominated by soft chess, foxtail chess, fascicled tarplant, and broad-leaved filaree, but also contain star-thistle, black mustard, and shining peppergrass (*Lepidium nitidum*).

1.3.3 Sensitive Plant Species

Sensitive plant species locations recorded during surveys are summarized in Table 2. In addition to these current surveys, historical records of sensitive plant species were reviewed from the following published databases: Ogden (1992b), MSCP maps (Ogden 1999), and CDFG (2003a).

Table 2
Summary of Sensitive Plant Species Detected Onsite

Scientific Name Common Name	Status Federal/State CRPR MSCP Coverage County List	Locations and Population Size on Site		
		Previous Studies	*Current Surveys*	*Comments*
Acanthomintha ilicifolia San Diego thornmint	FT/SE 1B.1 Covered Narrow Endemic A	MBA 89/91	Observed in all recent surveys	Identified in two disturbed areas with heavy clay soils. Associated vegetation consists of non-native grasses and annuals. Populations cover approximately 0.1 and 3.3 acres each. Because the population is densely distributed in these locations, the actual number of individuals was not quantified. Analysis of this plant is based on the acreage over which it occurs.
Adolphia californica California adolphia	None/None 2B.1 Not Covered B	Not observed	Observed in 1999	Identified in two locations in the western portion of the site within sparse coastal sage scrub (<20 individuals).
Convolvulus simulans Small-flowered morning-glory	None/None 4.2 Not Covered D	Not observed	Observed in 2000	Three locations in western part of project site in clay soil grasslands; approximately 120 total individuals.
Dichondra occidentalis Western dichondra	None/None 4.2 Not Covered D	MBA 89/90	Observed in 1999 and 2000	Recorded in eight locations on the central ridges of the site. A total of 30 patches were recorded that vary from 1 to 500 square feet. This species was recorded based on patch size due to low-growing dense form of the species. The species covers approximately 0.50 acre total over the 30 patches.
Dudleya variegata Variegated dudleya	None/None 1B.2 Covered – Narrow Endemic A	MBA 89/90	Observed in 1999 and 2000	Identified in 40 locations throughout the site. Estimated population size on site is approximately 5,833 individuals. Generally in clay soils and west-facing slopes, ridge lines, or margins of mesas.
Ferocactus viridescens San Diego barrel cactus	None/None 2B.1 Covered B	MBA 89/90	Observed in all recent surveys	Identified in approximately 50 locations throughout the project area, generally on south-facing slopes. Occurrences usually consist of <5 individuals; large stands contain 10–15 individuals. Approximately 217 individuals were recorded. Habitat association is generally open coastal sage scrub.
Harpagonella palmeri Palmer's grapplinghook	None/None 4.2 Not Covered D	Not identified	Observed in 1999 and 2000	Identified in three areas in the eastern and western portions of the site within disturbed coastal sage scrub, dirt road margins, and non-native grassland with heavy clay soils. Approximately 298 individuals were recorded.

Table 2
Summary of Sensitive Plant Species Detected Onsite

Scientific Name Common Name	Status Federal/State CRPR MSCP Coverage County List	Locations and Population Size on Site		
		Previous Studies	*Current Surveys*	*Comments*
Iva hayesiana San Diego marsh-elder	None/None 2B.2 Not Covered B	MBA 89/90	Observed in 1999 and 2000	Abundant within narrow drainages throughout the site. Total on-site population in the thousands. Generally associated with cismontane alkali marsh or sparsely vegetated, rocky stream channels. Due to densely occurring populations within these drainages, this plant was recorded by area rather than number of individuals. A total of 5.4 acres of this species was recorded on site.
Juncus acutus ssp. *leopoldii* Southwestern spiny rush	None/None 4.2 Not Covered D	MBA 89/90	Observed 1999 and 2000	Identified in 11 locations within cismontane alkali marsh. Occurrences typically contain <10 individuals within each location. Approximately 30 individuals present on site.
Microseris douglasii ssp. *platycarpha* Small-flowered microseris	None/None 4.2 Not Covered D	Not observed	Observed in 2000	Six locations identified in the western part of the site in open non-native grassland/coastal sage scrub. Approximately 1,270 individuals recorded on the site.
Bloomeria [Muilla] clevelandii San Diego goldenstar	None/None 1B.1 Covered A	MBA 89/90	Observed in 1999 and 2000	Identified in 21 locations in western and eastern portions of the site on mesic slopes containing sparse coastal sage scrub/native grassland. Approximately 1,146 individuals in western part of site and 1,400 individuals in eastern part in 2000. 1999 observations were fewer in number of individuals than 2000 observations presumably due to rainfall differences.
Myosurus minimus ssp. *apus* Little mousetail	None/None 3.1 Not Covered C	MBA 89/90	Not observed in recent surveys	Number of individuals was not recorded. Was not detected in recent focused surveys and is no longer considered to be present in K6 vernal pools.
Ophioglossum californicum California adder's-tongue	None/None 4.2 Not Covered D	MBA 89/90	Not observed	Two locations described near Otay Lakes Road in west and south-central portions of the site. Location was not mapped by MBA. Not identified during recent surveys; may no longer be present since it was not recorded during the rare plant surveys conducted in 2000.
Pentachaeta aurea ssp. *aurea* Golden-rayed pentachaeta	None/None 4.2 Not Covered D	Not observed	Observed in 2000	Four locations identified in western portion of site; Approximately 91 individuals occur in coastal sage scrub/grassland.

Table 2
Summary of Sensitive Plant Species Detected Onsite

Scientific Name Common Name	Status Federal/State CRPR MSCP Coverage County List	Locations and Population Size on Site		
		Previous Studies	*Current Surveys*	*Comments*
Quercus dumosa Nuttall's scrub oak	None/None 1B.1 Not Covered A	Not observed	Observed in all recent surveys	Occurs as a major component in areas mapped as scrub oak chaparral (approximately 200 individuals per acre). The acreage encompassed by this species is approximately 6.2 acres, including additional small patches within chaparral in the western portion of the site.
Romneya coulteri Coulter's matilija poppy	None/None 4.2 Not Covered D	Not observed	Observed on site	Number, location not mapped. Single location described as being adjacent to a drainage in eastern part of site.
Salvia munzii Munz's sage	None/None 2B.2 Not Covered B	MBA 89/90	Observed in all recent surveys	Occurs throughout the site but most densely in the northwestern quarter. Also occurs on K9 mesa. Most areas containing dense coastal sage scrub in this area contain approximately 50%–80% vegetation cover of S. munzii. Because the population is densely distributed in these locations, the actual number of individuals was not quantified. Analysis of this plant is based on the acreage over which it occurs, approximately 295 acres.
Viguiera laciniata San Diego County viguiera	None/None 4.2 Not Covered D	MBA 89/90	Observed in all recent surveys	Occurs throughout the site but most densely in the northern portion. Encompasses approximately 1,071 acres of the site. Comprises between 5% and 30% of vegetation cover in coastal sage scrub.

Federal Designations:
- FE Federally listed Endangered
- FT Federally listed as Threatened
- FSC Federal Species of Concern

State Designations:
- P CDFG Protected and Fully Protected Species
- R California Rare Species
- SE State-listed as Endangered
- ST State-listed as Threatened.

CNPS Designations:
- List 1A Presumed Extinct in California
- List 1B Rare or Endangered in California and Elsewhere
- List 2 Rare or Endangered in California, More Common Elsewhere
- List 3 Need More Information
- List 4 Plants of Limited Distribution
- .1 Seriously endangered in California
- .2 Fairly endangered in California
- .3 Not very endangered in California

MSCP Designations:
- Covered: Listed as Covered Species in Appendix B of Implementing Agreement between CDFG, USFWS, and County of San Diego (March 1998)

Not Covered: Not Listed as Covered Species in Appendix B of Implementing Agreement between CDFG, USFWS, and County of San Diego (March 1998).

County Designations:

List A Plants rare, threatened, or endangered in California and elsewhere (corresponds to CNPS List 1B)
List B Plants rare, threatened, or endangered in California but more common elsewhere (corresponds to CNPS List 2)
List C Plants which may be quite rare, but need more information to determine their rarity status (corresponds to CNPS List 3)
List D Plants of limited distribution and are uncommon, but not presently rare or endangered (corresponds to CNPS List 4)

1.3.4 Sensitive Wildlife Species

Knowledge concerning the presence/absence of sensitive wildlife species was ascertained from previous studies of Otay Ranch, as well as from focused surveys for fairy shrimp and Quino checkerspot butterfly. Although focused surveys for sensitive nesting bird species, amphibians, reptiles, or mammals have not been conducted, incidental observations of many sensitive wildlife species have been made. Species locations recorded during these surveys are summarized in Table 3. Given the context of the project within the MSCP Subarea Plan and Otay SRP, this level of sensitive wildlife survey information is adequate to assess potentially significant impacts. Evaluation of wildlife use is based on suitable habitat since the species may occur in areas other than where observed.

Table 3
Summary of Sensitive Wildlife Species Detected on Site or with Moderate to High Potential to Occur

Species (Scientific Name)	Regulatory Status: Federal; State; MSCP; County Group	General Habitat Association	Status on Site		
			Previous Studies	*Current Surveys*	*Comments*
San Diego fairy shrimp *(Branchinecta sandiegonensis)*	USFWS: FE CDFW: None MSCP: Covered County: 1	Small, shallow vernal pools, occasionally ditches and road ruts	Not observed	Observed in 2000, 2004, 2008, 2014-2015	A total of nine basins on K8 and one basin on K6 are confirmed occupied by this species.
Quino checkerspot butterfly *(Euphydryas editha quino)*	USFWS: FE CDFW: None MSCP: Not Covered County: 1	Sparsely vegetated hilltops, ridgelines, occasionally rocky outcrops; host plant *Plantago erecta* and nectar plants must be present	Not observed (known from 1970s P. Ehrlich research)	Observed in 1999, 2000, 2004, 2008, 2016	Over five years of surveys, a total of 145 individuals have been observed; 71 observed in 2008 and 16 observed in 2016. A total of 1,470 acres of coastal sage scrub and disturbed coastal sage scrub as potential habitat are on site. A total of 1,624 acres of critical habitat occurs on site. Observations were concentrated in the northern portion and along a ridgeline within the central portion of the site. A number of additional observations were scattered throughout the rest of the site.
Monarch butterfly *(Danaus plexippus*)	USFWS: None CDFW: None MSCP: Not Covered. County: 2	Overwinters in eucalyptus groves	Not observed	Observed	This species occurs on site on occasion as single individuals in flight over the area; however, there are not sufficient resources available to make this a significant overwintering site.
Western spadefoot toad *(Spea hammondii)*	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Most common in grasslands, coastal sage scrub near rain pools or vernal pools; riparian habitats	Not observed	Observed in 2000	Tadpoles incidentally observed in a single depression on K8 mesa. Could occur within pools that inundate.
Rosy boa *(Charina trivirgata)*	USFWS: None CDFW: None MSCP: Not Covered County: 2	Rocky chaparral, coastal sage scrub, oak woodlands, desert and semi-desert scrub	Not observed	Observed in 2008	Observed in northeastern portion of the project site.

Table 3
Summary of Sensitive Wildlife Species Detected on Site or with Moderate to High Potential to Occur

Species (Scientific Name)	Regulatory Status: Federal; State; MSCP; County Group	General Habitat Association	Status on Site		
			Previous Studies	*Current Surveys*	*Comments*
Western pond turtle *(Emys marmorata)*	USFWS: None CDFW: CSC MSCP: Covered County: 1	Slow-moving permanent or intermittent streams, ponds, small lakes, reservoirs with emergent basking sites; adjacent uplands used during winter	Not observed	Observed in 2000	Incidentally observed laying eggs in a dirt road in northwestern corner of site. Another observation of an individual crossing Otay Lakes Road immediately south of the site.
Orangethroat whiptail *(Aspidoscelis hyperythra)*	USFWS: None CDFW: CSC MSCP: Covered County: 2	Coastal sage scrub, chaparral, grassland, juniper, and oak woodland	MBA 89	Observed in 2000 and 2008	Observed in coastal sage scrub. Probably occurs elsewhere within open patches of coastal sage scrub and grassland.
Coastal whiptail *(Aspidoscelis tigris stejnegeri)*	USFWS: None CDFW: None MSCP: Not Covered County: 2	Coastal sage scrub, chaparral	Not observed	Observed in 2000	Observed in sparse coastal sage scrub on site. Probably resident in open areas and sparse coastal sage scrub and chaparral throughout the site.
San Diego ringneck snake *(Diadophis punctatus similis)*	USFWS: None CDFW: None MSCP: Not Covered County: 2	Open, rocky areas in moist habitats near intermittent streams: marsh, riparian woodland, sage scrub	Not observed	Observed on site.	Observed in the main eastern drainage. Moderate potential to occur within deeper canyons on site and under debris on site.
San Diego [coast; Blainville's] horned lizard *(Phrynosoma blainvillii)*	USFWS: None CDFW: CSC MSCP: Covered County: 2	Coastal sage scrub, non-native grassland, chaparral, oak and riparian woodland, coniferous forest	MBA 89	Observed in 1999, 2000, and 2008	Observed within undisturbed coastal sage scrub and chamise chaparral.
Red-diamond rattlesnake *(Crotalus ruber)*	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Variety of shrub habitats where there is heavy brush, large rocks, or boulders	Not observed	Observed in 1999, 2000, and 2008	Observed throughout the site within dense and sparse coastal sage scrub and chaparral.

Table 3
Summary of Sensitive Wildlife Species Detected on Site or with Moderate to High Potential to Occur

Species (Scientific Name)	Regulatory Status: Federal; State; MSCP; County Group	General Habitat Association	Status on Site		
			Previous Studies	*Current Surveys*	*Comments*
Two-striped garter snake *(Thamnophis hammondi)*	USFWS: None CDFW: CSC MSCP: Not Covered County: 1	Streams, creeks, pools, streams with rocky beds, ponds, lakes, vernal pools	Not observed	Not observed	Probably occurs on site.
Cooper's hawk *(Accipiter cooperii)*	USFWS: None CDFW: WL MSCP: Covered County: 1	Riparian and oak woodlands, montane canyons	Not observed	Observed in 2000	Observed flying over site; potential for nesting on site is low due to lack of developed forest or woodland habitats.
Southern California rufous-crowned sparrow *(Aimophila ruficeps canescens)*	USFWS: None CDFW: WL MSCP: Covered County: 1	Grass-covered hillsides, coastal sage scrub, chaparral with boulders and outcrops	MBA 89	Observed in 1999, 2000, and 2008	Observed throughout the site and highly likely to nest on site.
Grasshopper sparrow *(Ammodramus savannarum)*	USFWS: None CDFW: CSC MSCP: Not Covered County: 1	Open grassland and prairie, especially native grassland with a mix of grasses and forbs	MBA 89	Observed in 2000 and 2008	Observed mainly in southwestern and central portions of the project site.
Bell's sage sparrow *(Artemisiospiza belli belli)* (taxonomy was changed to Bell's sparrow *Artemisiospiza belli)*	USFWS: None CDFW: WL MSCP: Not Covered County: 1	Coastal sage scrub and dry chaparral along coastal lowlands and inland valleys	MBA 89	Observed in 1999, 2000, and 2008	Identified in eastern and western portions of site in sparse coastal sage scrub.
Golden eagle *(Aquila chrysaetos)*	USFWS: BCC CDFW: P, WL, Golden Eagle Protection Act MSCP: Covered County: 1	Open country, especially hilly and mountainous regions; grassland, coastal sage scrub, chaparral, oak savannas, open coniferous forest	Not observed	Observed in 1999, 2000, and 2008	Observed in eastern and north-central portion of the site. Site is in mapped primary foraging area for known golden eagle territory. Nearest known nest site is >3 miles from project site. No nesting observed; could forage.

Table 3
Summary of Sensitive Wildlife Species Detected on Site or with Moderate to High Potential to Occur

Species (Scientific Name)	Regulatory Status: Federal; State; MSCP; County Group	General Habitat Association	Status on Site		
			Previous Studies	*Current Surveys*	*Comments*
Red-shouldered hawk *(Buteo lineatus)*	USFWS: None CDFW: None MSCP: Not Covered County: 1	Riparian and woodland habitats, eucalyptus	Not observed	Observed on site	Observed foraging over the site near the southern portion. Moderate potential to also occur on site as a breeding bird.
Turkey vulture *(Cathartes aura)*	USFWS: None CDFW: None MSCP: Not Covered County: 1	Rangeland, agriculture, grassland; uses cliffs and large trees for roosting, nesting, and resting	Not observed	Observed in flight over site	Occasionally forages over the project area. No breeding potential.
Northern harrier *(Circus cyaneus)*	USFWS: None CDFW: CSC MSCP: Covered County: 1	Open wetlands (nesting), pasture, old fields, dry uplands, grasslands, rangelands, coastal sage scrub	Not observed	Observed in 1999, 2000, and 2008	Observed foraging over grassland areas in the K6 and K8 mesas. Could nest on site.
White-tailed kite *(Elanus leucurus)*	USFWS: None CDFW: P MSCP: Not Covered County: 1	Open grasslands, savanna-like habitats, agriculture, wetlands, oak woodlands, riparian	Not observed	Observed in 1999 and 2000	Observed foraging in grassland areas; nesting is unlikely due to lack of forest or woodlands.
California horned lark *(Eremophila alpestris actia)*	USFWS: None CDFW: WL MSCP: Not Covered County: 2	Open habitats, grassland, rangeland, shortgrass prairie, montane meadows, coastal plains, fallow grain fields	Not observed	Observed in 1999, 2000, and 2008	Observed within sparse coastal sage scrub and grasslands on the project site.
Prairie falcon (*Falco mexicanus)*	USFWS: BCC CDFW: WL MSCP: Not Covered County: 1	Grassland, savannas, rangeland, agriculture, desert scrub, alpine meadows; nest on cliffs or bluffs	Not observed	Observed in 2000	Observed within coastal sage scrub and grasslands. Rock outcrops on site suggest possible roosting and nesting.

Table 3
Summary of Sensitive Wildlife Species Detected on Site or with Moderate to High Potential to Occur

Species (Scientific Name)	Regulatory Status: Federal; State; MSCP; County Group	General Habitat Association	Status on Site		
			Previous Studies	*Current Surveys*	*Comments*
Loggerhead shrike *(Lanius ludovicianus)*	USFWS: BCC CDFW: CSC MSCP: Not Covered County: 1	Open ground including grassland, coastal sage scrub, broken chaparral, agriculture, riparian, open woodland	MBA 89	Observed in 2000	Likely to nest on site, individuals observed in grassland and sparse coastal sage scrub.
Coastal California gnatcatcher *(Polioptila californica californica)*	USFWS: FT CDFW: CSC MSCP: Covered County: 1	Coastal sage scrub, coastal sage scrub–chaparral mix, coastal sage scrub–grassland ecotone, riparian in late summer	MBA 89	Observed in 1999, 2000, and 2008	Observed nesting in coastal sage scrub and chamise chaparral throughout the site. Coastal sage scrub, coastal sage scrub–chaparral mix, coastal sage scrub–grassland ecotone, riparian in late summer; 29 locations are recorded on site and 3 additional locations are recorded for Cornerstone Land for a total of 32 locations recorded; (MSCP data).
Western bluebird *(Sialia mexicana)*	USFWS: None CDFW: None MSCP: Covered County: 2	Open forests of deciduous, coniferous or mixed trees, savanna, edges of riparian woodland saltmarsh, riparian habitats	Not observed	Observed during winter	This species once did not breed on the coastal plain; however, in recent years it has begun to do so. The only breeding opportunities for this species would be within wooded habitats which are not present on site.
Burrowing owl *(Athene cunicularia)*	USFWS: BCC CDFW: CSC MSCP: Covered County: 1	Grassland, lowland scrub, agriculture, coastal dunes and other artificial open areas	MBA 89	Observed in 2000	Previously identified on eastern slope of K6 mesa as an incidental observation of single individual in central portion of site.
Barn owl *(Tyto alba)*	USFWS: None CDFW: None MSCP: Not Covered County: 2	Open forests of deciduous, coniferous or mixed trees, savanna, riparian habitats , abandoned structures, mines	Not observed	Observed flying over site	This species has abundant foraging opportunities but limited nesting opportunities on site. It is unlikely that there is enough cover on site to support nesting by this species.

Table 3
Summary of Sensitive Wildlife Species Detected on Site or with Moderate to High Potential to Occur

Species (Scientific Name)	Regulatory Status: Federal; State; MSCP; County Group	General Habitat Association	Status on Site		
			Previous Studies	*Current Surveys*	*Comments*
San Diego black-tailed jackrabbit *(Lepus californicus bennettii)*	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Arid habitats with open ground; grasslands, coastal sage scrub, agriculture, disturbed areas, rangelands	Not observed	Incidentally observed.	Observed throughout the site.
San Diego desert woodrat *(Neotoma lepida intermedia)*	USFWS: None CDFW: CSC MSCP: Not Covered County: 2	Coastal sage scrub, chaparral, pinyon–juniper woodland with rock outcrops, cactus thickets, dense undergrowth	Not observed	Nests incidentally observed.	Middens were observed within chaparral areas on site.
Mountain lion *(Puma concolor)*	USFWS: None CDFW: None MSCP: Covered County: 2	Coastal sage scrub, chaparral, riparian, woodlands, forest; rests in rocky areas, and on cliffs and ledges that provide cover	MBA 89	Not observed	Signs of movement through eastern portion of site.

Federal Designations:
- FE Federally listed Endangered
- FT Federally listed as Threatened
- MNBMC Fish and Wildlife Service Migratory Nongame Birds of Management Concern.

State Designations:
- CSC California Special Concern Species
- P CDFG Protected and Fully Protected Species
- R California Rare Species
- SE State-listed as Endangered
- ST State-listed as Threatened
- WL Watch List.

MSCP Designations:
- Covered Listed as Covered Species in Appendix B of Implementing Agreement between CDFG, USFWS, and County of San Diego (March 1998)
- Not Covered Not Listed as Covered Species in Appendix B of Implementing Agreement between CDFG, USFWS, and County of San Diego (March 1998).

County Designations:
- Group 1: High level of sensitivity, either because listed as threatened or endangered or because species has very specific natural history requirements that must be met
- Group 2: Species is becoming less common, but is not yet so rare that extirpation or extinction is imminent without immediate action. These species tend to be prolific within their suitable habitat types.

1.3.5 Sensitive Resources Affected by the Project

Implementation of Alternative H would result in both temporary and permanent losses of the vegetation community acreages presented in Table 4. Losses would occur as the result of grading and fuel management. Impacts also include the installation of a water tank within the northern portion of the Otay Ranch RMP Preserve. The Otay Ranch RMP Preserve vegetation community acreage is shown in Table 5 and includes those areas not impacted by grading or fuel modification zones, as well as areas proposed to be restored and areas that are considered to be acceptable as a land use within the Preserve. These land uses include the water tank, and the road that provides access to the water tank. The restoration includes the slopes along the water tank and its access road, slopes along Otay Lakes Road, water line, and the natural drainage bypass facilities. A vegetation map with the proposed development footprint is provided in Figure 3. Permanent impacts to sensitive vegetation communities are mitigated per the Otay Ranch Resource Management Plan.

Table 4
Summary of Impacts to Vegetation Communities within the Project Site

Vegetation Community Type	Existing On-Site* (Acres)	Total On-Site Impacts (Acres)					Total Otay Ranch RMP Preserve Not Impacted	Conserved Open Space Not Impacted
		Outside Preserve	*Allowable Uses Inside Otay Ranch RMP Preserve*					
		*Proposed Development Impacts (Includes Fuel Modification, Detention Basins, Manufactured slopes)**	*Permanent Impacts*	*Temporary Impacts*				
			Water Tank and Road to Water Tank	*Temporary Slopes (along Otay Lakes Road and slopes for water tank)*	*Water Line*	*Natural Drainage Bypass Facilities*		
Coastal Sage Scrub	1,126.83	115.76	2.16	7.94	0.23	0.83	970.64	29.37
Disturbed Coastal Sage Scrub	348.69	273.09	--	3.02	—	—	48.21	24.36
Chamise Chaparral	143.14	89.95	—	0.43	—	—	49,06	3.70
Disturbed Chamise Chaparral	15.67	14.09	—	—	—	—	1.58	—
Scrub Oak Chaparral	22.45	22.10	—	—	—	—	0.35	—
Southern Mixed Chaparral	4.95	0.00	—	—	—	—	4.95	—

Table 4
Summary of Impacts to Vegetation Communities within the Project Site

Vegetation Community Type	Existing On-Site* (Acres)	Total On-Site Impacts (Acres)					Total Otay Ranch RMP Preserve Not Impacted	Conserved Open Space Not Impacted
		Outside Preserve	*Allowable Uses Inside Otay Ranch RMP Preserve*					
		*Proposed Development Impacts (Includes Fuel Modification, Detention Basins, Manufactured slopes)**	*Permanent Impacts*	*Temporary Impacts*				
			Water Tank and Road to Water Tank	*Temporary Slopes (along Otay Lakes Road and slopes for water tank)*	*Water Line*	*Natural Drainage Bypass Facilities*		
Disturbed Valley Needlegrass Grassland	110.46	102.94	--	0.02	—	—	7.50	—
Nonnative Grassland	79.02	64.49	--	—	—	—	3.11	11.42
Cismontane Alkali Marsh	1.73	0.06	—	—	—	—	1.58	—
Disturbed Cismontane Alkali Marsh	0.37	0.19	--		—	—	0.18	—
Mulefat Scrub (CDFW jurisdiction only)	0.15	0.06	—	—	—	—	0.09	—
Open Water	0.17	0.17	—	—	—	—	—	—
Southern Willow Scrub	0.27	0.01	—	—	—	—	0.29	—
Developed Land	0.87	0.79	--	0.08	—	—	—	—
Disturbed Habitat	13.46	7.79	0.02	0.15	—	—	4.55	0.95
Stock Pond	0.79	0.50	—	—	—	—	0.29	—
Totals	**1,869.02**	**691.99**	**2.18**	**11.65**	**0.23**	**0.83**	**1092.35**	**69.80**

* All impacts are considered permanent. Proposed Development impacts do not include the off-site road improvements. The off-site impacts are anticipated to remain the same as shown in Table 12 of the Biological Resources Technical Report (March 2015) and include the areas required for the improvements to Otay Lakes Road.

** These impacts are associated with allowable uses within the Preserve. Total acreage for Otay Ranch RMP Preserve and Conserved Open Space is 1,177 acres.

Table 5 Summary of Impacts to Vegetation Communities within Otay Ranch RMP Preserve On-site

Vegetation Community Type	Total Otay Ranch RMP Preserve Impacted and Not Impacted (Acres)	Allowable Uses within the Otay Ranch RMP Preserve (Impacted Acres)				Otay Ranch RMP Preserve Not Impacted
		Permanent Impacts	*Temporary Impacts*			
		Water Tank and associated road grading for the tank	*Slope grading to be revegetated (for water tank slopes and Otay Lakes Road Slopes)*	*Natural Drainage Bypass Facilities*	*Water line (trench then restore)*	
Coastal Sage Scrub	981.70	2.16	7.94	0.83	0.23	970.64
Disturbed Coastal Sage Scrub	51.24	—	3.02	—	—	48.21
Chamise Chaparral	49.49	—	0.43	—	—	49,06
Disturbed Chamise Chaparral	1.58	—	—	—	—	1.58
Scrub Oak Chaparral	0.35	—	—	—	—	0.35
Southern Mixed Chaparral	4.95	—	—	—	—	4.95
Disturbed Valley Needlegrass Grassland	7.52	—	0.02	—	—	7.50
Nonnative Grassland	3.11	—	—	—	—	3.11
Cismontane Alkali Marsh	1.67	—	—	—	—	1.58
Disturbed Cismontane Alkali Marsh	0.18	—		—	—	0.18
Mulefat Scrub	0.09	—	—	—	—	0.09
Open Water	0.00	—	—	—	—	—
Southern Willow Scrub	0.26	—	—	—	—	0.29
Developed Land	0.08	—	0.08	—	—	—
Disturbed Habitat	4.72	0.02	0.15	—	—	4.55
Stock Pond	0.29	—	—	—	—	0.29
Total	**1,107.23**	**2.18**	**11.65**	**0.83**	**0.23**	**1092.35**

1.3.6 Mitigation Strategy for Restoring Impacted Functions and Services

This Restoration Plan provides guidance for on-site restoration of 12.47 acres of sensitive upland vegetation communities, consisting of coastal sage scrub (9.0 acres), disturbed coastal sage scrub (3.02 acres), chamise chaparral (0.43 acre), disturbed Valley needlegrass grassland (0.02 acre) which are shown in Table 5. Temporary off-site impacts to sensitive vegetation communities will be immediately restored and are not otherwise a part of the proposed on-site project open space. These areas are anticipated to be the same as those provided in the Otay Ranch Resort Village Biological Resources Technical Report (Dudek 2015)

Although not discussed in this Restoration Plan, mitigation for the Resort Village also includes the conveyance of 786.7 acres of Otay Ranch RMP Preserve in conformance with requirements of the Otay Ranch Resource Management Plan (RMP; Otay Ranch 2011). At a future date, the remaining onsite areas of the Otay Ranch RMP Preserve will be conveyed or used as mitigation as required by the Wildlife Agencies. The Conserved Open Space will be protected by a Biological Open Space Easement or will be placed in the Otay Ranch RMP Preserve either with the first Final Map or at a later date in accordance with a Boundary Line Adjustment. The entire Otay Ranch RMP Preserve onsite will be protected by a biological open space easement. This Restoration Plan has been written to comply with this condition as stated in the *Otay Ranch Resort Village Biological Resources Technical Report* (Dudek 2015):

> Graded slopes that are proposed to remain within the MSCP Preserve are proposed to be restored to native habitat appropriate for the location and the previous condition of the area. These areas include a total of approximately 12 acres of upland habitat.
>
> Restoration areas may incorporate salvaged materials, such as seed collection and translocation of plant materials as determined to be appropriate. This includes California adolphia, San Diego barrel cactus, San Diego thornmint, San Diego goldenstar, and variegated dudleya. The project biologist shall review the plant materials prior to grading and will determine if salvage is warranted. Based on preliminary review of the proposed restoration areas, the slopes along the water tank and roads would be suitable for California adolphia and San Diego barrel cactus and the areas within the natural drainage facilities would be appropriate for the variegated dudleya, San Diego goldenstar and San Diego thornmint due to the clay soils. If salvage is not appropriate due to site conditions, plant conditions, or reproductive stage of the plants, a letter indicating that will be prepared and submitted to the Director of the Department of Planning and Development Services and the Director of Parks and Recreation. Prior to grading the project, a Conceptual Upland Restoration Plan (Appendix H) [this document] will be submitted to and receive approval from the

Director of the Department of Planning and Development Services (or their designee) and the Director of Parks and Recreation.

The Conceptual Upland Restoration Plan shall include, but not be limited to, the following to ensure the establishment of the restoration objectives: a 24- by 36-inch map showing the restoration areas, site preparation information, type of planting materials (species ratios, source, size of container, etc.), planting program, 80% success criteria, 5-year monitoring plan, and detailed cost estimate. The cost estimate shall include planting, plant materials, irrigation, maintenance, monitoring, and report preparation. The report shall be prepared by a County approved biologist and a state of California licensed landscape architect. The habitat created pursuant to the Conceptual Upland Restoration Plan must be placed within an open space easement dedicated to the County prior to or immediately following the approval of the Conceptual Upland Restoration Plan.

The upland restoration will occur on slopes that will be temporarily disturbed during the implementation of the development plan and that are inside the Otay Ranch Preserve (Preserve). The upland restoration areas are included within the Preserve boundaries and will be managed as part of the Preserve once they are reestablished. The restoration areas are located in several areas surrounding the development footprint. No restoration that is proposed to remain within the Preserve will be located within Brush Management Zones. The restoration plan has been reviewed and approved by the Wildlife Agencies. Slopes that are within the project development footprint that are not part of this restoration plan are addressed in the landscape plans and will be composed on native plant species where adjacent to the Preserve.

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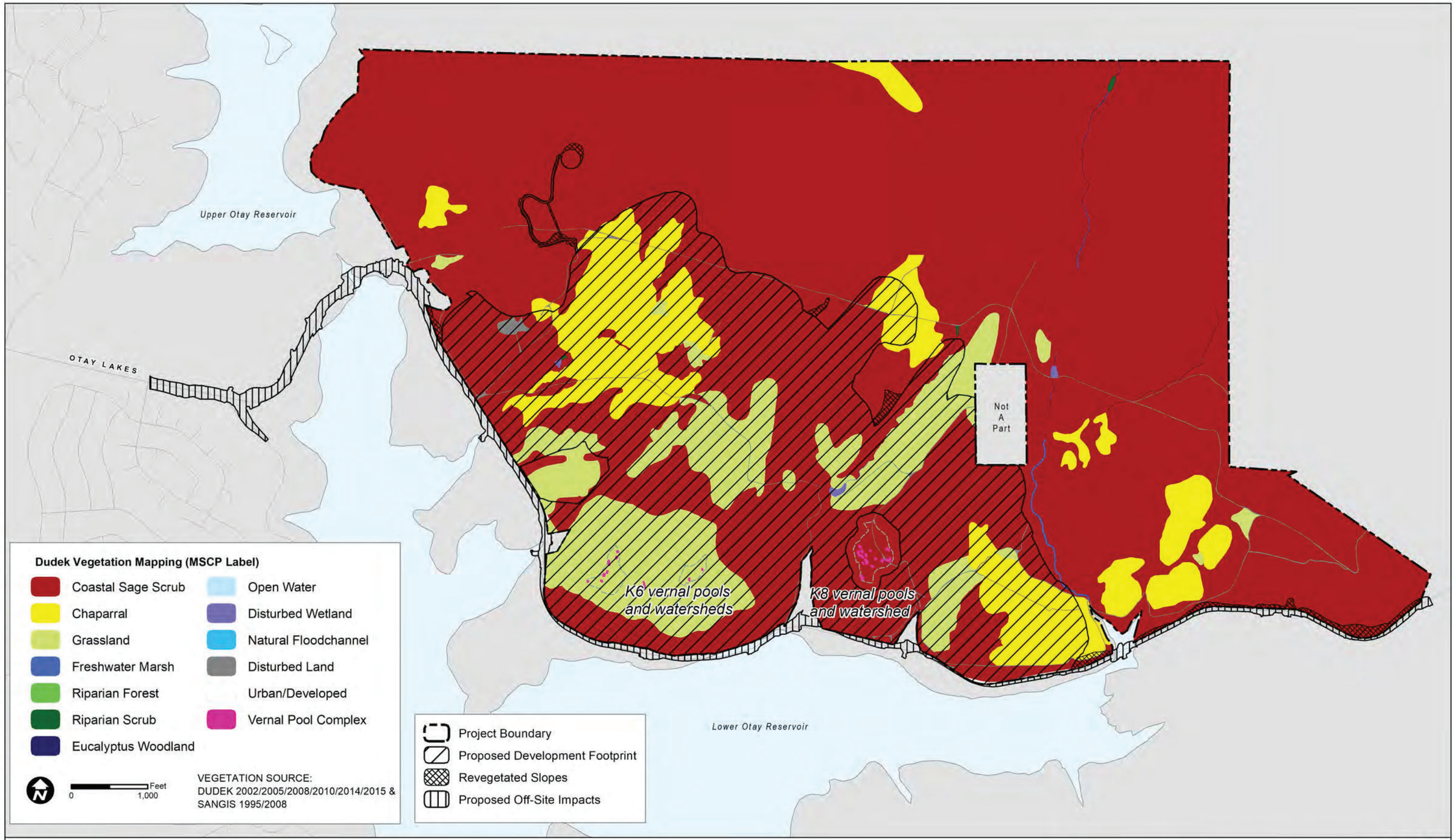

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FIGURE 3

Vegetation Map with Proposed Development Footprint

Otay Ranch Resort Village Site - Conceptual Uplands Restoration Plan

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2 GOAL OF THE COMPENSATORY MITIGATION PROJECT

The primary goal of the proposed upland slope restoration mitigation for the Otay Ranch Resort Village Alternative H is to compensate for the impacts to the upland habitats located on site within the development footprint through and restoration of slopes that are proposed to remain within the preserve and that will be preserved on site in perpetuity.

2.1 Responsibilities

The project applicants (Moller Otay Lakes Investments LLC and Baldwin & Sons LLC) are responsible for initiating and funding all maintenance and monitoring requirements during the 5-year program. They shall be responsible for hiring a qualified landscape maintenance contractor to carry out all maintenance work and for hiring a qualified biological monitor to carry out the monitoring program for the duration of the 5-year period. The specific identity of the compensatory mitigation project designer, the installation contractor, the Project Biologist and the restoration maintenance contractor will be determined at a later date during the permitting process.

2.1.1 Applicant Responsibilities

Dudek submits this Restoration Plan on behalf of the applicant, Baldwin & Sons LLC (contact: Mr. Stephen Haase) and Moller Otay Lakes Investments LLC (contact: Mr. Chuck Miller).

The applicant shall be financially responsible for all negotiations and costs associated with the implementation, monitoring, maintenance and long-term management and protection of the mitigation area, as defined in this document. The applicant shall select and may replace, at their discretion, the landscape contractor, maintenance contractor, and Project Biologist for this project at any time. The applicant or current owner shall submit a bond to cover the anticipated costs for the implementation, maintenance, and monitoring of the program through the end of a 5-year maintenance and monitoring program outlined herein. The applicant, or current owner, shall place a conservation easement over the new mitigation areas before project installation.

The applicant shall be responsible for directing the project grading contractor to salvage topsoil under the direction of the Project Biologist.

Proposed mitigation areas shall be accessible to the County throughout the Alternative H review and permitting phase, as well as during the installation and 5-year maintenance and monitoring period.

2.1.2 Project Biologist Responsibilities

A qualified Project Biologist shall be retained to monitor the implementation and perform long-term project biological monitoring, as outlined in this Restoration Plan. The Project Biologist may be an individual or a team of individuals and must have demonstrated experience in upland habitat restoration. The Project Biologist must demonstrate an understanding of local plant community ecology and habitat restoration, and have expertise in plant and wildlife identification.

The Project Biologist shall help ensure that the applicant follows the guidelines of this Restoration Plan, County permits, and final detailed restoration construction documents for the interpretation of such plans, field monitoring of project installation, monitoring through the 120-day maintenance period, and biological monitoring throughout the 5-year monitoring period.

The Project Biologist shall be required to monitor throughout the construction period. Monitoring time may increase or decrease as required by field conditions, construction activities, and resource agency permit requirements. During the construction, the Project Biologist will have the authority to stop work in situations where biological resources, not permitted to be impacted, are in imminent danger of impacts from construction activities. Each site visit will be documented in a monitoring observation report that will note construction activities relating to the mitigation plan and any project deficiencies.

Biological monitoring will be performed following acceptance of mitigation installation and throughout the 5-year, long-term monitoring phase.

2.1.3 Restoration Contractor Responsibilities

Restoration project installation and associated labor shall be provided by a contractor who has a valid California landscape contractor's license, has previous experience with habitat restoration in the region, and can demonstrate successful similar restoration project experience in Southern California. The contractor must demonstrate knowledge of techniques for growing, transplanting, and installing native upland species.

The contractor will be responsible for conformance to this Restoration Plan, resource agency permits, and construction documents. The construction documents will include detailed graphic restoration construction plans and written specifications that are in substantial conformance with the information and direction contained within this Restoration Plan. The contractor's responsibility will continue until successful restoration and final acceptance by the project applicant and Project Biologist at the end of the initial 120-day plant establishment period. The contractor will not be released from contractual obligations until written notification is received from the applicant, in consultation with the Project Biologist, certifying satisfactory completion of

all required installation tasks as defined in the installation contract, construction documents, this Restoration Plan, and resource agency permits.

After initial installation and completion of the 120-day plant establishment period, the applicant will have 5-year maintenance services performed by an experienced landscape maintenance contractor that specializes in habitat restoration. Maintenance work shall be performed as indicated herein and according to the Project Biologist's recommendations. The applicant may choose to hire a maintenance contractor that is separate from the installation contractor.

2.1.4 Landscape Maintenance Contractor Responsibilities

A landscape contractor shall provide 5-year maintenance. The contractor shall possess a valid California landscape contractor's license, have previous experience with habitat restoration in the region, and be able to demonstrate successful similar restoration project experience in Southern California. The contractor must demonstrate knowledge of techniques for maintaining native upland species and control of non-native species.

The contractor must possess a Qualified Applicator's License or certificate issued by the California Department of Pesticide Regulation, and maintenance laborers must receive appropriate annual herbicide training. Maintenance laborers must be trained to distinguish common native and non-native plants.

Maintenance work shall be performed as indicated herein and according to the Project Biologist's recommendations. The landscape maintenance contractor will be responsible for conformance to this Restoration Plan and any other conditions of County or resource agency permits. The contractor's responsibility will continue until final project approval by the County. The contractor will not be released from contractual obligations until written notification is received from the applicant certifying satisfactory completion of all required maintenance activities.

2.1.5 Seed and Plant Collection and Procurement Responsibilities

Plant material may be purchased from a native plant nursery (such as Tree of Life Nursery in San Juan Capistrano, Las Pilitas Nursery in Escondido, Moosa Creek in Valley Center, HRS Nursery in Carlsbad, El Nativo Nursery in Azusa, Matilija Nursery in Moorpark, or other sources of local native plant material approved by the Project Biologist). If project timing allows, seed collected from the project area will be provided for propagation to one of the native plant nurseries listed above. The container plant provider is responsible for providing the quantity and sizes of plants specified in this Restoration Plan in a pest and disease-free condition.

Seed for inclusion in the hydroseed mixtures may be obtained from S&S Seeds in Carpinteria, California, or an alternative source approved by the Project Biologist. The seed provider will be responsible for meeting the pure live seed and germination percentages standards listed in this Restoration Plan and documenting the provenance of the seed collected. If feasible, seed shall be collected from the project site.

2.2 Type and Area of Habitat to be Restored

The purpose of this Restoration Plan is to provide site-specific instructions for upland habitat restoration as on-site mitigation for Alternative H impacts to sensitive habitat areas that will be included within the Preserve. The slope impacts resulting from the disturbance will be restored to native habitat, including coastal sage scrub, grassland, or chaparral, as appropriate, and retained within the designated Preserve.

2.2.1 Restoration Areas

This Restoration Plan provides guidance for on-site restoration of approximately 12 acres of sensitive upland vegetation communities, consisting of coastal sage scrub (9.0 acres), disturbed coastal sage scrub (3.02 acres), chamise chaparral (0.43 acres), and disturbed Valley needlegrass grassland (0.02 acre) which are shown in Figure 4 (Table 6).

Table 6
Proposed Restoration for Upland Slope Areas for Alternative H

Vegetation Type	Total On-site Slope Restoration
Coastal sage scrub ; 32500	9.00
Disturbed coastal sage scrub; 32500	3.02
Chamise chaparral; 37210	0.43
Disturbed Valley needlegrass grassland; 42110	0.02
Total	**12.47**

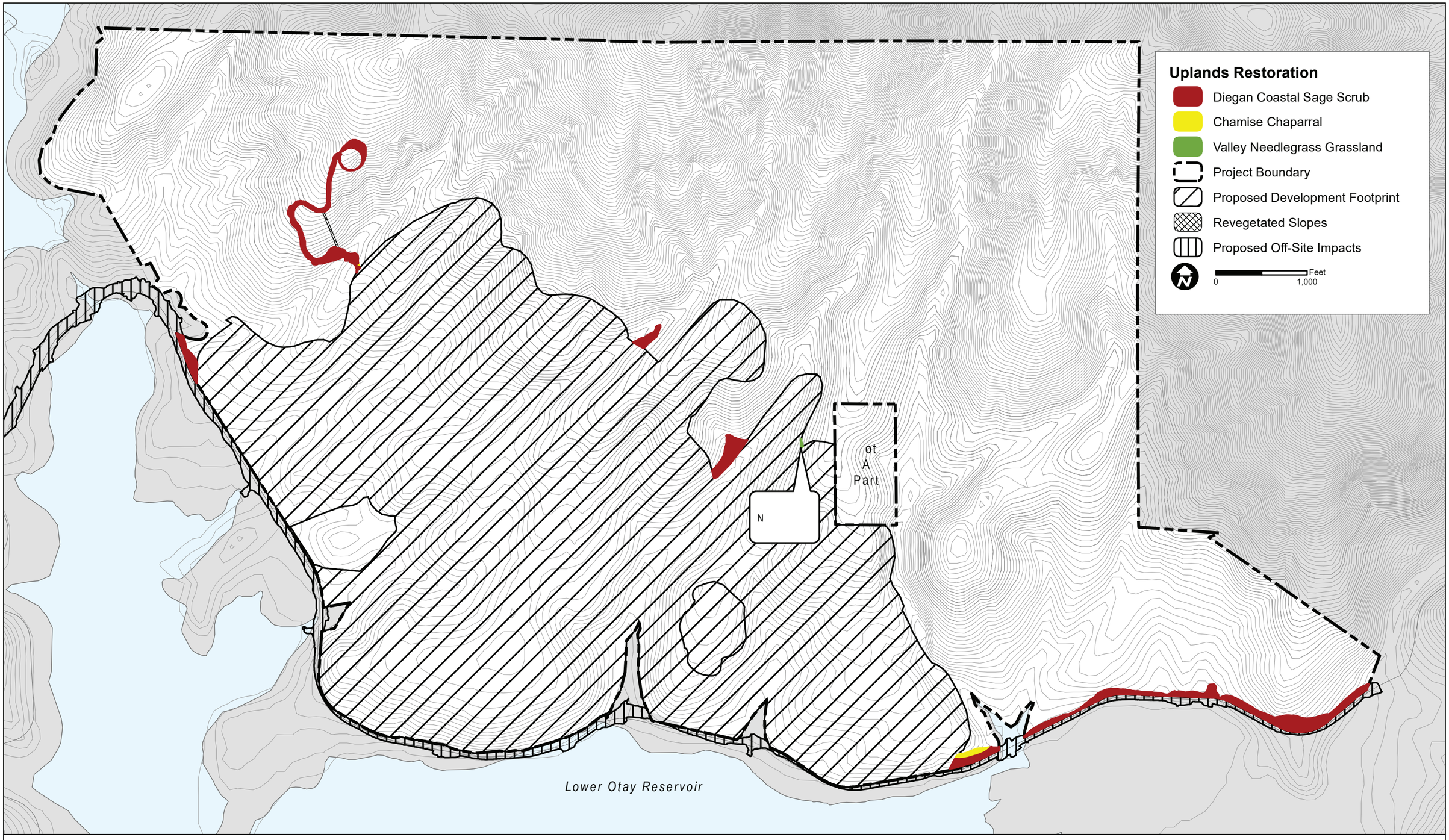

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FIGURE 4

Slope Revegetation Areas

Otay Ranch Resort Village Site - Conceptual Uplands Restoration Plan

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2.2.2 Goals

The primary goal of the Restoration Plan is to restore both on- and off-site upland vegetation communities that are temporarily impacted by the proposed development.

2.3 Functions and Values

Secondary goals of the restoration effort include providing for the establishment or translocation through a salvage task of special-status plant species that will be impacted by the proposed development, such as San Diego sunflower (*Viguiera laciniata*), Nuttall's scrub oak (*Quercus dumosa*), California adolphia, San Diego barrel cactus (*Ferocactus viridescens*), and variegated dudleya (*Dudleya variegata*), San Diego thornmint (*Acanthomintha ilicifolia),* San Diego goldenstar (*Bloomeria clevelandii)* and providing species-rich and structurally diverse native vegetation communities that will provide for plant and wildlife species diversity in the area. Additionally, coastal sage scrub dominated by San Diego viguiera (2.5 acres) or dominated by Munz's sage (6.5 acres) will also be provided in appropriate locations determined during the preparation of the plans and specifications. The requirement for the salvage of San Diego thornmint, San Diego goldenstar, variegated dudleya, San Diego barrel cactus and coastal sage scrub habitat dominated by San Diego viguiera or Munz's sage are requirements of the Otay Ranch RMP2. Achievement of the performance criteria described herein would create areas of suitable habitat for special-status plant and wildlife species.

It is anticipated that the restoration areas will become self-sustaining over time, needing little or no maintenance once established. Maintenance activities during the establishment period will focus on ensuring the establishment of self-sustaining habitat. Upon completion of 5 years of maintenance and monitoring of the restoration areas, and acceptance of the site by the County, the restoration area shall enter the long-term management phase along with the overall Preserve.

2.4 Time Lapse

It is anticipated that the upland mitigation will be installed within the same calendar year that the impact occurs with success criteria being met five years after installation.

2.5 Cost

This cost estimate is based on the project as described in this Restoration Plan and includes estimated costs for construction, installation, and monitoring of the approximately 12-acre area (see items A through E below). The cost estimate does not include costs associated with construction of the development or associated construction monitoring. The total cost estimate is **$1,350,000.**

Item A: Site Work and Construction

Includes site clearing, collection and chipping of native brush, topsoil salvage and replacement (1,613 cubic yards), site grading and contouring, incorporation of soil amendments and fertilizer, spreading native mulch, and installing silt fencing. It should be noted that some of these activities (e.g., soil salvage and replacement, installation of silt fencing) may be included with the overall site grading contract rather than the upland restoration work.

Cost Estimate: ***.....$345,000***

Item B: Temporary Irrigation System

Includes the installation of an on-grade temporary irrigation system. Estimate assumes that the system can be tied in to an existing back-flow preventer, pressure regulator, and water meter.

Cost Estimate**.....$230,000**

Item C: Plant and Seed Installation

Includes installation of 18,690 one-gallon container plants and the hydroseed mix, as specified in this Restoration Plan.

Cost Estimate: ***.....$315,000***

Item D: 5-Year Maintenance Period

Includes maintenance according to the maintenance schedule described in this Restoration Plan, including eight visits in Years 1 and 2, six visits in Year 3, and four visits in Years 4 and 5.

Cost Estimate: ***.....$400,000***

Item E: Biological Monitoring During 5-Year Maintenance Period

Includes monitoring mitigation installation work, preparing an as-built report, monthly monitoring during the 120-day plant establishment period, bimonthly monitoring during the Year 1, quarterly monitoring during Years 2–5, quantitative data collection in Years 2–5, and preparation of five annual monitoring reports.

Cost Estimate: ***.....$85,000***

TOTAL COST ESTIMATE (ITEMS A–E) $1,375,000

3 DESCRIPTION OF THE PROPOSED COMPENSATORY MITIGATION SITE

3.1 Site Selection

The restoration site includes those slopes that are within the proposed preserve. The surrounding area is a mosaic of grassland and scrub habitats hence the slopes are appropriate for having those habitats as the targeted goal of the plan. The restoration areas will be provided protection by being separated from development by back yard fencing and fuel modification zones, and by being in the Otay Ranch RMP Preserve. The habitat is historically and currently occupied within the greater preserve area, by sensitive plant and wildlife species and thus the restoration will contribute to the resources for these species.

3.2 Location and Size of Compensatory Mitigation Site

The size of the restoration areas are provided in Table 6. Locations of restoration areas are shown on Figure 4.

3.3 Functions and Values

Section 2.3 outlines the functions and values of the mitigation site.

3.4 Present and Proposed Uses

The present uses of the mitigation area are as undeveloped land. The proposed uses are as preserve land for Otay Ranch within which restoration is appropriate.

3.5 Reference Sites

Reference site information has not been collected at this time. However, the entire site has been mapped for vegetation communities and descriptions of the existing vegetation communities are provided in Section 1.3.2.

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4 IMPLEMENTATION PLAN FOR THE COMPENSATORY MITIGATION SITE

4.1 Rationale for Expecting Implementation success

Following approval of this Restoration Plan, detailed construction drawings and specifications will be prepared for construction purposes. Construction documents will conform with all aspects of this plan and to any subsequent permit conditions required by resource agencies. These documents may be subject to the review and comment by the County. Construction documents will incorporate the most current site condition information available. The construction document plan package will include a site plan that includes irrigation plans and planting plans, and associated legends, details, and specifications. The construction documents will indicate container plant species, container sizes, general planting locations, and areas to be seeded. All construction documents must conform with all aspects of this plan and to subsequent permit conditions required by the resource agencies. Restoration of the temporary impact areas is expected to be successful based on the presence of the native soils, the use of appropriate native plants and seeds, acquired from local sources, the inclusion of a temporary irrigation to help establish native seeds and plants, and by having an experienced maintenance contractor perform timely weeding and irrigation adjustments. Restoration success will be further ensured by having an experienced biologist/restorationist closely monitor and report on the progress of the project

4.2 Financial Assurances

The applicant will be required to provide a letter of credit, performance bond, or other special funding to ensure attainment of the approved compensatory mitigation project success criteria, as required by the County. The County will determine the monetary value of the letter of credit or performance bond based on an estimate of the total cost of the proposed compensatory mitigation project provided by the applicant. A restoration agreement shall be signed and notarized by the property owner following approval of this restoration plan and accompanied by the required security as agreed upon by the County of San Diego.

4.3 Schedule

To be provided.

4.4 Site Preparation

The landscape contractor shall be responsible for site and soil preparation. Before restoration work begins, the limit of work boundaries shall be delineated and staked to ensure that the contractor

stays within the limit of work and/or the proper acreage is restored. Removal of debris is not anticipated to be necessary.

4.4.1 Native Mulch Salvage

Native vegetation removed during the grubbing phase of construction will be stockpiled and mulched. The mulch will be spread in windrows no higher than 6 feet for storage until use. Distribution in windrows and limit of height will provide adequate air circulation to reduce amount of water weight and compression within piles. No irrigation system is anticipated for windrows. The mulch will primarily provide organic matter to the soil, and secondarily may provide a source of native seed. The native mulch will be applied to the restoration areas and incorporated into the top 12 inches before planting container plants and applying seed.

4.4.2 Topsoil Salvage

Topsoil shall be salvaged for placement in the graded restoration areas where special-status plant species will be transplanted or where grassland (native and non-native) restoration is planned. Grasslands and the special-status species requiring transplantation occur in clay soil. Therefore, soil shall be salvaged from areas of the project site with clay soil for use in the restoration effort. Salvaged topsoil is anticipated to provide soil physical structure and nutrients that would be lacking on the cut slopes to be revegetated as well as contain additional native seeds and microbes that may augment plant species diversity and enhance nutrient cycling and other ecosystem functions.

Before grading, the Project Biologist shall delimit approximately 1 acre of high-quality (i.e., relatively high proportion of native species) clay soil within the areas to be graded. When the topsoil has dried and before the onset of winter rains, the grading contractor will drive over the vegetation to crush the plant parts and incorporate them into the soil. The upper approximately 1foot of topsoil will be bladed and moved to soil stockpile storage areas to be determined by the contractor and the Project Biologist. The Project Biologist shall ensure that all stockpiling occurs outside of sensitive areas that the grading contractor uses areas within the grading footprint.

The topsoil shall be placed in separate, clearly marked, temporary topsoil storage piles. Piles shall be covered with a tarp prior to the onset of winter rains, if necessary.

4.4.3 Initial Weed Control

The restoration areas include graded slopes, and therefore the vegetation and resident seed bank will likely have been removed during the grading process. Thus, initial weed control may not be necessary. However, if the restoration area, or area immediately adjacent to the restoration area, on property owned by the responsible party supports non-native species, they shall be controlled prior to planting.

Where practical, "grow and kill" weed treatments will be conducted by the landscape contractor before the installation of native seed and container plants. The temporary irrigation system (if present) will be operated to encourage seed germination. When weeds have begun to grow, a foliar application of an appropriate herbicide will be applied to kill target weeds. If necessary, the cycle shall be repeated. Additional cycles may be required as recommended by the Project Biologist. Any herbicide application shall be conducted in accordance with label instructions under the direction of a state-certified qualified applicator. All dead weeds shall be removed from the soil surface, or ripped into the soil, if deemed appropriate by the Project Biologist.

4.4.4 Mulch Application and Soil Preparation

After completion of grading and before placement of salvaged topsoil and/or salvaged mulch, the soil within the slope restoration areas will be scarified. In areas where salvaged soil is placed, it shall be applied to a depth of approximately 1 foot. Salvaged mulch shall be spread over all restoration areas and incorporated into the top 12 inches. Restoration areas will be track-walked up and down slope after placement of salvaged soil and salvaged mulch to reduce erosion potential.

Areas where salvaged soil is not placed shall be amended. Soil tests shall be performed and analyzed for the cut slope areas to determine what soil amendments may be necessary for plant growth. Soil amendments shall be applied to the soil surface and incorporated into the top 12 inches.

4.5 Planting Plan

4.5.1 Seed Sources and Procurement

Container plant material may be purchased from a native plant nursery. If project timing permits, container plants will be grown from plant material collected from the project site and surrounding vicinity.

Seed for inclusion in the hydroseed mixtures may be obtained from S&S Seeds in Carpinteria, California, or an alternative source approved by the Project Biologist. To the maximum extent feasible, seeds and container plants shall be from southwestern San Diego County. If such seed is not available commercially, and project timing does not permit additional collection, the Project Biologist will consult with County staff to determine whether to use seed from outside of this area or substitute a different species in the seed mix.

4.5.2 Coastal Sage Scrub and Disturbed Coastal Sage Scrub Plant Palette

The restoration strategy for restoration of coastal sage scrub habitat includes reintroducing appropriate on-site native coastal sage scrub species (Table 7). A disturbed coastal sage scrub plant

palette has not been generated for this plan, as the areas mapped as disturbed will be treated the same in the restoration process as those not mapped as disturbed. The plant palette has been designed to provide a diverse mix of species, including nurse crop species for quick establishment and erosion control. Some species, particularly dot-seed plantain (*Plantago erecta*) and deerweed, are expected to germinate readily in response to adequate weather conditions and provide an initial ground cover layer that will reduce erosion potential. Shrubs and subshrubs, such as coastal goldenbush and California buckwheat, may germinate later and will provide greater structural diversity.

Table 7
Coastal Sage Scrub Plant Palette

Scientific Name	Common Name	Minimum Percent Live Seed	Rate (pounds/acre)
Seed Mix			
Cryptantha intermedia	common forget-me-not	5	2
Deinandra fasciculata	fascicled tarplant	20	1
Eriophyllum confertiflorum var. *confertiflorum*	long-stem golden yarrow	25	1
Eschscholzia californica	California poppy	85	1
Gnaphalium californicum	California everlasting	2	1
Gutierrezia sarothrae	broom snake-weed, matchweed	2	3
Isocoma menziesii ssp. *veneta*	Coastal goldenbush	15	1
Lasthenia californica	California goldfields	50	2
Acmispon glaber	deerweed	85	1
Lupinus bicolor	pygmy lupine	90	2
Nassella lepida	foothill stipa	65	4
Phacelia parryi	Parry's phacelia	80	2
Plantago erecta	dot-seed plantain	85	1
Salvia columbariae	chia	65	1
		Total Pounds/Acre	**23**
Scientific Name	**Common Name**	**Size**	**Spacing (feet on center)**
Container Plants			
Adolphia californica	California adolphia	1	5
Artemisia californica	coastal sagebrush	1	4
Cneoridium dumosum	bushrue	1	6
Encelia californica	California sunflower	1	4
Eriogonum fasciculatum	California buckwheat	1	5
Helianthemum scoparium var. *aldersonii*	Alderson's rockrose	1	3
Isomeris arborea	bladderpod	1	5
Lonicera subspicata var. *denudata*	southern honeysuckle	1	5

Table 7
Coastal Sage Scrub Plant Palette

Scientific Name	Common Name	Minimum Percent Live Seed	Rate (pounds/acre)
Seed Mix			
Malacothamnus fasciculatus	chaparral mallow	1	6
Malosma laurina	laurel sumac	1	8
Mimulus aurantiacus	Bush monkeyflower	1	4
Mirabilis californica var. *californica*	California wishbone bush	1	3
Rhamnus crocea	redberry	1	5
Salvia apiana	white sage	1	5
Salvia munzii	Munz's sage	1	5
Sambucus mexicana	blue elderberry	1	12
Viguiera laciniata	San Diego sunflower	1	5

4.5.3 Chamise Chaparral Plant Palette

Chamise chaparral is predominantly composed of chamise. The planting palette includes the dominant and component species of the vegetation community.

The restoration strategy for chaparral restoration is to plant the component species from container plants (chaparral species are difficult to establish from seed), and include some annual species to provide initial cover for erosion control and species diversity (Table 8). Additionally, the plant palette includes coastal sage scrub species because chaparral habitat develops slowly, and coastal sage scrub species will establish more quickly to provide greater structure on the restored slopes.

Table 8
Chaparral Plant Palette

Scientific Name	Common Name	Minimum Percent Live Seed	Rate (Pounds/Acre)
Seed Mix			
Deinandra fasciculata	Fascicled tarplant	20	1
Eriophyllum confertiflorum var. *confertiflorum*	Long-stem golden yarrow	25	1
Eschscholzia californica	California poppy	85	1
Gnaphalium californicum	California everlasting	2	1
Gutierrezia sarothrae	broom snake-weed, matchweed	2	3
Lasthenia californica	California goldfields	50	2
Lupinus bicolor	pygmy lupine	90	2
Nassella lepida	foothill stipa	65	4
Plantago erecta	dot-seed plantain	85	1
Salvia columbariae	chia	65	1
		Total Pounds/Acre	**17**
Scientific Name	**Common Name**	**Size**	**Spacing (feet on center)**
Container Plants			
Adenostoma fasciculatum	chamise	1	4
Artemisia californica	coastal sagebrush	1	4
Baccharis sarothroides	chaparral broom	1	5
Cneoridium dumosum	bushrue	1	6
Eriogonum fasciculatum	California buckwheat	1	5
Helianthemum scoparium var. *aldersonii*	Alderson's rockrose	1	3
Isomeris arborea	bladderpod	1	5
Malacothamnus fasciculatus	chaparral mallow	1	6
Malosma laurina	laurel sumac	1	8
Quercus dumosa	Nuttall's scrub oak	1	3
Rhamnus crocea	redberry	1	5
Rhus integrifolia	lemonadeberry	1	8
Xylococcus bicolor	mission manzanita	1	5

4.5.4 Valley Needlegrass Grassland Plant Palette

The restoration strategy for disturbed Valley needlegrass grassland is to plant most of the component species from seed, with some complimentary shrub species from container stock to increase species and structural diversity (Table 9). The shrubs shall be planted in small clusters of 5 to 10 plants within the grassland restoration areas.

Table 9
Grassland Plant Palette

Scientific Name	Common Name	Minimum Percent Live Seed	Rate (Pounds/Acre)
Seed Mix			
Cryptantha intermedia	common forget-me-not	5	2
Deinandra fasciculata	fascicled tarplant	20	1
Eriophyllum confertiflorum var. confertiflorum	long-stem golden yarrow	25	1
Eschscholzia californica	California poppy	85	1
Lasthenia californica	California goldfields	50	2
Lupinus bicolor	pygmy lupine	90	2
Nassella lepida	foothill stipa	65	4
Nassella pulchra	purple needlegrass	75	8
Phacelia parryi	Parry's phacelia	80	2
Plantago erecta	dot-seed plantain	85	1
Salvia columbariae	chia	65	1
Sisyrinchium bellum	blue-eyed grass	80	2
		Total Pounds/Acre	**27**
Scientific Name	**Common Name**	**Size**	**Spacing (feet on center)**
Container Plants			
Artemisia californica	Coastal sagebrush	1	4
Eriogonum fasciculatum	California buckwheat	1	4
Gnaphalium californicum	California everlasting	1	2
Gutierrezia sarothrae	broom snake-weed, matchweed	1	3
Melica imperfecta	California melic	1	2
Mimulus aurantiacus	Bush monkeyflower	1	3
Mirabilis californica var. californica	California wishbone bush	1	3
Sidalcea malvaeflora	checker mallow	1	2

4.6 Planting Design

Plant materials for the restoration areas will include the container stock and seed mixes indicated in the plant palettes provided in Tables 7 through 9. Exceptions include the off-site temporary impact areas and small on-site restoration areas (less than 0.10 acre), which may not be irrigated and may not be planted with container plants due to their isolation and small size. These areas will rely on the application of a native seed mix only.

Implementation of the mitigation efforts must be coordinated among the restoration contractor, the Project Biologist, and the nursery/seed supplier providing the plant materials and seed mixes from appropriate nursery stock, native seed stock, or both.

Planting locations will be shown on construction documents (planting plans) or be flagged in the field. Container plant materials will be planted in small clusters or groups to develop natural patchiness.

4.6.1 Seed Application Methods

Seed will be mixed uniformly in a slurry composed of water and virgin wood fiber mulch, and which will include:

- Seed mixture at indicated pounds-per-acre
- Virgin wood cellulose fiber mulch at 2,500 pounds-per-acre
- 'Az-tac' binder at 100 pounds-per-acre (if seed mix is to be installed between November and February)
- Amendments based on soil test results

Appropriate timing of application of the hydroseed and container planting will increase the survival of the plants. The best survival rates are achieved when container plants and seed are installed from late fall to early winter. Planting and seeding at the site should be timed to take advantage of seasonal rainfall patterns and should be accomplished no later than late winter of the implementation year.

Seed mixes shall be applied equally to all areas indicated on plans. Seeding shall only occur when environmental conditions are favorable for such activities, based on standard horticultural practices. Seeding shall not take place if temperatures are unreasonably high, or if the site is excessively wet or muddy. Best management practices shall be incorporated as an erosion control measure along all hydroseeded slopes, including silt fencing at the toe of the slope.

4.6.2 Container Planting Methods

Container stock shall be installed using industry standard techniques. A hole two times the diameter of the root ball will be excavated to the depth of the root ball. Each hole will be filled with water and allowed to drain prior to plant installation. Each container plant root ball shall be scarified prior to installation. Backfill soil will contain no amendments and fertilizers unless shown in the construction documents, recommended by soil test results and/or by the Project Biologist. After installation, each plant shall be thoroughly irrigated to the depth of the root ball. The location of each container plant shall be pin-flagged to aid in future identification, weeding, and survival monitoring.

4.7 Irrigation

A temporary above-grade irrigation system is proposed to provide supplemental irrigation to facilitate weed control and successful establishment of native container plants and seed installed at the site. The irrigation system will be used only until the plants are established such that they can survive on their own from seasonal rainfall. It is expected that the irrigation system will be removed at the end of Year 3 of the 5-year maintenance and monitoring period, depending upon the level of plant establishment achieved by that time. Watering on site will gradually be decreased prior to the irrigation system being abandoned in order to allow the plants to acclimate to the site's natural conditions.

The irrigation system will be installed as an aboveground system so that irrigation equipment may be removed once the system has been decommissioned, and once the resource agencies and the County have approved and signed off the site. The applicant will be responsible for removal of the irrigation system prior to project completion. The irrigation system will use a water source located as close to the site as possible. All on-site irrigation will consist of polyvinyl chloride pipe staked on grade at approximately 10 feet on center and at all corners, providing coverage of the restoration areas using spray and/or rotor heads, where appropriate. The landscape contractor will install all irrigation. Irrigation will be discontinued by the end of the Year 3, and all aboveground components will be removed from the site prior to the end of the 5-year period.

The contractor will inspect the irrigation system regularly and make any necessary repairs and adjustments as required. Plants growing near the sprinkler heads may be pruned to maintain adequate sprinkler coverage. Where pruning is not feasible or allowed, irrigation heads may need to be raised up on staked risers to reach above developing plants to avoid head blockage. Once the plants are well established, the irrigation schedule will be reduced and/or terminated on direction of the Project Biologist

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5 MAINTENANCE DURING MONITORING

5.1 120-Day Establishment Period

The installation contractor shall complete a 120-day plant establishment maintenance period following container plant installation and hydroseed application. Maintenance responsibilities include weed control to promote successful establishment of the applied native seed mix and erosion control until the vegetative cover has established on the restored slopes. Weed control methods may include mechanical removal and chemical treatment of non-native weed species.

During the initial 120-day plant establishment period, following the container plant installation and seeding, the Project Biologist will monitor site conditions twice monthly. The Project Biologist will note seedling germination, container plant survival, soil erosion, and weed and exotic species control to determine if the plants are becoming adequately established and to verify that the seed application has been successful. If the seed application has been successful and adequate germination occurs, then rapid seedling emergence should limit the need for erosion control devices. Potential remedial actions if germination is not sufficient include reseeding, installation of additional erosion control devices, and follow-up weed control.

The Project Biologist will inform the installation contractor of concerns regarding successful plant establishment and will coordinate appropriate remedial actions

5.2 Five-year Maintenance Plan

The purpose of the maintenance plan is to provide guidelines for long-term maintenance of the restoration areas during the 5-year establishment period. Maintenance activities shall occur in consultation with the Project Biologist.

The maintenance period shall begin upon successful completion of the 120-day establishment period. The maintenance period is scheduled to last for 5 years and will conclude once the County determines that the project is successful.

Because the goal of this project is to establish a natural system that can support itself with little or no maintenance, the primary focus of the maintenance plan is concentrated in the first few seasons of plant growth following the restoration effort, when weeds can easily out-compete native plants. The intensity of the maintenance activity is expected to decrease each year as the native plant materials become more established and as local competition from non-native plants for resources on the site is minimized through direct removal and treatment of non-natives. However, long-term maintenance concerns for the site will include non-native, exotic, and invasive plant species adjacent to the site and potential establishment from wind-borne seed.

The risk of large-scale reinvasion of non-native plants onto the site can be adequately minimized during the first 5 years by adhering to these specific maintenance and management guidelines.

5.2.1 Schedule of Maintenance Inspections

Maintenance activities, including weed control, shall be conducted by the maintenance contractor at least monthly during the winter and spring (January–June) in Years 1 and 2, and at increasing intervals for the remainder of the 5-year maintenance program (Table 10).

Table 10
Preliminary Project Maintenance Schedule

Task	Timing/Frequency
Site Preparation and Establishment	
Site clearing, mulch salvage and application, and soil preparation/perimeter exotic removal	Summer or fall, or per Migratory Bird Treaty Act restrictions
Installation of temporary irrigation system	Fall (following site clearing and soil preparation)
Weed/exotic removal and grow–kill cycles	Fall (following site preparation)
Planting container stock	Early winter (following grow–kill cycles)
Hydroseed application	Winter (following planting)
Completion of 120-day establishment period	Spring
Maintenance Program	
Year 1	Eight (8) times (monthly January through June; August; November)
Year 2	Eight (8) times (see Year 1)
Year 3	Six (6) times (bimonthly)
Year 4	Four (4) times (approximately quarterly)
Year 5	Four (4) times (approximately quarterly)
Final Signoff	End of Year 5

5.2.2 Site Protection

The restoration areas are located within the Preserve area. It is anticipated that the Preserve area will be fenced. Because of the dispersed distribution of the restoration areas, no special fencing or signage is proposed to distinguish these areas from the larger Preserve area. However, signage shall be installed to indicate the location of the habitat restoration sites.

5.2.3 Weed Control

Weeds (non-native/exotic plant species) are expected to be the primary pest problem, particularly during the first few years of the maintenance period. The maintenance contractor shall control weeds within the mitigation site. The contractor shall control weeds so they do not prevent the

establishment of native species or invade adjacent areas. The contractor shall control weeds prior to setting seed. The contractor shall use a combination of herbicide treatment, mechanical treatments (weed whipping), and physical removal to control non-native plant species.

Herbicide application is an efficient method to control non-native plants, particularly during the first year's maintenance when weeds can be abundant. Herbicide application is also favorable because it kills non-native plants without soil disruption, which can invigorate additional weed seeds to germinate. However, herbicide application must be conducted by knowledgeable, experienced staff who can recognize and distinguish native species from non-native species to avoid problems with damage to native species. In general, a broad spectrum, systemic herbicide, such as glyphosate, will be applied as a foliar spray to target plants. Herbicide applicators shall be properly trained in general herbicide safety and in the label requirements of all herbicides used, and shall be able to identify target and non-target plant species. All herbicide applications will be conducted under the supervision of a state-licensed or certified qualified applicator.

Maintenance activities in the coastal sage scrub restoration areas that are conducted during the breeding season of coastal California gnatcatcher (February 15 and August 31) shall be coordinated with the Project Biologist. The Project Biologist may recommend a survey for gnatcatchers within the coastal sage scrub restoration areas prior to maintenance activities.

5.2.4 Trash and Debris Removal

Deadwood and leaf litter of native vegetation shall not be removed, unless extensive growth is causing a maintenance problem outside of the mitigation area. Deadwood and leaf litter provide valuable microhabitats for invertebrates, reptiles, small mammals, and birds. The Project Biologist shall approve pruning or clearing of native vegetation. Deadwood and leaf litter of native vegetation will be left in place to replenish soil nutrients and organic matter.

Trash consists of all man-made materials, equipment, or debris dumped, thrown, washed into, or left within the restoration areas. The maintenance contractor shall remove trash during each maintenance visit and shall dispose trash legally.

5.2.5 Erosion Control

Where needed, erosion control measures (e.g., installation of silt fencing, fiber rolls, etc.) may be required until target vegetation establishes within the restoration areas. The Project Biologist shall determine the need for erosion control in the field. The landscape maintenance contractor shall determine the type and placement of erosion control devices, in consultation with the Project Biologist and following standard best management practices.

5.2.6 Replacement Plantings and Reseeding

If annual container plant survival performance criteria are not met, the Project Biologist will determine the number of container plants required to meet annual survival requirements and will develop a list of the number of each species to be planted. The Project Biologist will determine the appropriate species and number to be planted based on site conditions, natural recruitment, and survival and growth trends of the target plant species in the replanting locations.

If the seed application fails, resulting in low seed germination, the Project Biologist may recommend re-seeding. Depending on the suspected cause of the failed seed application, modifications to the seeding methods and/or seed mix components may be made.

Either the landscape maintenance contractor or installation contractor may implement hydroseeding or container planting, as determined by the project applicant. Ideally, replacement planting and seeding shall be conducted after the onset of seasonal rains according to the methods described in Section 4.6. Replacement plantings or seeding will not be subject to a 120-day establishment period, but the Project Biologist will inspect these areas to assure adequate establishment.

5.2.7 Vandalism

Vandalism is not anticipated to be a problem during the 5-year maintenance period because the restoration areas will be located within a fenced preserve area. However, if vandalism becomes a problem, the applicant will be responsible for repairing any damage.

6 MONITORING PLAN FOR THE COMPENSATORY MITIGATION SITE

The Project Biologist shall monitor the restoration areas to (1) monitor the progress by assessing native habitat establishment (percent native and non-native coverage via quantitative and qualitative methods), relative to the established performance criteria; and (2) direct and monitor the maintenance activities and determine remedial actions in a manner that ensures that appropriate maintenance occurs in a timely manner. Target acreage and functions and values are provided in Table 6.

6.1 Performance Standards

Performance standards have been established for the restoration areas based on expected vegetative development within properly functioning habitat. The performance standards listed herein do not apply to the restoration of the off-site temporary impact areas because of their small size and because they will not be part of the Preserve.

Native plant cover criteria are based on the assumption that the greatest contribution to native plant cover will be provided initially by hydroseeded and container plants, but that in later years, natural recruitment and/or seeds from adjacent native areas and the growth of individual container plants will contribute more to plant cover. Lower performance standards for chaparral are based on the assumption that container plants used will grow more slowly and contribute less to overall vegetation cover. Maximum non-native plant cover criteria for each vegetation type are identical, as listed under "% Maximum Non-native Plant Cover" in Table 11.

Table 11
Performance Standards

Year	% Native Plant Cover			% Maximum Non-native Plant Cover	% Container Plant Survival
	Coastal Sage Scrub	*Chaparral*	*Grassland*	*All Restoration Areas*	*All Restoration Areas*
Year 1	20	10	30	10	95
Year 2	40	20	50	10	90
Year 3	55	40	60	10	85
Year 4	70	60	70	5	85
Year 5	80	70	80	5	85

Performance standards consist of the "% Native Plant Cover" and "% Maximum Non-native Plant Cover" standards listed in Table 11. Even if overall success criteria are achieved, if any subarea misses any performance criterion by more than 15% (e.g., native plant cover in a coastal sage scrub area in Year 2 is less than 40% in one subarea), specific remedial measures will be developed for that subarea.

Container plant survival performance criteria will be assessed during the final monitoring visit of the calendar year (November), and native and non-native plant cover criteria will be assessed during the latter portion of the growing season (i.e., late spring or summer) through the 5-year maintenance and monitoring program.

These performance criteria shall be used to assess the annual progress of the restoration areas and are regarded as interim project objectives designed to reach the final goals. The Project Biologist will also provide an annual qualitative assessment of the species composition of each subarea to assure that the vegetation is appropriate for the target plant community; for instance, a site dominated by early-successional native plant species and with small surviving container plants may not be considered to meet performance standards even if the criteria listed above were attained.

Fulfillment of these criteria will indicate that the uplands restoration areas on the project site are progressing toward the habitat types and functions that constitute the long-term goals of the plan. If the restoration efforts fail to meet the performance standards in any one year, the Project Biologist may recommend remedial action to be implemented the following year that will enhance the vegetation to a level of conformance with the original standard. These remedial actions may include re-seeding, applying soil amendments, additional weed control measures, erosion control, or adjustments to the irrigation and maintenance practices.

6.2 Monitoring Methods

The Project Biologist will conduct qualitative monitoring visits throughout the 5-year monitoring period. Qualitative monitoring will include reviewing the health and vigor of container plants and seed plantings, checking for the presence of pests and disease, reviewing soil moisture content and the effectiveness of the irrigation system, erosion problems, invasion of weeds/invasive species, and the occurrence of trash and/or vandalism. Contractor maintenance will be reviewed as well. Each monitoring visit will be followed by a written summary of observations, recommendations, and conclusions to be forwarded to the landscape maintenance contractor and applicant within 2 weeks of completion of the visit.

Attainment of percent native and non-native cover success criteria in the first year will be measured by visual estimation coupled with photo-documentation. To document overall site conditions, a minimum of one permanent photo point (for the duration of the 5-year monitoring program) will be established in each restoration area that is at least 0.5 acre in size.

Starting in Year 2, quantitative data collection will begin. Quantitative data collection will consist of transect data collection using the point-intercept methodology. Transects will be established in restoration areas that are at least 0.5 acre in size. The transect locations shall be spaced throughout

the restoration areas, and their exact locations shall be randomly determined. The transect locations shall be mapped using a global positioning system and shown on a figure in the annual reports. The transects shall be marked with metal t-posts at each end so the same locations can be sampled each year. Transect data shall be collected in late spring or early summer each year to show native cover by species, weed/invasive cover by species, total vegetated cover, and total unvegetated cover. In addition, a comprehensive plant species list shall be compiled for the restoration area.

Quantitative evaluation of container plant survival shall be determined through counts of dead container plants. The fall site visit shall assess plant mortality and recommend container plant replacement, if needed.

6.3 Monitoring and Reporting Schedules

The Project Biologist shall be responsible for monitoring activities of the installation contractor and the building contractor during preparation of the restoration areas as described in Table 12, including staking project boundaries, grading, irrigation installation, grow–kill cycles, container plantings, and seed application. During the 120-day plant establishment period, the Project Biologist will qualitatively monitor progress monthly and will conduct a final quantitative inventory of container plant survival during the last visit.

Table 12
Preliminary Project Monitoring Schedule

Task	Timing/Frequency
Site Preparation and Establishment	
Staking project perimeter	When scheduled to occur; present during boundary delineation of restoration areas
Grading	When scheduled to occur; present during grading of restoration areas
Installation of temporary irrigation system	Fall; confirm proper installation
Weed/invasive removal and grow–kill cycles	Fall; approximately monthly
Planting container stock	Early winter; present during all planting
Hydroseed application	Winter; present during all hydroseeding
120-day establishment period installation	Monthly (four (4) times)
Monitoring Program	
Year 1	Eight (8) times (monthly January through June; August; November)
Year 2	Six (6) times (bimonthly)
Year 3	Four (4) times (approximately quarterly)
Year 4	Four (4) times (approximately quarterly)
Year 5	Four (4) times (approximately quarterly)
Final signoff	End of Year 5

The Project Biologist will communicate and coordinate with the landscape contractor to assure the timely performance of project activities. The schedule discussed below is a recommended minimum monitoring schedule that the Project Biologist may revised in consultation with the applicant and landscape contractor, if site conditions warrant.

During Year 1, the Project Biologist will monitor the site eight times, on the approximate schedule shown in Table 12. Container plant survival will be quantified during the November visit to permit supplemental planting, if needed, to coincide with the onset of winter rains. The Project Biologist will assess native and non-native plant cover performance criteria during the final spring monitoring visit.

During Year 2, the Project Biologist will monitor the site six times, on an approximately bimonthly schedule. Site visits may be more frequent (up to once every 6 weeks) during the winter and spring, and less frequent (at least once every 3 months) during the dry season.

During Years 3 through 5, the Project Biologist will monitor the site four times annually, approximately on a quarterly schedule (visits may be concentrated somewhat during the winter and spring, if appropriate). If container plant survival rates have been achieved during the first 2 years and other native plant cover criteria are being met, continued monitoring of container plant survival will not be required. Otherwise, container plant survival will be quantified during the fall visit until survival criteria have been met successfully for 2 consecutive years and native plant cover criteria are also met.

The Project Biologist shall submit to the applicant/owner and County a letter report within 60 days of completion of the 120-day plant establishment period, and annual reports within 2 months following the anniversary date during the 5-year monitoring period.

6.4 Annual Monitoring Reports

An annual report outlining the results of each year's monitoring surveys shall be submitted to the applicant and County by June 1 following the anniversary date of each year's monitoring period throughout the 5-year maintenance and monitoring period. The monitoring reports shall describe the existing conditions of the site, compare existing conditions with the performance guidelines, identify any shortcomings of the restoration program, and recommend remedial measures necessary to help guide the project to a successful completion.

The reports will also include:

- A list of names, titles, and companies of all persons who prepared the content of the annual report and participated in maintenance and monitoring activities
- Prints of photo-point locations.
- Maps identifying the monitoring areas, transect locations, planting zones, etc., as appropriate.

7 COMPLETION OF COMPENSATORY MITIGATION

7.1 Notification of Completion

If the applicant believes the final success criteria have been met at the end of the 5-year monitoring period, the applicant shall notify the County upon submitting the annual report for the final year and request acceptance of the site. Early release may be possible if success criteria/performance standards are met early and the County agrees with the level of establishment.

Following the receipt of notification of completion, the County may visit the site to confirm completion of the mitigation efforts and issue letters of formal acceptance. Any remaining bond monies would also be granted release at that time.

7.2 Long-Term Management

The primary goal of this plan is the successful establishment of self-sustaining target upland habitats. Long-term management of the mitigation area is necessary to ensure the long-term viability of the restoration effort described in this Restoration Plan. The restoration areas will be included in the proposed Preserve system. Upon successful completion of 5 years of maintenance and monitoring of the restoration areas, and acceptance of the site by the County of San Diego (County), the restoration areas will be managed along with the overall Preserve lands in accordance with the RMP and *Subregional Plan* (SRP; Otay Ranch 1993).

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8 CONTINGENCY MEASURES

8.1 Initiating Procedures

If annual performance criteria are not met within any subarea in any year, or if the final success criteria are not met, the Project Biologist shall prepare an analysis of the cause(s) of failure and, if determined necessary by the County, propose remedial contingency measures. If the mitigation sites have not met the performance criteria, the responsible party's maintenance and monitoring obligations will continue, or alternative contingency measures will be negotiated, until the County or resource agencies gives final project permit compliance/approval.

8.2 Funding Mechanism

The same funding source for the proposed project, as established by the applicant, will provide funding for any additional planning, implementation, and monitoring of any contingency procedures that may be required to achieve the mitigation goals.

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APPENDIX E

Conceptual Resource Management Plan

CONCEPTUAL RESOURCE MANAGEMENT PLAN for
Otay Ranch Resort Village – Alternative H
Conserved Open Space Areas
San Diego County, California
GPA 04-003, SP 04-002, TM5361RPL, REZ 04-009; S08-028
Environmental Log Number ER 04-19-005; KIVA 03-1004387

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1 INTRODUCTION

This Conceptual Resource Management Plan (CRMP) has been prepared for the proposed Otay Ranch Resort Village Alternative H ("Alternative H") Project in accordance with the mitigation requirements identified in the Biological Resources Technical Report Supplemental Analysis Otay Ranch Resort Village – Alternative H (Dudek 2019). This document is consistent with the format and content requirements of the County of San Diego (County) Report Format and Content Requirements – Biological Resources for preparing a CRMP (County of San Diego 2010a). This CRMP covers the management of the Conserved Open Space areas to remain as part of the on-site biological open space on the project Site.

Approximately 70 acres of coastal scrub, chaparral, grassland, and non-native communities is proposed as on-site open space (Conserved Open Space) as part of the mitigation for the proposed project. The proposed Conserved Open Space design consists of three blocks of key biological resources situated along the northern, and eastern boundaries of the proposed development in the project Site, as well as an additional two blocks of open space in the center of the proposed development. Each of these blocks compares favorably in size and biologic importance to a number of other preserve areas. This CRMP includes a description of management tasks for the 70 acres of Conserved Open Space.

A CRMP is required for projects in the County when a planned project proposes Conserved Open Space preservation that would significantly benefit from active management and/or monitoring of biological and/or cultural resources.

1.1 Purpose of Biological Resources Management Plan

The purpose of this CRMP is to provide direction for the permanent preservation and management of the on-site biological Conserved Open Space preserve. The objectives of this CRMP are to:

A. Guide management of vegetation communities/habitats, plant and animal species, cultural resources, and programs described herein to protect and, where appropriate, enhance biological and cultural values.

B. Serve as a descriptive inventory of vegetation communities, habitats, and plant and animal species that occur on or use this property.

C. Establish the baseline conditions from which adaptive management will be determined and success will be measured.

D. Provide an overview of the operation, maintenance, administrative, and personnel requirements to implement management goals, and serve as a budget planning aid.

The details of this Conceptual RMP may be modified when the Final RMP is prepared and submitted to the County for approval. The County will review the Final RMP to ensure that it meets the specified purpose and objectives.

1.2 Implementation

1.2.1 Resource Manager Qualifications and Responsible Parties

Proposed Resource Manager

This CRMP will be implemented and managed by one of the following resource managers:

- Conservancy group
- Natural resources land manager
- Natural resources consultant
- County Department of Parks and Recreation
- County Department of Public Works
- Federal or state wildlife agency (U.S. Fish and Wildlife Service, California Department of Fish and Wildlife (CDFW; formerly California Department of Fish and Game))
- Federal land manager, such as Bureau of Land Management
- City land managers, including but not limited to departments of public utilities, parks and recreation, and environmental services.
- State land managers, such as California State Parks

If the developer desires that the department of parks and recreation manage the land, the following criteria must be met:

a. The land must be located inside a pre-approved mitigation area (PAMA) or proposed PAMA, or otherwise deemed acceptable by the director of parks and recreation (DPR).
b. The land must allow for public access.
c. The land must allow for passive recreation opportunities, such as a trails system.

The resource manager shall be approved in writing by the director of Planning and Development Services (PDS), the director of public works (DPW), or the DPR. Any change in the designated resource manager shall also be approved in writing by the direct County department that originally approved the resource manager. Appropriate qualifications for resource managers include, but are not limited to:

- Ability to carry out habitat monitoring or mitigation activities
- Fiscal stability, including preparation of an operational budget (using an appropriate analysis technique) for the management of this CRMP
- At least one staff member with a biological, ecological, or wildlife management degree, or a Memorandum of Understanding (MOU) with a qualified person with such a degree
- If cultural sites are present, a cultural resource professional on staff or an MOU with a cultural consultant
- Experience with habitat and cultural resource management in Southern California.

Proposed Land Owner

Fee title of separate open space lots may be held by the HOA, a land/resource manager or another appropriate land owner (e.g., land trust, conservancy, or public agency), depending on the particular circumstance.

Proposed Easement Holder

If the land is transferred in fee title to a non-governmental entity, a Biological Open Space Easement or Conservation Easement must be recorded. This easement should be dedicated to the County, but it may also include other appropriate agencies as a grantee or third-party beneficiary. If title to the land is transferred to the County or other public conservation entity, no easement is necessary. Currently, it is proposed that an easement will be recorded on these Conserved Open Space areas.

Restoration Entity

If revegetation/restoration activities are required, management responsibility for the revegetation/restoration area shall remain with the restoration entity until restoration/revegetation has been completed. Upon County/agency acceptance of the revegetated/restored area, management responsibility for the revegetation/restoration area will be transferred to the resource manager. Currently, no restoration is anticipated for four of the areas. There is restoration proposed for the area that contains vernal pools, the K8 mesa.

1.2.2 Financial Mechanism

Acceptable financial mechanisms include the following:

- Special District. Formation of a Lighting and Landscape District or Zone, or Community Facility District as determined appropriate by the Director of the Planning and Development Services (PDS), DPW or DPR.
- Endowment. A one-time, non-wasting endowment, which is tied to the property, and is intended to be used by the Resource Manager to implement the RMP.
- Other acceptable types of mechanisms including annual fees, to be approved by the Director of PDS, DPW or DPR.
- Transfer of ownership to existing entity (e.g., County of San Diego) for management.

The project applicant is responsible for all RMP funding requirements, including direct funds to support the RMP start-up tasks as well as an ongoing funding source for annual tasks, which is tied to the property to fund long-term RMP implementation. Start-up tasks include fence and sign installation around the on-site Conserved Open Space preserve, and database compilation. Long-term tasks involve the management and maintenance of the Conserved Open Space preserve in perpetuity, including habitat monitoring and mapping, exotic species control, and general monitoring and reporting. These habitat management tasks commence immediately upon initiation of long-term management by the resource manager.

1.2.3 Conceptual Cost Estimate

Table 1 includes the resource management tasks that are proposed for the Alternative H CRMP. A Property Analysis Record (PAR) is not included at this time.

Table 1
Biological Resource Management Tasks

Check if Applies	Tasks	Frequency (Times per year)
	Biological Tasks	
✔	Baseline Inventory of resources (if original inventory is over 5 years old)	One time
✔	Update biological mapping	Once every 5 years.
✔	Update aerial photography	Once every 5 years.
✔	Removal of invasive species	Annually
	Predator control	
	Habitat Restoration/Installation	

Table 1
Biological Resource Management Tasks

Check if Applies	Tasks	Frequency (Times per year)
	Habitat Restoration/Monitoring and Management	
	Poaching control	
✓	**Species Surveys (include a separate line for each species)** 1. Focused protocol surveys for Quino checkerspot butterfly (*Euphydryas editha quino*) 2. San Diego fairy shrimp (*Branchinecta sandiegonensis*) 3. Riverside fairy shrimp (*Streptocephalus woottoni*) 4. Rare plants	Once every 5 years
✓	**Species Management (include separate line for each specific task)** 1. Quino checkerspot butterfly (*Euphydryas editha quino*) 2. San Diego fairy shrimp (*Branchinecta sandiegonensis*) 3. Riverside fairy shrimp (*Streptocephalus woottoni*) 4. Rare plants	As-needed basis
	Noise management, if required	
	For lands within the MSCP and outside PAMA, consult Table 3-5 of the MSCP Plan for required biological resource monitoring	
✓	Monitoring visits	Quarterly
	Operations, Maintenance, and Administration Tasks	
✓	Establish and maintain database and analysis of data	Annually
✓	Prepare and submit annual report to County	Annually
✓	Review fees for County review of annual report	Annually
✓	Review and if necessary, update management plan	Every 5 years
✓	Construct permanent signs	One time in coordination with other areas of the Otay Ranch RMP Preserve
✓	Replace signs	Every 10 years
✓	Construct permanent fencing	One time in coordination with other areas of the Otay Ranch RMP Preserve
✓	Maintain permanent fencing	Annually in coordination with other areas of the Otay Ranch RMP Preserve
✓	Replace permanent fencing	Every 20 years in coordination with other areas of the Otay Ranch RMP Preserve
✓	Remove trash and debris	Quarterly
	Coordinate with Department of Environmental Health (DEH) and Sheriff	
	Maintain access road	
	Install stormwater best management practices (BMPs)	
	Maintain stormwater BMPs	

Table 1
Biological Resource Management Tasks

Check if Applies	Tasks	Frequency (Times per year)
	Restore built structure	
	Maintain built structure	
	Maintain regular office hours	
	Inspect and service heavy equipment and vehicles	
	Inspect and repair buildings, residences, and structures	
	Inspect and maintain fuel tanks	
✔	Coordinate with utility providers and easement holders (SDG&E)	As-needed basis
	Manage erosion and sediment control (as required)	
✔	Coordinate with law enforcement and emergency services (e.g., fire)	As-needed basis
	Coordinate with adjacent land managers	
	Remove graffiti and repair vandalism	
Public Use Tasks		
	Construct trail(s)	
	Monitor, maintain/repair trails (unless a trail easement has been granted to the County)	
✔	Control public access	Quarterly
	Provide ranger patrol	
	Manage fishing and/or hunting program (if one is allowed)	
	Provide Neighbor Education – Community Partnership	
	If homeowners association (HOA) is funding management, provide annual presentation to HOA	
	Coordinate volunteer services	
	Provide emergency services access/response planning	
Fire Management Tasks		
✔	Coordinate with applicable fire agencies and access (gate keys, etc.) for these agencies	As-needed basis
	Plan fire evacuation for public use areas	
	Protect areas with high biological importance	
	Hand-clear vegetation	
	Mow vegetation	
Post-Fire Tasks		
✔	Evaluate for post-fire actions/needs	
	Control post-fire erosion	
	Remove post-fire sediment	
	Reseed after fire	
	Replant after fire	

1.2.4 Reporting Requirements

An RMP annual report will be submitted to the County (and resource agencies, as applicable), along with the submittal fee to cover County staff review time. The annual report shall discuss the previous year's management and monitoring activities, as well as management/monitoring activities anticipated in the upcoming year.

The annual report shall provide a concise but complete summary of management and monitoring methods, identify any new management issues, and address the success or failure of management approaches (based on monitoring). The report shall include a summary of changes from baseline or previous year conditions for species and habitats, and address any monitoring and management limitations, including weather (e.g., drought). The report shall also address any adaptive management (changes) resulting from previous monitoring results and provide a methodology for measuring the success of adaptive management.

For new special-status species observations or significant changes to previously reported species, the annual report shall include copies of completed California Natural Diversity Database forms with evidence that they have been submitted to the State of California (State). The report shall also include copies of invasive plant species forms submitted to the State or County.

A fee for staff review time will be collected by the PDS upon submittal of the annual report. The RMP may also be subject to an ongoing deposit account for staff to address management challenges as they arise. Deposit accounts, if applicable, must be replenished to a defined level as necessary.

1.2.5 RMP Agreement

The County will require an agreement with the applicant when an RMP is required. The agreement will be executed when the County accepts the final RMP. The agreement will obligate the applicant to implement the RMP and provide a source of funding to pay the cost to implement the RMP in perpetuity. The agreement shall also provide a mechanism for the funds to be transferred to the County if the resource manager fails to meet the goals of the RMP.

The agreement will specify that RMP funding or a funding mechanism be established prior to the following milestones:

- For subdivisions, prior to the approval of grading or improvement plans, or prior to approval of the parcel/final map, whichever is first
- For permits, prior to construction or use of the property in reliance on the permit.

This agreement will be provided at a later date.

1.3 Limitations and Constraints

Management constraints that may affect meeting the RMP goals could include environmental factors; legal, political, or social factors; or financial factors.

Altered Fire Regime. This region has experienced periodic fires over the years. The proposed development and subsequent removal of vegetation could alter the natural fire regime. A catastrophic fire within the Conserved Open Space preserve could alter the existing vegetation, convert vegetation communities, and reduce habitat for species.

Urbanized Environment. Although the Conserved Open Space preserve area is designed as a large, contiguous block of habitat, the associated residential development could have direct and indirect impacts on the open space environment. Disturbances of plants and wildlife by humans and domestic pets include the following: introduction/expansion of non-native species, littering, trampling of vegetation, altered hydrology through landscaping and irrigation, disturbance from lighting associated with the residences and cars, and increased noise impacts. Human presence can particularly disturb wildlife during the breeding/nesting season.

These are some examples of potential constraints with respect to obtaining the Conserved Open Space preserve goals and objectives. At this time, no legal, political, or financial constraints are known.

2 PROPERTY DESCRIPTION

2.1 Legal Description

The Alternative H Project is located on a 1,869-acre property in the Proctor Valley Parcel of Otay Ranch General Development Plan within unincorporated San Diego County, California (Figure 1). The project Site is approximately 13 miles east of the Pacific Ocean and six miles north of the international border with Mexico. Access is provided via Telegraph Canyon Road, which transitions into Otay Lakes Road, as an east–west arterial that forms the southern boundary of the project site (Figure 2). The project proposes the construction of 1,881 single-family homes and 57 multi-family homes for a total of 1,938 homes within a total impact area of 692 acres. The Project also includes off-site improvements to Otay Lakes Road on approximately 40-acres south and west of the project area.

2.2 Environmental Setting

2.2.1 Site Description

Site elevations range from approximately 500 feet above mean sea level at the southern end of the property to approximately 1,500 feet above mean sea level in the northeastern portions. The project Site is located at the interface of urban development and scenic open space. Prior to 2001, the southern half of the project area was used for ranching, specifically cattle grazing, and possibly crop cultivation purposes. In addition, crop cultivation likely occurred on the southwestern corner of the property decades ago. The site is bounded on the south by Otay Lakes Road and Jamul Creek is located just east of the eastern boundary. Lower Otay Lake (which is owned by the City of San Diego) is located south of the site; open space in the Jamul Mountains is adjacent to the site in the north and east (which is owned by the U.S. Bureau of Land Management (BLM) and private parties).

2.2.2 Topography and Soils

The project Site consists of a broad mesa sloping to the south, broken by several steep canyons draining from north to south, towards Otay Lakes Road. Portions of the relatively flat mesa extend north into the Jamul Mountains, becoming part of steeper slopes. The majority of the survey area is currently vacant, but characteristic of a landscape that has been used historically for grazing. A few dirt roads traverse the sites.

The project Site lies within the watershed of the Otay River, a westerly flowing stream that drains an area of approximately 145 square miles. The site is upstream of Savage Dam, which creates Lower Otay Lake. The southern half of the site contains three large mesas (K6, K8, and K9 from west to east), an expansive relatively flat area in the west, and increasing elevations with steep canyons to the north. Drainages bisect the mesas and generally run north to south, with the

exception of one drainage running east to west from the center to the western edge of the property. Several stock ponds have been intentionally created along the drainages on the property.

According to Bowman (1973), soils within the project Site are mostly Olivenhain cobbly loam, San Miguel–Exchequer rocky silt loams, Redding cobbly loam, and Friant rocky fine sandy loam.

2.2.3 Fire Factors

San Diego County is prone to increased fire risk due to drought conditions in the region. Analysis of fire within the region has been provided by the fire protection plan consultant for the project.

2.3 Land Use

Land use within the Conserved Open Space and in the surrounding areas is a mixture of undeveloped lands and urban development. The Otay Valley Parcel of Otay Ranch, the East Lake Vistas residential community, the East Lake Woods residential community, and the U.S. Olympic Training Center compose the edge of urban development to the west. Prior to 2001, the southern half of the project area was used for ranching.

The site is located in the Proctor Valley Parcel of the Otay Subregional Plan (SRP) approximately 0.25 mile east of the City of Chula Vista (Figure 2). As part of the planning for the development of Otay Ranch, several villages and planning areas were designated for various types of development while other areas were reserved for preservation of multiple species and habitats. An effort was undertaken to plan development of the ranch so as to conserve species and habitats in the region. The Otay Ranch Resort Village project area comprises approximately 1,869 acres, is located in an unincorporated portion of the County, and is designated for residential and resort development and for open space by the Otay Ranch *Subregional Plan* (SRP; Otay Ranch 1993).

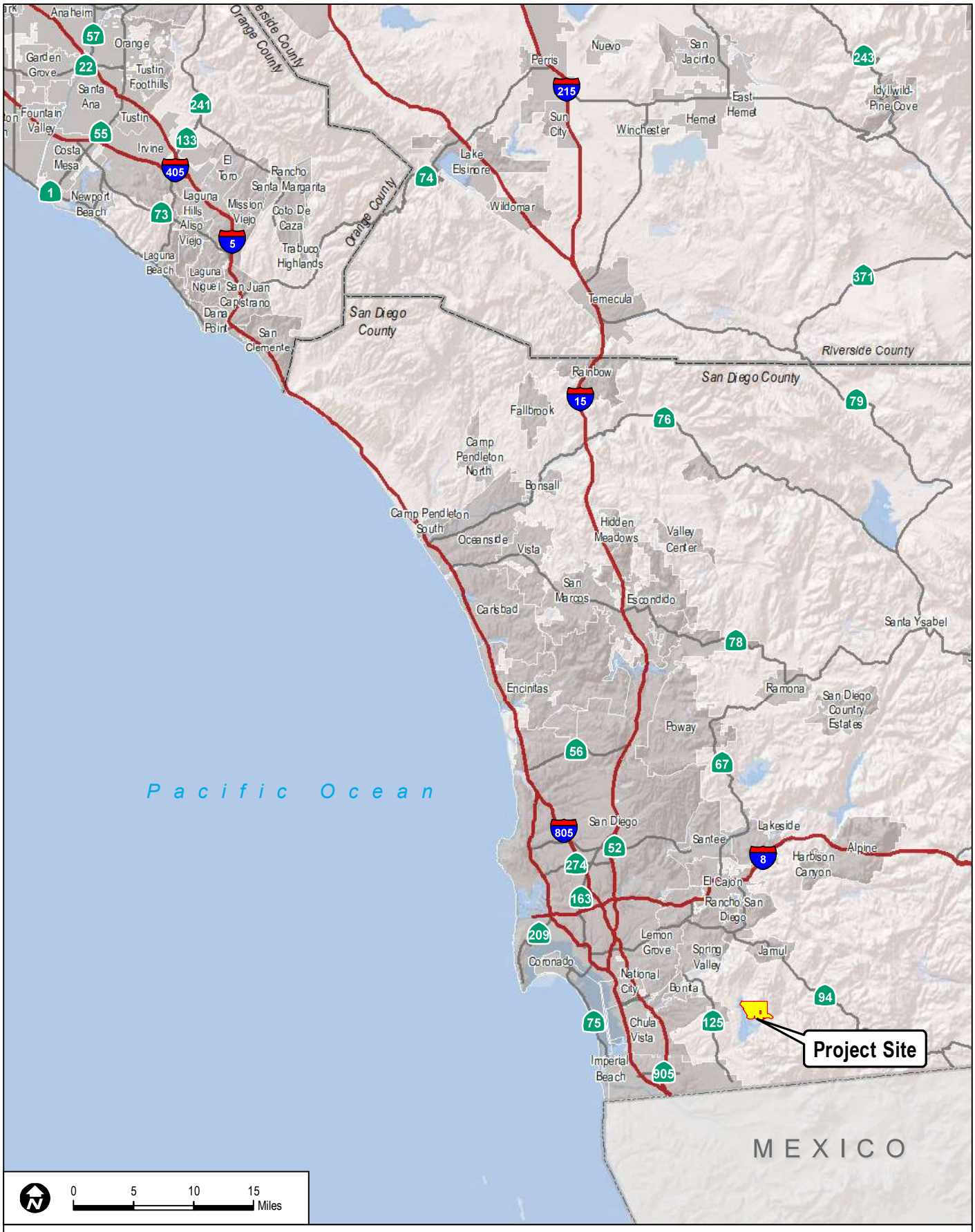

FIGURE 1
Regional Map

Conceptual Resource Management Plan for Otay Ranch Resort Village - Alternative H

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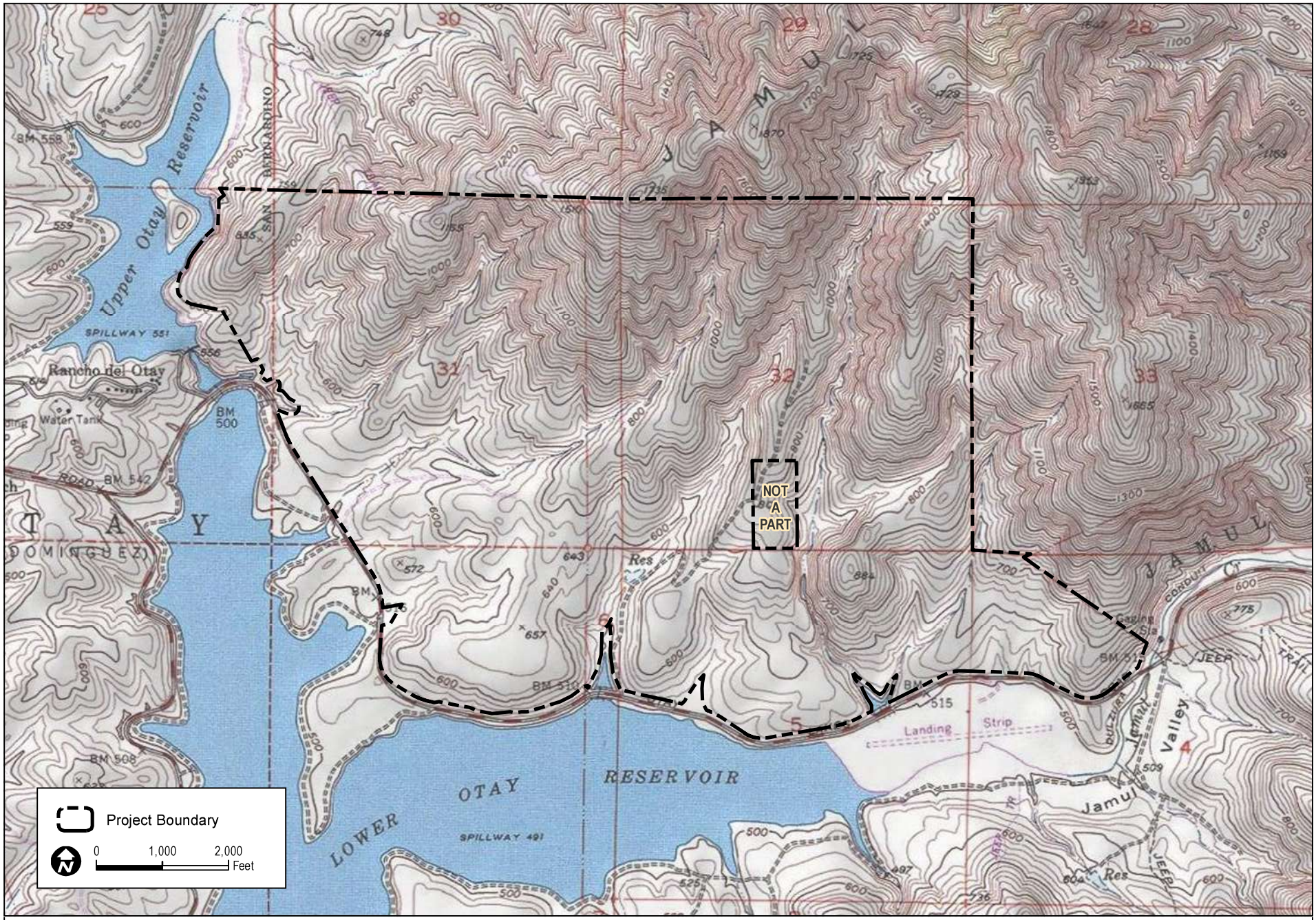

SOURCE: USGS 7.5 Minute Series, Jamul Mountains Quadrangle

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FIGURE 2
Vicinity Map

Conceptual Resource Management Plan for Otay Ranch Resort Village - Alternative H

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3 BIOLOGICAL RESOURCES DESCRIPTION

A biological resources technical report has been prepared and used to prepare this CRMP (Dudek 2015). The following information is based on resource mapping that was completed in 2018.

3.1 Habitat Types/Vegetation Communities

Five vegetation communities and land cover types were identified within the Conserved Open Space preserve areas and include the following general vegetation communities: coastal sage scrub, chaparral, and non-native areas (Figure 3, Table 2). The status of vegetation communities was determined using Holland (1986), as modified by Oberbauer et al. (2008), and the County's Guidelines for Determining Significance and Report Format and Content Requirements (County 2010b). Refer to the Biological Resources Technical Report for the proposed project prepared by Dudek (2015) for a more detailed description of the biological resources on site.

Table 2
Vegetation Communities and Land Cover Types
Conserved Open Space Preserve

Habitat Types/Vegetation Communities	Code [1]	Conserved Open Space San Diego Thorn-Mint (Ac.)	Conserved Open Space Vernal Pool (Ac.)	Conserved Open Space "finger north of the NAP" (Ac.)	Conserved Open Space (was formerly the realigned Otay Lakes Road) (Ac.)	Total Conserved Open Space Preserve (Ac.)
Upland						
Diegan Coastal Sage Scrub*	32500	-	-	6.72	22.65	29.37
Disturbed Diegan Coastal Sage Scrub*	32500	3.41	12.29	4.01	4.65	24.36
Chamise Chaparral*	37210	-	-	-	3.70	3.70
Nonnative Grassland*	42200	10.22	-	-	1.20	11.42
	Subtotal	*13.63*	*12.29*	*10.73*	*32.20*	*68.85*
Non-Natural Land Covers						
Disturbed Habitat	11300	-	0.23	0.43	0.29	0.95
	Subtotal	-	*0.23*	*0.43*	*0.29*	*0.95*
	Total	**13.63**	**12.52**	**11.16**	**32.49**	**69.80**

[1] Holland (1986) as modified by Oberbauer et al. (2008).
* Considered special-status by the County (2010a).

3.1.1 Coastal Sage Scrub

This plant community is considered sensitive by resource agencies and the County of San Diego. According to Holland (1986), Diegan coastal sage scrub is composed of a variety of soft, low

shrubs, characteristically dominated by drought-deciduous species such as California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and sages, with scattered evergreen shrubs, including lemonadeberry (*Rhus integrifolia*) and laurel sumac (*Malosma laurina*). It typically develops on xeric slopes.

Diegan coastal sage scrub and all its variants generally are recognized as special-status plant communities by local, state, and federal resource agencies. It supports a diversity of special-status plants and animals, and it is estimated that it has been reduced by 75% to 80% of its historical coverage throughout Southern California. It is the focus of the current State of California Natural Communities Conservation Planning Program (NCCP). Diegan coastal sage scrub is a MSCP Tier II vegetation community (County of San Diego 1997).

Diegan coastal sage scrub vegetation on site occurs in relatively distinct subassociations. Shrub cover in disturbed coastal sage scrub may vary from 5% to 50% and typically consists of California sagebrush (*Artemisia californica)*, California buckwheat (*Eriogonum fasciculatum*), deerweed (*Lotus scoparius*), rock-rose (*Helianthemum scoparium*), and laurel sumac (*Malosma laurina*). In addition to these native shrub species, a large percentage of the ground cover is taken up by broad-leaved filaree (*Erodium botrys*) and fascicled tarplant (*Deinandra [Hemizonia] fasciculata*). Other non-natives include grasses such as slender wild-oat (*Avena barbata*), soft chess (*Bromus hordeaceus*), black mustard (*Brassica nigra*), and star-thistle (*Centaurea melitensis*). The majority of the property is mapped as Diegan coastal sage scrub. A disturbed form of Diegan coastal sage scrub is found on site, primarily adjacent to areas that are mapped as disturbed or developed lands where there are more non-native species present.

3.1.2 Chamise Chaparral

A predominant chaparral type found in Ventura, Los Angeles, San Bernardino, Riverside and San Diego counties, chamise chaparral is a plant community overwhelmingly dominated by chamise (Holland 1986). Typically between 1 and 4 meters in height, stands of chamise are adapted to repeated fires because the species is capable of stump-sprouting following wildfire. Associated species may include manzanita (*Arctostaphylos* spp.), ceanothus (*Ceanothus* spp.), California buckwheat, deerweed, scrub oak (*Quercus berberidifolia*), lemonadeberry (*Rhus integrifolia)*, sages (*Salvia* spp.), ashy spike-moss (*Selaginella cinerascens*), and yucca (*Yucca* spp.). However, associated species do not comprise a significant portion of the overall cover, and mature stands contain very little herbaceous understory or litter. Chamise chaparral is a MSCP Tier IIIA vegetation community (County of San Diego 1997).

Chamise chaparral occurs in the north-central portion of the site, often on mesic exposures, and in the southeastern portion on relatively flat topography. Covering relatively large areas, these habitat patches consist of nearly monotypic stands of chamise. In habitat edges, usually adjacent to either coastal sage

scrub or scrub oak chaparral, components of those habitats will also be present. For example, California buckwheat, scrub oak, and chaparral broom occur along with chamise in habitat edge areas. Very little understory is present in this community, with the exception of ashy spike-moss and fringed spineflower (*Chorizanthe fimbriata*) occurring in many of the chamise patches in the eastern areas, and non-native grasses that have filled gaps in a few areas where chamise chaparral occurs as a disturbed community.

3.1.3 Non-Native Grassland

Where the native habitat has been disturbed frequently or intensively by grazing, fire, agriculture, or other activities, the native community usually is incapable of recovering. These areas often are characterized by weedy, introduced annuals, primarily grasses, including especially slender wild oat, bromes, mustards, filaree, and Russian-thistle (*Salsola tragus*). Non-native grassland is a MSCP Tier IIIB vegetation community (County of San Diego 1997).

In the project area, non-native grassland occurs in distinct patches where extensive grazing and possibly mechanical disturbance have reduced the cover of native shrub and grass species to below 5%. These areas typically are dominated by soft chess, foxtail chess, fascicled tarplant, and broad-leaved filaree, but also contain star-thistle, black mustard, and shining peppergrass (*Lepidium nitidum*).

3.1.4 Disturbed Habitat

Disturbed habitat was mapped along major dirt roads greater than 5 feet wide where vegetation has been cleared. In addition, a single area in the western part of the site contains some old corral and tank structures that have been cleared of vegetation surrounding them. This area also was mapped as disturbed habitat. Developed land was mapped in the project area for the portions of Otay Lakes Road that intersect the project boundary.

3.2 Jurisdictional Wetlands and Waters

The southern portion of the Conserved Open Space contains one large mesa, K8, an expansive and relatively flat area in the west, and increasing elevations with steep canyons in the north. Mesa K8 consists of space coastal sage scrub. The Conceptual Vernal Pool Mitigation Plan for the Otay Ranch Resort Village provides guidance for on-site restoration and enhancement of vernal pools within the K8 vernal pool complex to compensate for significant impacts to 0.11 acre of vernal pools in the K6 vernal pool complex. Additional vernal pool mitigation has been proposed at the K8 vernal pool complex as mitigation for impacts to vernal pools associated with the Otay Ranch Villages Two and Three Projects (Dudek 2008). Because the K6 vernal pools impacted by the proposed project are characterized as having low to moderate value, the proposed mitigation will use a 2:1 mitigation ratio for the pools not occupied by San Diego fairy shrimp and 5:1 mitigation ratio for the occupied pool. Thus 0.025 acre will mitigate for impacts to the occupied pool, and 0.214 acre will mitigate for the impacts to the unoccupied pools for a total mitigation of 0.239 acre

of vernal pool basin area. Additional information regarding the vernal pool mitigation is provided in the Conceptual Vernal Pool Mitigation Plan for the Otay Ranch Resort Village.

Other jurisdictional resources are present within the Conserved Open Space in the form of waters of the U.S. These features are located within the far eastern area and are shown on Figure 4.

3.3 Flora

Four special-status plant species were detected within the Conserved Open Space preserve: San Diego thornmint, Munz's sage, San Diego barrel cactus, San Diego County viguiera, San Diego marsh elder, small-flowered microseris, small-flowered morning glory, golden-flowered pentachaeta, and variegated dudleya (Figure 5).

3.4 Fauna

The study area supports habitat for common upland species. Diegan coastal sage scrub and chamise chaparral within the Conserved Open Space provide foraging and nesting habitat for migratory and resident bird species and other wildlife species.

There were 150 species observed in the project Site. Species richness in the study area is moderate due to the property size, amount of undeveloped land, and the number of native upland habitats. Species richness generally increases with the presence of more habitat types and ecotones. Although species richness is moderate, the number of species and the wildlife population levels (i.e., number of individuals) is typical for undeveloped areas in this region, particularly those areas that support the habitat types on site. Special status wildlife species that have been recorded for the Conserved Open Space include California gnatcatcher, Quino checkerspot butterfly, San Diego fairy shrimp, horned lizard, and western spadefoot (Figure 6).

3.7 Overall Biological Value

The vegetation communities/habitats that will be preserved and managed are described in Table 2. The Conserved Open Space preserve is shown on Figure 3.

The Conserved Open Space preserve has a high functional value because it supports sensitive plant communities, a robust population of the endangered San Diego thornmint, multiple vernal pools with San Diego fairy shrimp, documented occurrences of Quino checkerspot butterfly and habitat that is connected to other open space areas within the Otay Ranch RMP Preserve. The areas provide live-in habitat for wildlife and plant species. The high quality coastal sage scrub, that would be preserved within the areas is contiguous with preserved open space would remain intact for use by migratory birds and resident bird species, such as the coastal California gnatcatcher.

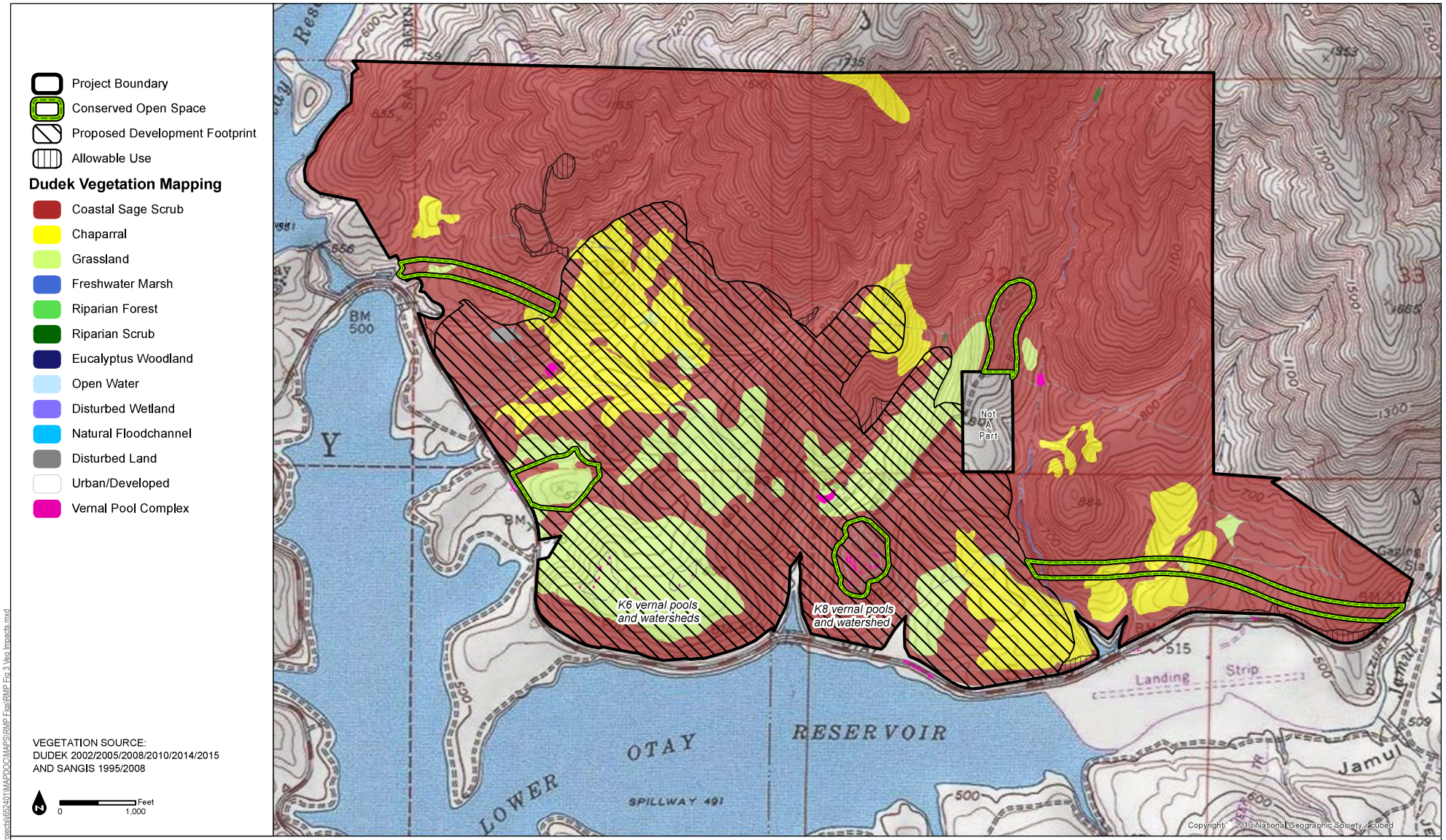

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FIGURE 3

Otay Ranch Resort Village - Alternative H Conserved Open Space Preserve

Conceptual Resource Management Plan for Otay Ranch Resort Village - Alternative H

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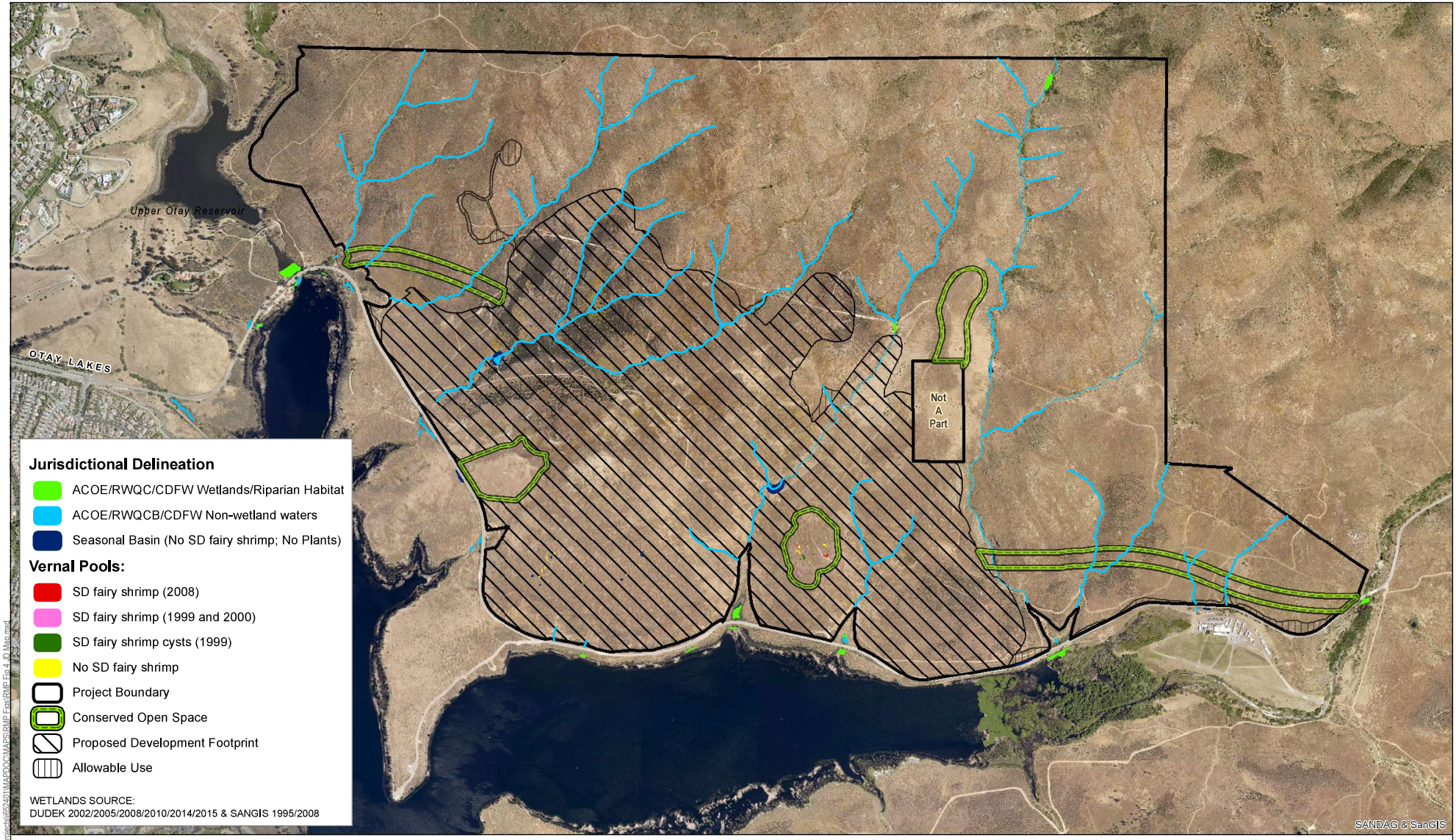

SOURCE: AERIAL-SANGIS 2017

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FIGURE4

Jurisdictional Resources Map

Conceptual Resource Management Plan for Otay Ranch Resort Village - Alternative H

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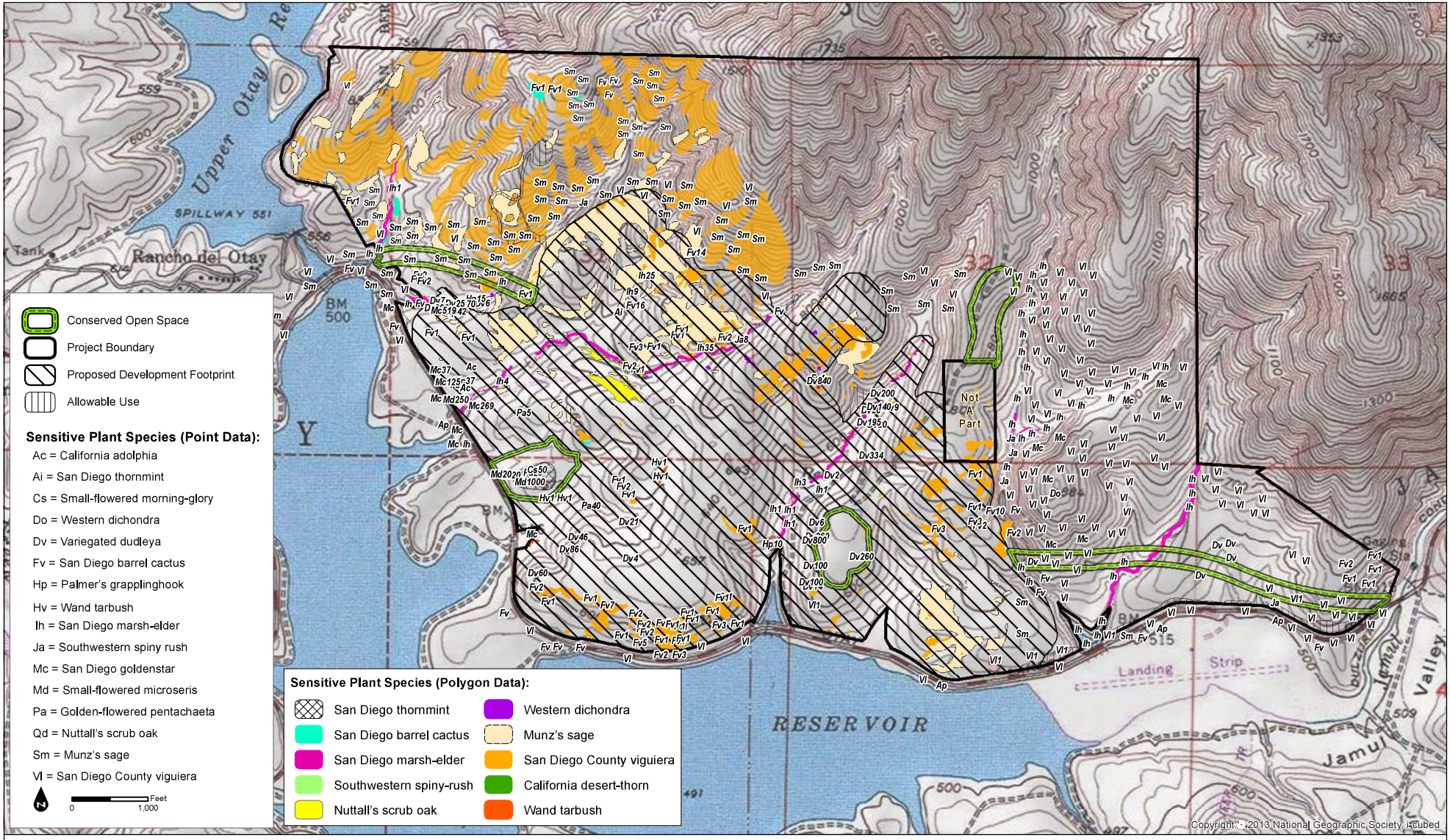

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FIGURE 5

Sensitive Plant Species Map with Alternative H Conserved Open Space Preserve

Conceptual Resource Management Plan for Otay Ranch Resort Village - Alternative H

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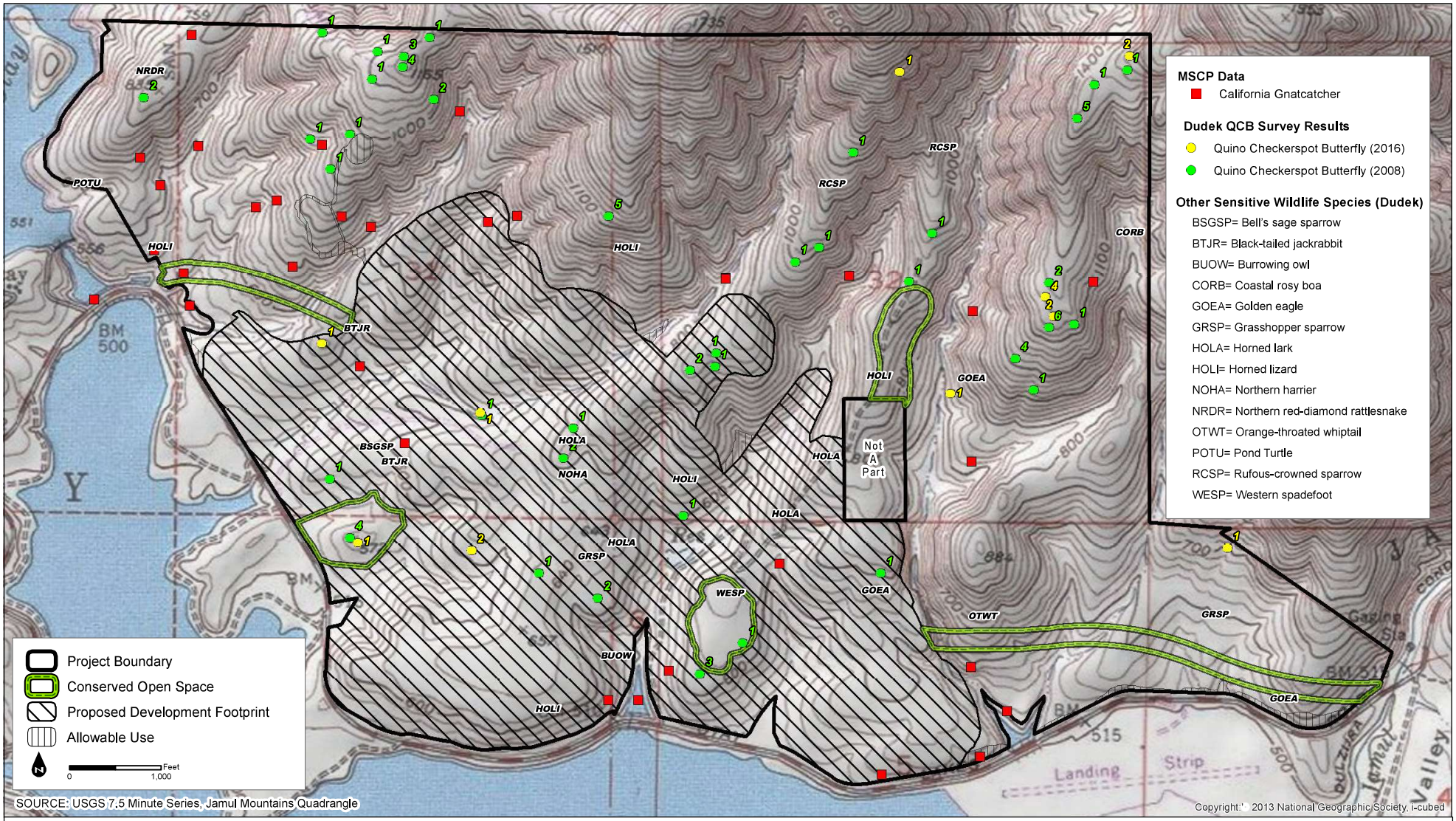

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FIGURE 6

Sensitive Wildlife Species Map with Alternative H Conserved Open Space Preserve

Conceptual Resource Management Plan for Otay Ranch Resort Village - Alternative H

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4 BIOLOGICAL RESOURCE MANAGEMENT

4.1 Management Goals

Goal: To preserve and manage lands to the benefit of the flora, fauna, and native ecosystem functions reflected in the natural communities occurring within the open space preserve.

A baseline inventory has been collected as part of the evaluation of the project during surveys from 1998 to 2016. Ongoing species and habitat monitoring shall occur in accordance with County and regional standards. These standards typically include vegetation mapping every 5 years. Habitat maintenance may be required if vegetation mapping indicates habitat conversion that is detrimental to the preservation of native ecosystem functions. Specific management tasks are described below.

4.2 Biological Management Tasks

Maintenance work within the Conserved Open Space preserve area shall be conducted by the designated Resource Manager at regular intervals and shall include regular inspections of the signage and fencing, human disturbance, presence of trash, and presence of exotic species (plants and animals). A general inventory will be conducted in the initial startup of the open space management. This will establish a baseline inventory and resource map.

The baseline inventory update will be conducted during the first year of active management. These data will allow the Resource Manager to measure habitat changes caused by natural and human effects and to evaluate management efforts during subsequent years. To optimize the probability of detecting sensitive species reported or expected to occur within on site, this survey should be conducted between March and June, when the majority of sensitive plant and wildlife species are most likely to be detected. The biological management tasks are outlined in Table 1, and are discussed below.

4.2.1 Update Biological Mapping

Every 5 years, the Resource Manager will update the vegetation and sensitive resources mapping on a current aerial photograph of the site. This task includes mapping vegetation over the entire Conserved Open Space preserve and updating the aerial photography.

4.2.2 Exotic Plant Control

The Resource Manager will identify and track exotic species infestations if they should occur. Weed control measures will be implemented as necessary to prevent expansion of existing or establishment of new exotic species in the Conserved Open Space preserve.

If the use of herbicide is deemed necessary, application should be minimal and may only occur in compliance with all federal and state laws. Use of chemical herbicides should be determined in coordination with the County Department of Environmental Health. All herbicide use will be applied by backpack sprayers or stump painting directly on target weeds and will involve short-duration, biodegradable chemicals.

4.2.3 Species Surveys

The following survey shall be conducted every 5 years for special-status wildlife species:

- **Quino Checkerspot Butterfly.** Surveys shall follow the 2014 USFWS Quino checkerspot butterfly survey protocol (USFWS 2014) as modified by the 2016 Building Industry Association (BIA) deviation protocol outlined in the negotiated *Proposed 2016 Quino Checkerspot Survey Protocol* (BIA 2016) or other protocol as required.
- **San Diego and Riverside Fairy Shrimp.** Surveys will be conducted for the presence/absence of San Diego fairy shrimp in accordance with the USFWS survey protocol for listed fairy shrimp species (USFWS 2012).
- **Sensitive Plant Species**. Focused surveys for the state-listed endangered and federally listed threatened San Diego thornmint and other narrow endemic plant species.

4.2.4 Species Management

Based on the species surveys described earlier, management tasks for the Quino checkerspot butterfly and San Diego fairy shrimp are required, as needed based on survey results. Management may also be required for rare plant species.

4.2.5 Monitoring

The County requires monthly monitoring of the Conserved Open Space preserve. The Resource Manager shall visit the Conserved Open Space preserve quarterly in order to monitor the overall conditions of the Conserved Open Space preserve and determine if any management tasks are required.

4.3 Adaptive Management

The Conserved Open Space preserve supports a number of special-status plant and wildlife species and important vegetation communities. If it is determined that the special-status wildlife or plant species are documented to be declining over time, then remedial measures may need to be initiated. Prior to initiation of any remedial measures, a study shall be conducted to determine potential causes of such species decline. If the causes of species decline are a result of human activity, then

the Conserved Open Space preserve manager shall develop and implement a program in conjunction with consultation with the County to address the issues causing the species decline. The responsibility for payment for additional studies or other protective measures shall be the responsibility of the developer and/or HOA, who shall coordinate with the Conserved Open Space preserve resource manager accordingly.

The Resource Manager is responsible for interpreting the results of site monitoring to determine the ongoing success of the RMP. If it is necessary to modify the plan between regularly scheduled updates, plan changes shall be submitted to the County and agencies for approval as required.

4.4 Operations, Maintenance, and Administration Tasks

Section 4.2.1 describes a list of tasks such as baseline inventory, vegetation mapping, and regular visits to be conducted by the Resource Manager. Regular visits will occur quarterly.

4.4.1 Data and Reporting

The following tasks shall be completed annually.

1. Maintain a resource database of pertinent documents and biological resource data;
2. Prepare and submit a report to the County, described in more detail in Section 1.2.4; and
3. Review fees for county review of annual report.

In addition, every 5 years, the Resource Manager shall review, and if necessary, update the management plan.

4.4.2 Installation of Fencing and Signs

The project developer will be responsible for coordinating with the Preserve Owner Manager for the Otay Ranch RMP Preserve for the installation of permanent preserve signs on the permanent fencing. If fencing is not appropriate to be installed because the area is contiguous with other open space, that will be coordinated with the manager of the Otay Ranch RMP Preserve.

Maintenance/replacement of fencing and signs shall be done on an as-needed basis by the Reserve Manager in coordination with the Preserve Owner Manager.

4.4.3 Trash/Debris Removal

The Reserve Manager will conduct general trash removal within the Conserved Open Space preserve during regular management site visits. Additionally, damage caused by vandalism will

be repaired. Small trash removal and vandalism repair will occur as needed during regular site visits quarterly. Large trash removal would be conducted annually.

4.4.4 Utilities

The Reserve Manager will coordinate with utility easement holders as needed as needed to conduct management activities within the preserve. Currently, no tasks have been identified.

4.4.5 Law Enforcement and Emergency Services

The Reserve Manager will coordinate with the local sheriff's department, fire department, and emergency services department on an as-needed basis for activities related to management of the preserve (e.g., illegal trespassing).

4.5 Public Use Tasks

The Conserved Open Space preserve will not have public trails or other facilities. The Conserved Open Space preserve is intended to serve as a habitat preserve and as such is not compatible with most activities.

Activities that will be specifically prohibited include:

1. Use of herbicides (except to remove non-native species as necessary), pesticides, rodenticides, biocides, fertilizers, or other agricultural chemicals;
2. Use of OHVs and any other motorized vehicles except in the execution of management duties;
3. Grazing or other agricultural activity of any kind;
4. Recreational activities including, but not limited to, horseback riding, biking, target shooting, hunting, or fishing;
5. Commercial or industrial uses;
6. Construction, reconstruction, or placement of any building or other improvement, billboard, or sign;
7. Depositing or accumulation of soil, trash, ashes, refuse, waste, bio-solids or any other material;
8. Planting, introduction, or dispersal of non-native or exotic plant or animal species;
9. Altering the general topography of the open space preserve, including but not limited to building of roads and flood control work;

10. Removing, destroying, or cutting of trees, shrubs, or other vegetation, except as required by federal, state, or local law or by governmental order for (1) emergency fire breaks; (2) maintenance of existing roads; (3) prevention or treatment of disease; or (4) required mitigation programs; and
11. Manipulating, impounding, or altering any natural watercourse, body of water, or water circulation on the open space preserve, and activities or uses detrimental to water quality, including but not limited to degradation or pollution of any surface or sub-surface waters.

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APPENDIX F

Offsite Impacts -
Otay Lakes Road Impact Memorandum

605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 F 760.632.0164

APPENDIX F
MEMORANDUM

To: County of San Diego; Planning & Development Services
From: Anita Hayworth, PhD; Dudek
Subject: Offsite Impacts – Otay Lakes Road Impact Memorandum
Date: March ~~31~~1, ~~2019~~2020
cc: Stephen Haase and Eric Johnston (Baldwin & Sons); Ted Shaw (Moller)~~;~~

Off-site impacts, totaling approximately 59 acres, are anticipated to occur as a result of the widening and improvements to Otay Lakes Road (Figure 1). These offsite impacts will occur to areas within the City of San Diego Cornerstone Lands, County of San Diego lands (Otay Lakes Right-of-Way), lands within the City of Chula Vista, ~~and~~ off-site areas within the Otay Ranch that are not a part of the proposed project and thus are considered off site, and lands owned by State of California.

Alternative H would amend the Otay SRP classification of Otay Lakes Road from a 6-Lane Prime Arterial to a 4-Lane Boulevard with Raised Median beginning at the Chula Vista/County of San Diego municipal boundary west of Alternative H and continuing along the project frontage to the second project entry (proposed Piazza Urbino). East of the second project entry, Otay Lakes Road transitions to a 2-Lane Community Collector with Intermittent Turn Lanes in its current alignment.

Vegetation Communities

Table 1 summarizes the overall impacts to vegetation communities to these off-site areas combined for ownership (Figure 2).

Table 1: Impact Acreages on Vegetation Communities and Land Cover Types within the Offsite Project Area

Plant Community Type	Holland Code	Off Site Impact Acreage
Sensitive Upland Communities		
Coastal Sage Scrub	32500	18.38
Disturbed Valley Needlegrass Grassland	42110	0.07
Non-Native Grassland	42200	11.78
	Subtotal	*30.23*
Sensitive Wetland Communities		
Arundo	N/A	0.09
Freshwater Marsh	52410	0.74
Mulefat Scrub	63310	0.26

Table 1: Impact Acreages on Vegetation Communities and Land Cover Types within the Offsite Project Area

Plant Community Type	Holland Code	Off Site Impact Acreage
Open Water	64140	0.23
Southern Willow Scrub	63320	0.46
Southern Arroyo Willow Riparian	61320	~~0.16~~0.18
Disturbed Wetland	N/A	0.47
	Subtotal	~~*2.41*~~*2.43*
Non-Sensitive Communities and Land Covers		
Developed Land	12000	22.50
Disturbed Habitat	11300	0.71
Eucalyptus Woodland	79100	1.53
Non-Native Vegetation	11000	1.87
	Subtotal	*26.61*
	Total	~~59.25~~59.27

Table 2 provides a detail accounting of the impact to the vegetation communities as determined by location and ownership of the property within which the impact occurs.

Table 2: Impact Acreages on Vegetation Communities and Land Cover Types within the Ownerships of the Offsite Project Area

Plant Community Type	Holland Code	County of San Diego (Right of Way)	City of San Diego Cornerstone Lands	City of Chula Vista (Eastlake and City)	Other Otay Ranch Lands (S & M Birch)	State of California	Total Off Site Impact Acreage
Sensitive Upland Communities							
Coastal Sage Scrub	32500	3.67	12.76	1.03	0.92		18.38
Disturbed Valley Needlegrass Grassland	42110	0.03	0.04				0.07
Non-Native Grassland	42200	1.11	4.32	2.08	4.27		11.78
	Subtotal	*4.81*	*17.12*	*3.11*	*5.19*		*30.23*
Sensitive Wetland Communities							
Arundo	N/A		0.09				0.09
Freshwater Marsh	52410		0.74				0.74
Mulefat Scrub	63310	0.01	0.25				0.26
Open Water	64140		0.23				0.23
Southern Willow Scrub	63320		0.46				0.46

Table 2: Impact Acreages on Vegetation Communities and Land Cover Types within the Ownerships of the Offsite Project Area

Plant Community Type	Holland Code	County of San Diego (Right of Way)	City of San Diego Cornerstone Lands	City of Chula Vista (Eastlake and City)	Other Otay Ranch Lands (S & M Birch)	State of California	Total Off Site Impact Acreage
Southern Arroyo Willow Riparian	61320		~~0.16~~0.06			0.12	~~0.16~~0.18
Disturbed Wetland	N/A		0.47				0.47
	Subtotal	*0.01*	*~~2.40~~2.30*	*0.00*	*0.00*	*0.12*	*~~2.41~~2.43*
Non-Sensitive Communities and Land Covers							
Developed Land	12000	19.67	0.24	2.57	0.02		22.50
Disturbed Habitat	11300	0.21	0.50				0.71
Eucalyptus Woodland	79100	0.35	0.77		0.41		1.53
Non-Native Vegetation	11000	0.22	0.42	0.67	0.56		1.87
	Subtotal	*20.45*	*1.93*	*3.24*	*0.99*		*26.61*
	Total	**25.27**	**~~21.45~~21.35**	**6.35**	**6.18**	**0.12**	**~~59.25~~59.27**

County of San Diego Lands

As shown in Table 2, direct impacts to lands within the County of San Diego, Otay Lakes Road Right-of-Way, as a result of the widening of Otay Lakes Road total 25.27 acres. Of this total, 4.81 acres are impacts to Sensitive Upland Communities, 0.01 acre is impact to wetlands, and 20.45 acres are impacts to non-sensitive communities. This off-site area is located outside of the Otay Ranch boundary and is within the jurisdiction of the County of San Diego. All of the impacts are within the right-of-way of Otay Lakes Road. Impacts are required to comply with the regulations set forth by the County. In compliance with the MSCP Subregional Plan and the County of San Diego Subarea Plan (County MSCP; County of San Diego 1997), the County established the Biological Mitigation Ordinance (BMO; County of San Diego 2010) to provide the requirements and mitigation measures necessary for projects within the plan area. Certain areas within the County MSCP were designated as "Take Authorized Areas" within the South County Segment of the MSCP. The Take Authorized Areas designated in the County MSCP were developed through a comprehensive planning effort with the affected jurisdictions and describe areas that are not subject to further mitigation because direct and cumulative impacts to MSCP Covered Species were considered in the overall MSCP planning effort. The County specifically exempted the Take Areas from the BMO at Sec. 86.503. Exemptions, (a) (4), which states that the chapter shall not apply to "Any Take Authorization Area approved by the Board of Supervisors and the Wildlife Agencies as part of the County Subarea Plan, as shown on Attachment B of Document No. 0769999 on file with the Clerk of the Board or any approved Habitat Loss Permit issued pursuant to 16 U.S.C. Sec. 1533(d)." The right-of-way for Otay Lakes Road is located within the South County segment of the MSCP and the proposed impact area is designated as Take Authorized. As such, and in accordance with the County MSCP and BMO, no additional biological mitigation is required for

development to occur. The "take" as defined by the Endangered Species Act already has been adequately mitigated in the form of land set aside as "Hard Line" preserves during the negotiations between the landowners, wildlife agencies, and County during preparation of the Subarea Plan. The off-site impact areas are consistent with the requirements for the road improvements per the County and do not conflict with the goals or standards of the County's Subarea Plan.

City of San Diego MSCP Cornerstone Lands

Otay Lakes Road is currently adjacent to City of San Diego MSCP Cornerstone Lands around Lower Otay Lake. As shown in Table 2, direct impacts to City of San Diego Cornerstone Lands as a result of the widening of Otay Lakes Road total ~~21.45~~21.35 acres. Of this total, 17.12 acres are impacts to Sensitive Upland Communities, ~~2.40~~2.30 acres occur to wetlands and 1.93 acres are non-sensitive communities.

The City of San Diego requires projects to demonstrate they avoid or reduce impacts to Cornerstone Lands to the maximum extent feasible. Regardless, impacts to Cornerstone Lands are significant absent mitigation (M-BI-2), Appendix D-3.

Lands Within City of Chula Vista

In compliance with the MSCP Subregional Plan and the Subarea Plan, the City of Chula Vista established development standards, the Habitat Loss and Incidental Take (HLIT) Ordinance, as a condition of issuance of Take Authorization by the wildlife agencies. The HLIT is consistent with the conservation and mitigation goals of the MSCP Subregional Plan and the City of Chula Vista Subarea Plan, which require impacts to sensitive vegetation communities to be avoided and minimized to the maximum extent practicable. Furthermore, the HLIT identifies specific impact and mitigation requirements for impacts to native and some non-native communities (e.g., non-native grassland).

As shown in the Table 2, direct impacts to lands within the City of Chula Vista as a result of the widening of Otay Lakes Road total 6.35 acres. Of this total, 3.11 acres are to Sensitive Upland Communities and 3.24 acres are to non-sensitive communities. This off-site area is located outside of the Otay Ranch boundary and is subject to the City of Chula Vista HLIT Ordinance. The off-site impact areas within City of Chula Vista are consistent with City Planning Guidelines and do not conflict with the goals or standards of the City's Subarea Plan since the impacts are for the road improvements; however, compliance with the City's HLIT Ordinance will require conformance with several standard measures to address habitat loss.

Impacts to native upland vegetation communities and wetland habitats are considered significant absent mitigation under the City's HLIT Ordinance and require mitigation (City of Chula Vista 2003, Tables 5-3 and 5-6). Vegetation communities considered sensitive under the City Subarea Plan are those listed as Tier I through Tier III (rare uplands to common uplands), as well as wetlands. Significant impacts include non-native grassland (Tier III), and the disturbed and non-disturbed coastal sage scrub (Tier II). Impacts to vegetation communities that are not considered significant include impacts to Tier IV habitats (other uplands) consisting of disturbed land and developed land on site. Impacts to areas subject to HLIT are quantified in Table 2 and mitigated as described in M-BI-3, Appendix D-3. There are no impacts to jurisdictional wetlands within the City of Chula Vista.

Off-site Otay Ranch Lands

As shown in Table 2, direct impacts to off-site lands within the Otay Ranch as a result of the widening of Otay Lakes Road total 6.18 acres. Of this total, 5.19 acres are to Sensitive Upland Communities and 0.99 acres are to non-sensitive communities. This off-site area is located outside of the Otay Ranch Resort Village boundary but within the Otay Ranch. The impacts to these off-site Otay Ranch lands are subject to the requirements of the Otay Ranch RMP. Because the impacts to the off-site Otay Ranch lands are associated with road improvements as required by the County of San Diego, conveyance per the Otay Ranch RMP is not required.

State of California Lands

As shown in Table 2, direct impacts to off-site lands within the ownership of the State of California as a result of the widening of Otay Lakes Road total 0.12 acre. Of this total, 0.12 acre are to wetland communities. Because the impacts to the off-site lands are associated with road improvements as required by the County of San Diego, the State may determine that mitigation is not required.

Jurisdictional Resources

There are 0.24 acres (404 linear feet) of non-wetland waters of the United States off site (Figure 3). There are ~~2.18~~2.20 acres (1,370 linear feet) of jurisdictional wetlands within the off site for a total of ~~2.42~~2.44 acres of agency regulated ~~wetlands~~aquatic resources. The vegetation communities within the jurisdictional wetlands off site are quantified in Table 3. Impacts to jurisdictional wetlands and waters are significant and require mitigation per M-BI-5 and M-BI-6, Appendix D-3.

Table 3: Jurisdictional Non-Wetland Waters and Wetlands within Ownerships in Off Site Impact Areas

Jurisdictional Resource	County of San Diego (Right of Way)	City of San Diego Cornerstone Lands	City of Chula Vista (Eastlake and City)	Other Otay Ranch Lands (S & M Birch)	State of California	Total Off Site Impact Acreage	Total Off-Site Linear Feet Impact
Non-Wetland Waters of the United States							
Ephemeral Stream Channel		0.01				0.01	241
Open Water		0.23				0.23	163
Non-Wetland Waters of the United States		*0.24*				*0.24*	*404*
Wetlands							
Arundo		0.09				0.09	–
Freshwater Marsh		0.74				0.74	887
Mulefat Scrub	0.01	0.25				0.26	97
Southern Willow Scrub		0.46				0.46	150
Southern Arroyo Willow Riparian		~~0.16~~0.06			0.12	~~0.16~~0.18	106
Disturbed Wetland		0.47				0.47	130
Wetlands	*0.01*	*~~2.17~~2.07*			*0.12*	*~~2.18~~2.20*	*1,370*
Total	**0.01**	**~~2.41~~2.31**	**0.0**	**0.0**	**0.12**	**~~2.42~~2.44**	**1,774**

Special Status Species and Critical Habitat

This section provides a description of the federally listed species within the offsite areas, including focused surveys that were conducted, quantification of impacts and provision of mitigation measures if needed.

Rare Plants

Focused surveys for sensitive plant species were conducted within the project site including offsite areas over a number of years but focused on the offsite areas in 2006. Surveys were conducted by Tish Schuyler and Vipul Joshi. The surveys were conducted on foot with focus given to areas that exhibited appropriate soil conditions for rare plants. Species were recorded with GPS or mapped by hand onto 200-scale aerial photographic or topographic maps. Population sizes were visually estimated at each location. Species that were determined to be present within the offsite impact area include: San Diego barrel cactus, San Diego goldenstar, San Diego marsh-elder, and San Diego County viguiera. Impacts to San Diego barrel cactus, San Diego goldenstar, and San Diego marsh-elder are significant and mitigated by M-BI-8, Appendix D-3. The area where San Diego County viguiera is located is not CSS that is dominated by the species so impacts are less than significant and no mitigation is required.

San Diego Fairy Shrimp

San Diego fairy shrimp are most commonly found within the coastal portions of San Diego County. This species occurs in vernal pools and other ephemeral ponds (e.g., road ruts, swales, ephemeral drainages, stock ponds) within coastal mesa areas. Focused fairy shrimp surveys were conducted in multiple years (2006, 2007, 2008, and 2014) within the offsite areas to determine the presence/absence of San Diego and Riverside fairy shrimp within the proposed improvements areas of Otay Lakes Road. Focused survey reports for these years are provided in the Otay Ranch Resort Village Biological Resources Technical Report (March 2015), which is Appendix C-3 to the Otay Ranch Resort Village Draft EIR.

A focused survey of the off-site area was performed in winter 2006 by Vipul Joshi in accordance with the USFWS survey protocol for listed fairy shrimp species (USFWS 1996). The surveys consisted of an inspection of six basins (OLR-1 through OLR-6; Table 4), one located in a dirt road and five located adjacent to the road shoulder. Of the six basins identified during the survey, none were found to contain branchiopod species (Dudek 2006a).

A focused survey of the off-site area was again performed in winter 2007 (January to February 2007) by Mr. Joshi and Brock Ortega. Surveys were conducted in accordance with the USFWS survey protocol for listed fairy shrimp species (USFWS 1996). The surveys consisted of an inspection of 19 ponded road ruts/basins (OLR-7 through OLR-25; Table 4): one located in a dirt road and the others located adjacent to the road shoulder. Of the 19 features, seven were found to contain San Diego fairy shrimp (Dudek 2007).

A complete focused survey of the off-site area was conducted in 2008 and 2014 by Thomas S. Liddicoat (permit #TE-139634-0). The 2008 and 2014 surveys included visits to all basins observed within the off-site area. Figure 3 shows the locations of the off-site basins. A total of 12 basins were found to contain San Diego fairy shrimp. No impacts will occur to either vernal pools or San Diego fairy shrimp as a result of the offsite impacts and no mitigation is required.

Table 4: Basins and Fairy Shrimp Occurrence within the Otay Ranch Resort Village Off-Site Area

Basin ID	Size of Basin (Square Feet)	Size of Basin (Acres)	Fairy Shrimp Cysts Present[1]	San Diego Fairy Shrimp Present[2]	Vernal Pool Plant Indicator Present[3]	Acreage of Basins Concluded to be Vernal Pools
OLR-1	132	0.003	—	—	—	—
OLR-2	900	0.021	—	—	—	—
OLR-3	537	0.012	—	—	—	—
OLR-4	23	0.001	—	—	—	—
OLR-5	129	0.003	—	—	—	—
OLR-6	352	0.008	—	—	—	—
OLR-7	281	0.006	—	x	—	—
OLR-8	649	0.015	—	x	—	—
OLR-9	589	0.014	—	x	—	—
OLR-10	190	0.004	—	x	—	—
OLR-11	191	0.004	—	x	—	—

Table 4: Basins and Fairy Shrimp Occurrence within the Otay Ranch Resort Village Off-Site Area

Basin ID	Size of Basin (Square Feet)	Size of Basin (Acres)	Fairy Shrimp Cysts Present[1]	San Diego Fairy Shrimp Present[2]	Vernal Pool Plant Indicator Present[3]	Acreage of Basins Concluded to be Vernal Pools
OLR-12	1,101	0.025	—	x	—	—
OLR-13	60	0.001	—	x	—	—
OLR-14	941	0.022	—	x	—	—
OLR-15	368	0.008	—	x	—	—
OLR-16	19	<0.001	—	x	—	—
OLR-17	19	<0.001	—	x	—	—
OLR-18	522	0.012	—	x	—	—
OLR-19	719	0.017	—	—	—	—
OLR-20	101	0.002	—	—	—	—
OLR-21	124	0.003	—	—	—	—
OLR-22	127	0.003	—	—	—	—
OLR-23	90	0.002	—	—	—	—
OLR-24	58	0.001	—	—	—	—
OLR-25	1,224	0.028	—	—	—	—

1 No dry-season surveys conducted.
2 Based on wet-season surveys conducted in 2006, 2007, 2008, and 2014. "X" indicates that San Diego fairy shrimp was detected.
3 Based on focused surveys of vernal pool plant species conducted in 2001.

Quino Checkerspot Butterfly

Quino checkerspot butterfly is a federally endangered species, found only in western Riverside County, southern San Diego County, and northern Baja California, Mexico (USFWS 2003). This species is found on sparsely vegetated hilltops, ridgelines, and occasionally on rocky outcrops in open chaparral and coastal sage scrub habitat.

The off-site area was surveyed by Dudek biologists according to the 2002 protocol (USFWS 2002) in 2006 (Dudek 2006b). No Quino checkerspot butterflies were observed within the offsite areas. Additional surveys were conducted in 1998, 1999, 2000, 2004, 2008, and 2016 within the Alternative H project footprint that identified Quino checkerspot butterflies and habitat within the project site. Mitigation is included within the project EIR that would require pre-construction surveys, conservation of suitable or occupied Quino checkerspot habitat and preparation of a Quino Checkerspot butterfly management plan in order to reduce impacts to the species. No mitigation is required for the offsite impacts.

Coastal California Gnatcatcher

Coastal California gnatcatcher is federally threatened, a Species of Special Concern, an MSCP Covered Species, and a County Group 1 species. This species occurs in coastal Southern California and Baja California year-round, where it depends on a variety of arid scrub habitats. California gnatcatcher occurs mainly on cismontane slopes (coastal side of the mountains) in Southern California, ranging from Ventura and northern Los Angeles Counties south through the Palos Verdes Peninsula to Orange, Riverside, San Bernardino, and San Diego Counties.

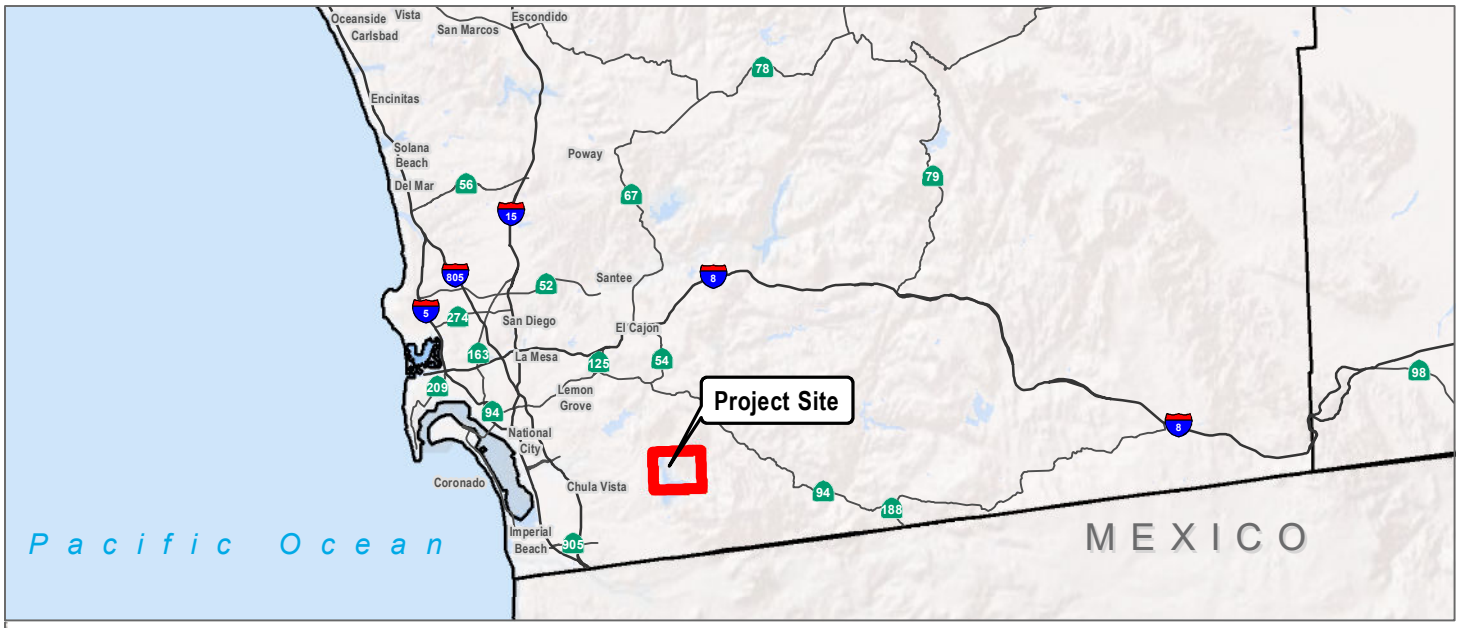
Focused surveys for coastal California gnatcatcher were not conducted due to assumed occupation of all coastal sage scrub and disturbed coastal sage scrub vegetation communities. Extensive occurrence data has been compiled through the MSCP and were used for the species analysis for the proposed project. The data indicate that there are approximately two occurrences of the species within the City of San Diego-owned Cornerstone Lands areas (Dudek 2015a) (Figure 5). Impacts to the California gnatcatcher are significant and are mitigated per M-BI-15, Appendix D-3.

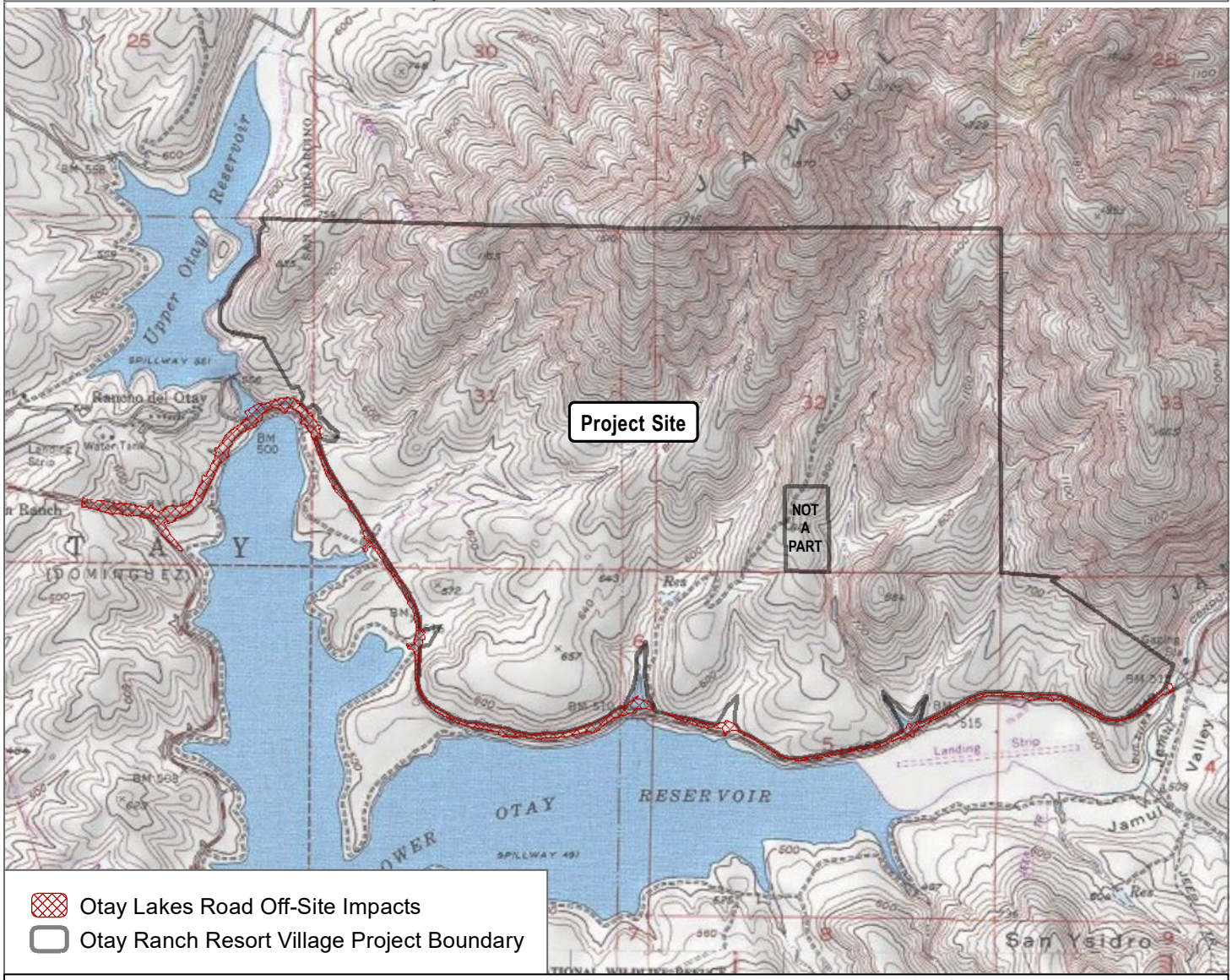
Least Bell's Vireo

Least Bell's vireo is a federally and state endangered species. In addition, least Bell's vireo is covered under the MSCP. This species is largely associated with early successional riparian scrub and woodlands dominated by species such as mulefat, willows, cottonwood (*Populus* sp.), and blue elderberry to an elevation of 4,100 feet above mean sea level.

Focused surveys for least Bell's vireo, as well as for the federally-listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*), were conducted by Dudek biologists in the spring and summer of 2006. The surveys were conducted in the off-site portions of the project area, as this is where suitable riparian habitat is located. One pair of least Bell's vireo was detected during these focused surveys (Figure 5). The pair was located within the easternmost portion adjacent to the project boundary, but offsite within Jamul Creek on the south side of Otay Lakes Road. No southwestern willow flycatchers were observed (Dudek 2006c). Impacts to least Bell's vireo are significant and are mitigated per M-BI-18, Appendix D-3.

Portions of the Otay Lakes Road impact overlaps with critical habitat for least Bell's vireo (Figure 5). The proposed project will result in 6.20 acres ~~of effects~~of effects to least Bell's vireo critical habitat. The large majority of impacts to least Bell's vireo critical habitat are comprised of impacts to existing roadway. Impacts to critical habitat will be addressed during the wetland permitting process with the U.S. Army Corps of Engineers.





Otay Lakes Road Off-Site Impacts

Otay Ranch Resort Village Project Boundary

SOURCE: USGS 7.5-Minute Series Quadrangle

DUDEK

0 1,200 2,400 Feet

FIGURE 1

Regional Map

Offsite Impacts - Otay Ranch Resort Village Alternative H

Document Path: Z:\Projects\j652401\MAPDOC\MAPS\Offsite OLRd Memo 20190329\Memo Fig 1 Project Location USGS.mxd

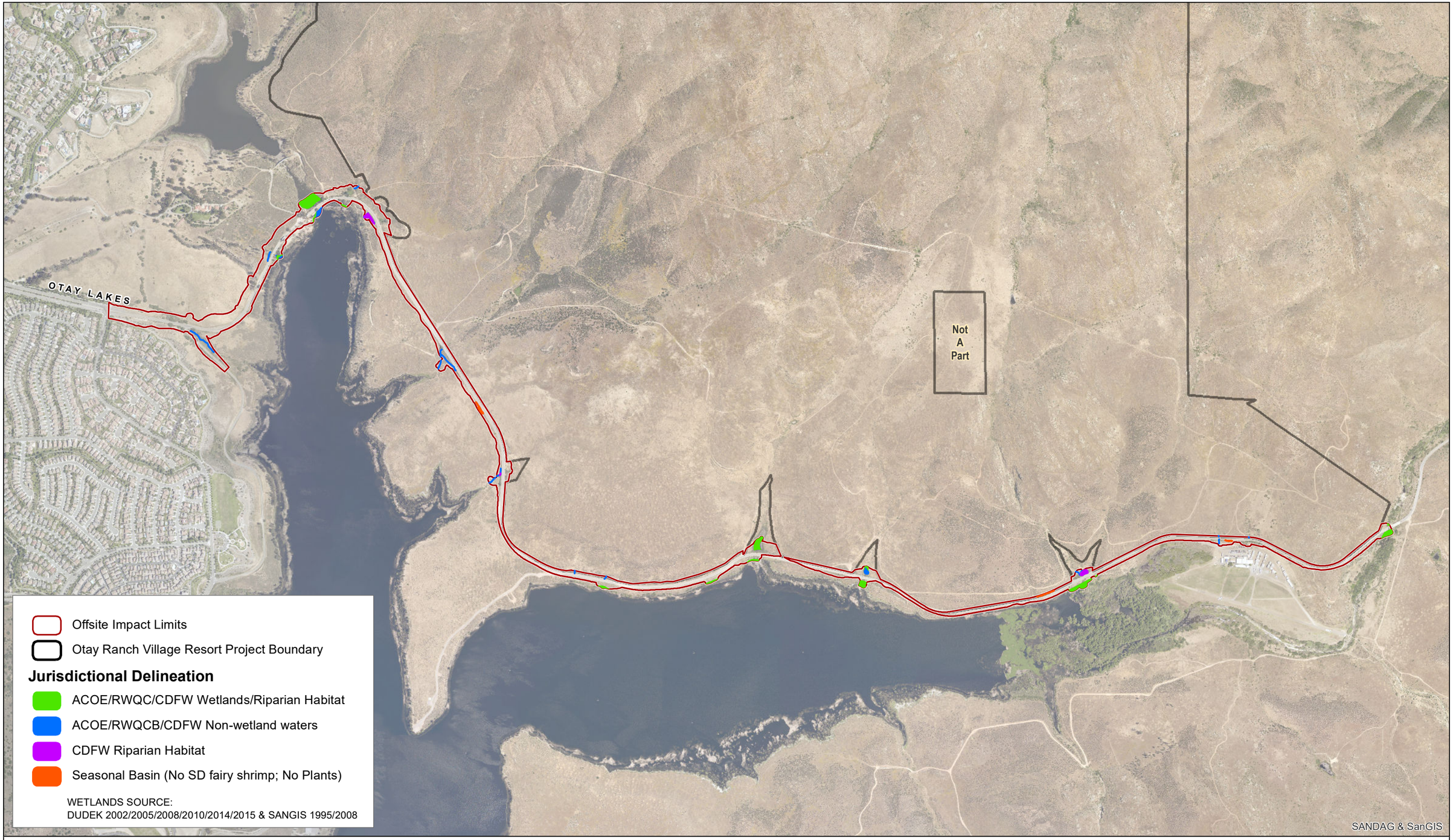
Document Path: Z:\Projects\j652401\MAPDOC\MAPS\Offsite OLRd Memo 20190329\Memo Fig 2 Veg Impacts.mxd

DUDEK

FIGURE 2

Vegetation Communities

Offsite Impacts - Otay Ranch Resort Village Alternative H



SOURCE: AERIAL-SANGIS 2017

DUDEK

0 600 1,200 Feet

FIGURE 3

Jurisdictional Resources

Offsite Impacts - Otay Ranch Resort Village Alternative H

Document Path: Z:\Projects\j652401\MAPDOC\MAPS\Offsite OLRd Memo 20190329\Memo Fig 3 JD Impacts.mxd

Document Path: Z:\Projects\j652401\MAPDOC\MAPS\Offsite OLRd Memo 20190329\Memo Fig 4 Plants Impacts.mxd

DUDEK

FIGURE 4

Sensitive Plant Species

Offsite Impacts □ Otay Ranch Resort Village Alternative H

Document Path: Z:\Projects\j652401\MAPDOC\MAPS\Offsite OLRd Memo 20190329\Memo Fig 5 Wildlife Impacts.mxd

DUDEK

FIGURE 5

Sensitive Wildlife Species

Offsite Impacts - Otay Ranch Resort Village Alternative H