October 17, 2017

Ms. Stacey Love
Recovery Permit Coordinator
U.S. Fish and Wildlife Service
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Ste. 250
Carlsbad, CA 92008

SUBJECT: RESULTS OF THE 2017 QUINO CHECKERSPOT BUTTERFLY (*EUPHYDRYAS EDITHA QUINO*) FOCUSED SURVEYS FOR THE PROPOSED TIE LINES 636 AND 639 WOOD TO STEEL PROJECT, SAN DIEGO COUNTY, CALIFORNIA

Dear Ms. Love:

Chambers Group, Inc. (Chambers Group) was contracted by San Diego Gas and Electric Company (SDG&E) to conduct focused surveys for Quino checkerspot butterfly (*Euphydryas editha quino*; QCB) during the spring season of 2017 for the proposed Tie Lines (TL) 636 and 639 Wood to Steel project located in San Diego County, California. The primary purpose of this effort was to identify QCB and habitat within the proposed work areas in accordance with SDG&E's Low-Effect Habitat Conservation Plan for QCB (HCP; SDG&E 2007).

PROJECT BACKGROUND

In an effort to maintain existing electric power lines in high fire and wind areas in SDG&E service territory, SDG&E proposes to replace wood poles with steel poles along TL 636, extending from the existing Elliott Substation for approximately 4.6 miles, and along TL 639, extending from Elliott Substation for approximately 8.1 miles to Sycamore Substation (Proposed Project).

PROJECT LOCATION

The Proposed Project spans approximately 8 miles within western San Diego County, in the City of San Diego and Marine Corps Air Station (MCAS) Miramar (Attachment 1: Figure 1), within the United States Geological Survey (USGS) La Mesa and Poway 7.5-minute quadrangle maps (Attachment 1: Figure 2). The Proposed Project is comprised of TL 639 and TL 636; TL 639 begins at the Sycamore Substation, heads south through open space on MCAS Miramar and Mission Trails Regional Park, crosses Highway 52, continues southwest through Mission Trails Regional Park, and then terminates at the Elliott Substation. TL 636 begins at a landfill in the northeast, and heads southwest through private property and open space in Mission Trails Regional Park, crosses Highway 52, and joins TL 639 approximately 1.3 miles southwest of the landfill. From this point, TL 636 and TL 639 run together along the same alignment as described above. Open space primarily surrounds the Proposed Project, with some encroachment by residential development along the southwest portion of the alignment.

Within the SDG&E existing service area, the HCP requires that QCB surveys be conducted within portions of a project that occur within the HCP Mapped Area (Attachment 1: Figure 2). According to the HCP, no QCB

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surveys or mitigation are required for activities covered under the HCP occurring outside the HCP Mapped Area. However, for this Proposed Project, SDG&E has taken a conservative approach and expanded the survey area to include all suitable habitat, regardless of whether it occurs within the HCP Mapped Area.

SDG&E LOW-EFFECT HABITAT CONSERVATION PLAN FOR QUINO CHECKERSPOT BUTTERFLY

The QCB received federal protection by the United States Fish and Wildlife Service (USFWS) under the Federal Endangered Species Act (FESA) in 1997 (USFWS 2002). Although not covered under SDG&E's Natural Community Conservation Plan (NCCP), an HCP was created by SDG&E and USFWS, and QCB is covered under the SDG&E Low-Effect QCB HCP. The Low-Effect HCP addresses potential impact to the QCB from the use, maintenance, and repair of existing gas and electric facilities and allows for typical expansions to those systems. Other than maintenance of existing access roads, SDG&E activities include, without limitation, all current and future actions arising out of, or in any way connected with, the siting, design, installation, construction, use, maintenance, operation, repair, and removal of facilities within SDG&E's service territory. Pole and tower replacement is one example of these covered activities.

The Low-Effect HCP emphasizes protection of habitat through impact avoidance and use of operational protocols designed to avoid or minimize impacts to the QCB. The plan was prepared in consultation with the USFWS to fulfill the requirements of a FESA Section 10(a)(1)(B) permit application for SDG&E activities.

The Low-Effect HCP for QCB established protocols for surveying, assessing, and, when appropriate, mitigating for impacts to QCB. These protocols can differ from other practices established by the USFWS for species management, such as a modified area that is required to be surveyed for QCB and the means by which occupied habitat areas are calculated. The Low-Effect HCP also defines impacts and establishes mitigation ratios for both temporary and permanent impacts to QCB suitable occupied and unoccupied habitat as a result of SDG&E activities occurring within the HCP Mapped Area. Attachment 1: Figure 2 displays the location of QCB HCP Mapped Area in relation to the Proposed Project QCB Survey Area, from approximately Highway 52 to the southwestern terminus of the project alignment.

QCB NATURAL HISTORY

The following QCB background information was written by QCB-permitted biologist Ken Osborne (Chambers Group 2010) and updated per the 2014 Survey Guidelines:

The QCB, a subspecies of Edith's checkerspot, is a small brush-footed butterfly (family Nymphalidae) that flies once a year. Like most *Euphydryas* sp., it has a small, approximately 2.5 to 4 cm wingspan and is checkered with black, red, and yellowish markings. This species is distributed in local colonies over much of western North America (Scott 1986, Parmesan 1996). Many subspecies have been described including at least 18 from California (Emmel 1998).

QCB colonies are primarily associated with low elevation (sea level to 3,000 feet) open grasslands, vernal pools, and sunny openings within chaparral, coastal-sage scrub, and juniper woodlands. Colonies are found frequently near clay soils and soils that possess cryptogamic crusts (soil infused with algae and lichen in the soil surface) (Osborne 1998). According to the 2014 Survey Guidelines, known QCB larval host plants include dot-seed plantain (*Plantago erecta*, Plantaginaceae) also known as dwarf plantain, woolly plantain (*Plantago patagonica*, Plantaginaceae), Coulter's snapdragon (*Antirrhinum coulterianum*, Plantaginaceae), bird's beak

(*Cordylanthus rigidus*, Orobanchaceae), purple owls' clover (*Castilleja exserta*, Orobanchaceae) and southern Chinese houses (*Collinsia concolor*, Plantaginaceae). Dwarf plantain is the primary host plant of QCB. Larvae may use other plantain (*Plantago*) species (e.g. *P. ovata,* and *P. insularis*) as well (Pratt and Pierce 2010). Introduced Mediterranean plantain species such as *P. lanceolata* and *P. major* - common weeds of residential lawns and city lots - although suitable in the laboratory (Osborne 2009), and used by some wild *E. editha* populations in Oregon, are not likely used where they occur in habitats not frequented by QCB. Nevertheless, these exotic host plants may be of potential use to QCB where they occur in wild habitats proximal to QCB populations. Although QCB are oligophagous (feed upon a limited range of plant species) and feed primarily upon plants contained within the Orobanchaceae (formerly Scrophulariaceae) and Plantaginaceae families, most local populations tend to be monophagous (feed on only one plant species) (White 1974, Scott 1986).

QCB mating activity occurs in or near the meadows, clearings, and open areas on slopes and ridgelines inhabited by the host plants, where the larvae previously developed, and on open or sparsely vegetated hilltops, ridgelines, and occasionally rocky hilltops (with or without the host plant being present nearby). Inordinately large numbers of adult males are found on hilltops (usually only one or two per hilltop), where they exhibit "territorial behavior" – flying sorties from various perches to chase other butterflies, including conspecifics. QCB males often chase each other high into the air, only to return to different parts of the hilltop. Hilltopping, where male butterflies await the arrival of unmated females in order to secure mates, is common in many species of butterflies and the behavior in QCB is well known among experienced southern California lepidopterists (Shields 1967). When QCB adult densities are relatively low, mating success derived from facultative hilltopping behavior may be critical to long term viability.

Females lay egg masses that contain approximately 20-75 eggs and may produce up to 1,200 eggs in several batches during their lifetime. The eggs hatch in about ten days under favorable conditions and the larvae immediately begin to feed. In coastal California, the early larval stages undergo an obligatory aestival diapause (dormant period from late spring through winter), which is broken after fall or winter rains (Murphy and White 1984, Osborne 1998). The larvae then quickly complete their development, usually on the native annual plant dot-seed plantain, and emerge as adults during the same spring (Emmel and Emmel 1973, White 1974, Orsak 1977, Murphy and White 1984). Adult flight typically occurs between late January and mid-May, with peak activity generally in March and April. The flight period varies from year to year, depending upon the annual rainfall and other weather conditions. The timing and abundance of rainfall are important factors affecting the timing of host seed germination, growth, maturity, and senescence of the host plant (Murphy and White 1984, Dobkin et al. 1987), which in turn affects the survivorship of the larvae (Ehrlich et al. 1980). Solar insolation on hillsides (determined in part by topography), where the larvae live, affects both the rate of host development and that of the larvae (White 1974, Weiss et al. 1988). In the race against host senescence, post-diapause larvae seek microclimates with high solar insolation in order to bask (Osborne 1998, Osborne and Redak 1999). This behavior increases their rate of development (Weiss et al. 1987). During periods of extended drought, the butterfly's populations decline and individual butterflies may become difficult to find. It is hypothesized that extended periods of diapause, lasting up to five or six years, occur during these droughts.

Populations of QCB, which were once distributed through much of lowland coastal southern California from northern Baja California, Mexico to Point Dume, Los Angeles County, have been declining since the late 1960's (Thorne 1970; Emmel and Emmel 1973; Orsak 1977, 1988). It has been hypothesized that this decline is primarily due to habitat loss by urban and agricultural expansion (Thorne 1970, Emmel and Emmel 1973, Orsak 1988), and possibly because of global warming and drought (Parmeasan 1996), fire and overgrazing (Orsak

1977, 1988). After an extended drought in the late 1980's and early 1990's, only one known population of QCB remained. Populations are now known to exist only at a few sites, in small isolated colonies, in southwestern Riverside and southern San Diego Counties. The decline of QCB may have started long before these modern observations after the early Spanish explorers and settlers introduced exotic grasses and forbs. These plants are highly competitive with the native QCB host plants. QCB received federal protection under the Endangered Species Act in 1997 (United States Federal Register, January 17, 1997) and is currently federal-listed as endangered.

METHODS

Habitat Assessment

The QCB habitat assessment was conducted within the Proposed Project Biological Survey Area (BSA), consisting of a 150-foot buffer on either side of the power line (300 feet total width); a 50-foot buffer around substations and proposed work areas (if outside the 150-foot buffer); and a 20-foot buffer out from the edges of access roads. The habitat assessment was conducted in accordance with the *USFWS Quino Checkerspot Butterfly Survey Guidelines* (2014 Survey Guidelines; USFWS 2014) and consistent with SDG&E's Low-Effect HCP (SDG&E 2007). The assessment was used to identify suitable QCB habitat. "Suitable QCB Habitat" is defined in SDG&E's Low-Effect QCB HCP as:

> *"shrub communities, such as coastal sage scrub, chaparral, and desert scrub, with 50 percent shrub cover or less, and the potential to support dot-seed plantain* [Plantago erecta] *and other larval host plants. Areas that meet the shrub cover standard are excluded if the ground cover vegetation is disturbed and/or covered by understory vegetation to the extent that larval host plants do not grow. Areas of solid rock substrate and the surfaces of solidly compacted access roads which are not likely to support vegetation are also excluded. All areas of vernal pool complexes are included as Suitable QCB Habitat regardless of upland vegetation surrounding the vernal pools. Areas meeting the 50 percent shrub cover with QCB Host Plants, native herbaceous species, cryptobiotic crusts, or the potential to support any of these elements are included as Suitable QCB Habitat. Also included in Suitable QCB Habitat for this Plan are all native grasslands and non-native grasslands that show evidence of potential to support larval host plants. Evidence for a potential to support larval host plants included presence of native grasses, native wildflowers, and cryptobiotic crusts."*

Prior to entering the field, a literature search was performed of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB; CDFW 2017) and the USFWS Species Occurrences Database (USFWS 2017) for QCB records of occurrence within 5 miles of the BSA. In addition, Google Earth satellite images and results from the 2017 vegetation mapping effort for the BSA were reviewed to identify habitat potentially suitable for QCB, based on the suitable habitat definition above.

Permitted QCB biologists conducted a field habitat assessment to map all areas requiring QCB surveys (QCB Survey Area), which included all potentially suitable habitat within the Proposed Project BSA. The biologists recorded the location of all larval host plants electronically with the aid of hand-held GPS units and/or by hand onto high-resolution aerial field maps. Information characteristic of QCB suitable habitat, including locations of breaks in vegetation, rocky outcrops, and hilltops, were noted and mapped. Areas that were developed or contained closed-canopy habitat were mapped and excluded from focused surveys. The remaining habitat

within the QCB Survey Area was deemed appropriate to survey, regardless of the presence of host plants, per the Low-Effect HCP definition above.

Focused Surveys

Chambers Group biologists conducted QCB focused surveys within the QCB Survey Area according to the USFWS 2014 Survey Guidelines and SDG&E's Low-Effect HCP. Surveys throughout all potentially suitable habitat (i.e., where no QCB excluded areas were mapped during the habitat assessment) within the HCP Mapped Area were initiated at the beginning of the QCB flight season, following a 15-day survey notification submitted to USFWS on February 10, 2017. Surveys outside of the HCP Mapped Area were initiated three weeks after surveys had begun within the HCP Mapped Area, and were continued weekly, per a modified survey schedule submitted to the USFWS on March 17, 2017.

Focused QCB surveys were conducted weekly and spaced at least 4 days apart. Surveys were conducted for 5 continuous weeks at a minimum. In areas where no QCB were detected during the first 5 weeks of surveys, surveys continued until QCB were detected or until the end of the season, defined as the second Saturday in May (May 13, 2017). If QCB were detected during the first 5 weeks, surveys ceased in that area. If a QCB was detected in the QCB Survey Area, the USFWS was notified within 24 hours by the permitted QCB biologist.

Surveys were conducted by walking survey routes that were roughly parallel to each other, spaced approximately 30 feet apart, and within 15 feet of the Survey Area boundary and/or the perimeter of excluded areas. Chambers Group biologists conducted the surveys at a rate of approximately 5 to 10 acres per person/hour and under suitable weather conditions defined as (a) no significant precipitation (e.g., fog, drizzle, or rain); (b) sustained or gusting winds averaging less than 15 miles per hour over a 30 second period at a height of 4 to 6 feet above ground level; and (c) temperatures of at least 60 degrees Fahrenheit (°F) in the shade at ground level on a clear, sunny day (i.e., less than 50 percent cloud cover), and temperatures of at least 70°F on cloudy days (i.e., greater than 50 percent cloud cover).

Chambers Group biologists recorded butterfly species observed and numbers of each species during each weekly survey. Butterflies observed during the surveys were identified by sight and with the aid of binoculars. Biologists also recorded and updated information on host plant populations, including revised numbers, densities, and new locations, as well as a list of potential nectar sources. Additional observations of larval host plant populations were mapped with the aid of hand-held Global Positioning System (GPS) units and/or hand-drawn onto high-resolution aerial field maps, and potential nectar plant species were documented. Butterfly identification and nomenclature was based on field guides by Shiraiwa (2009) and Glassberg (2001).

Focused surveys of potential QCB habitat were conducted by the following USFWS-permitted QCB biologists (Table 1).

Table 1: USFWS-Permitted QCB Biologists

USFWS-Permitted QCB Biologists	
Biologist	***USFWS Permit Number***
Laurie Gorman	TE-233367-2
Alicia Cooper Hill	TE-06145B-1

USFWS-Permitted QCB Biologists	
Biologist	***USFWS Permit Number***
Travis Cooper	TE-170389-6
John Dicus	TE-839960-6
Melanie Dicus	TE-049175-4
Darin Busby	TE-115373-3
Melissa Busby	TE-080779-3
Erik LaCoste	Authorized under Darin Busby's permit

RESULTS

Habitat Assessment

Based on the literature search, there is one CNDDB historical record of occurrence for QCB documented within the BSA from 2005 (CDFW 2017); the location of this occurrence was mapped approximately adjacent to the proposed pole location P12.

A total of approximately 363 acres of suitable habitat for QCB was identified within the Proposed Project BSA and surveyed as the QCB Survey Area. A total of approximately 178 acres of QCB Survey Area occur within the SDG&E Low-Effect QCB HCP Mapped Area (south of Highway 52) and approximately 185 acres of the QCB Survey Area occur outside of the HCP Mapped Area (north of Highway 52) (Attachment 1: Figure 2). Habitats and land-cover types present within this QCB Survey Area include bare ground, grassland, low-density chaparral and scrub habitats, and openings in woodlands with the potential to support host plants and nectar sources. These habitat types are displayed on aerial maps of the Proposed Project as Attachment 2.

Pursuant to the Low-Effect HCP's definition of Suitable QCB Habitat and the USFWS 2014 Survey Guidelines criteria for designating Excluded Areas, developed areas were excluded as suitable QCB habitat, including paved areas (including substations) and compacted portions of dirt access roads where vegetation does not grow. In addition, closed-canopy vegetation communities including dense chaparral and riparian forest habitats were excluded.

Potential QCB host plants mapped within the QCB Survey Area included dwarf plantain, woolly plantain, purple owl's clover, southern Chinese houses, and bird's beak. Parish's owl's clover (*Castilleja densiflora*) was noted within the QCB Survey Area as a potential host plant as well; this species was found intermixed with purple owl's clover, dwarf plantain, and woolly plantain. Host plant density was recorded and categorized as low (approximately 1-99 individual plants), moderate (approximately 100 to 999 individual plants), and high (more than approximately 999 individual plants). The results of the host plant mapping efforts are provided as Attachment 3[1].

[1] Host mapping efforts encompass roads which may be considered already impacted and mitigated per the terms of SDG&E's Low- Effect QCB HCP.

Focused Surveys

Chambers Group conducted a total of 12 weekly QCB focused surveys within the HCP Mapped Area from February 25, 2017 to May 13, 2017, and a total of 9 weekly QCB focused surveys outside the HCP Mapped Area from March 18, 2017 to May 11, 2017. Surveys were discontinued in areas where QCB were detected after 5 surveys were completed, per the 2014 Survey Guidelines.

A total of eight (8) QCB were detected at five (5) general locations. All 5 locations were within the QCB Survey Area along the TL 639 alignment, north of Highway 52 (outside the SDG&E Low-Effect HCP Survey Area). Locations #1-3 were on MCAS Miramar, and Locations #4 and #5 were just south of MCAS Miramar. The firebreak areas surrounding these five locations were covered with dwarf plantain, numbers of plants ranging from the 1,000s to 10,000s; and 10s of purple owl's clover and Parish's owl's clover. The surrounding habitat consisted primarily of dwarf plantain-dominated firebreaks and coastal sage scrub habitat. The details of these observations are provided in Table 2, below.

Table 2: QCB Observations

Date	*Surveying Biologist(s)*	*Number of QCB*	*Location Number*	*GPS Location in NAD83 (UTM; Decimal Degrees)*	*Notes*
3/17/17	Melissa Busby, Darin Busby	1	2	11S 3638886 N, 495910 E; 32.88813°N, -117.04373°W	One adult QCB patrolling at 1045 along the edge of a firebreak approximately 30 feet from the road edge. The QCB flew into coastal sage scrub habitat and back to the firebreak area several times before flying out of sight. This location is just east of the access road between P62 and P63, on the north side of Range 100 within MCAS Miramar.
3/18/17	Alicia Cooper Hill, Travis Cooper, John Dicus, Melanie Dicus	2	3	11S 3637779 N 495838 E; 32.87814°N, -117.04449°W	Two adult male QCB observed patrolling, basking, and nectaring on *Cryptantha* sp. at 1230 before leaving abruptly into the surrounding coastal sage scrub. A third individual was observed basking at 1605 in the same area; however, it is unknown if this was one of the previously observed individuals. This location is just west of the access road due west of proposed pole location P57.
3/18/17	Alicia Cooper Hill, Travis Cooper, John Dicus, Melanie Dicus	2	4	11S 3637356 N, 495869 E; 32.87433°N, -117.04416°W	Two adults (one very fresh male) were observed patrolling on the hilltop and within the access road at 1306. This location is along the access road between proposed pole locations P51 and P52.
3/18/17	Alicia Cooper Hill, Travis Cooper, John	1	5	11S 3636441 N, 495625 E; 32.86607°N,	One fresh male adult observed nectaring on *Cryptantha* sp. at 1350. This location is northwest of proposed pole location P50, adjacent to the top of the access road.

Date	Surveying Biologist(s)	Number of QCB	Location Number	GPS Location in NAD83 (UTM; Decimal Degrees)	Notes
	Dicus, Melanie Dicus			-117.04676°W	
3/24/17	John Dicus, Melanie Dicus, Laurie Gorman	1	3	11S 3637771 N, 495841 E; 32.87807°N, -117.04446°W	One QCB observed on hilltop densely covered with dwarf plantain. The same individual was observed nectaring on *Cryptantha* sp. at 1137, 1144, and 1420.
4/01/17	Erik LaCoste	1	1	11S 3640050 N 496924 E; 32.89864°N, -117.03289°W	One QCB basking in the sun on a small hilltop adjacent to a firebreak. This location is adjacent to the access road, northwest of proposed pole location P48.

The locations of the QCB observations are displayed on aerial imagery as Attachment 3. A 1-kilometer buffer is shown around each QCB observation, indicating a proposed "QCB Occupied Territory," based off of the USFWS QCB Recovery Plan criteria for estimating QCB occupied areas[2]. The QCB Occupied Territories collectively form a QCB occurrence complex (USFWS 2003). Attachment 4 provides photographs of QCB detected during the surveys, as well as suitable habitat within the QCB Survey Area.

In addition to QCB, a total of 55 butterfly species were observed. A complete list of butterfly species observed is provided as Attachment 5. A complete list of flowering plant species (as potential nectar sources) observed is provided as Attachment 6. Weather conditions during the QCB surveys are provided as Attachment 7. A Biologist Signature Page certifying these results are an accurate representation of the permitted biologists' findings is provided as Attachment 8. Field survey forms of the survey results are provided as Attachment 9; these forms contain details on which butterfly and flowering plant species were observed per survey.

DISCUSSION

A total of approximately 363 acres of suitable habitat for QCB were identified within the Proposed Project BSA and surveyed as the QCB Survey Area. A total of approximately 178 acres of QCB Survey Area occur within the SDG&E Low-Effect QCB HCP Mapped Area (south of Highway 52) and approximately 185 acres of the QCB Survey Area occur outside of the HCP Mapped Area. A total of 8 QCB at 5 general locations were observed during the 2017 focused surveys for the Proposed Project. All 8 of these observations were within the USFWS Recommended Quino Survey Area, north of Highway 52.

Please call me at (949) 933-9432 or email me at lgorman@chambersgroupinc.com if you have any questions or comments regarding this letter report.

[2] SDG&E's Low-Effect QCB HCP defines occupied habitat as suitable habitat "that is inside the Mapped Areas and within 300 meters of a known QCB occurrence (within two years of the observation)." SDG&E's Low-Effect QCB HCP's definition of occupied habitat is not depicted in this report, only the USFWS QCB Protocol definition.

Sincerely,

CHAMBERS GROUP, INC.

Laurie Gorman
Senior Biologist

ATTACHMENTS

Attachment 1 – Figures
Attachment 2 – Vegetation Communities Maps
Attachment 3 – QCB Host Plant Location and Survey Results Map
Attachment 4 – Site Photographs
Attachment 5 – Butterfly Species Detected
Attachment 6 – Flowering Plant Species Observed
Attachment 7 – Weather Conditions
Attachment 8 – QCB Survey Project Biologists Signature Page
Attachment 9 – Field Survey Forms

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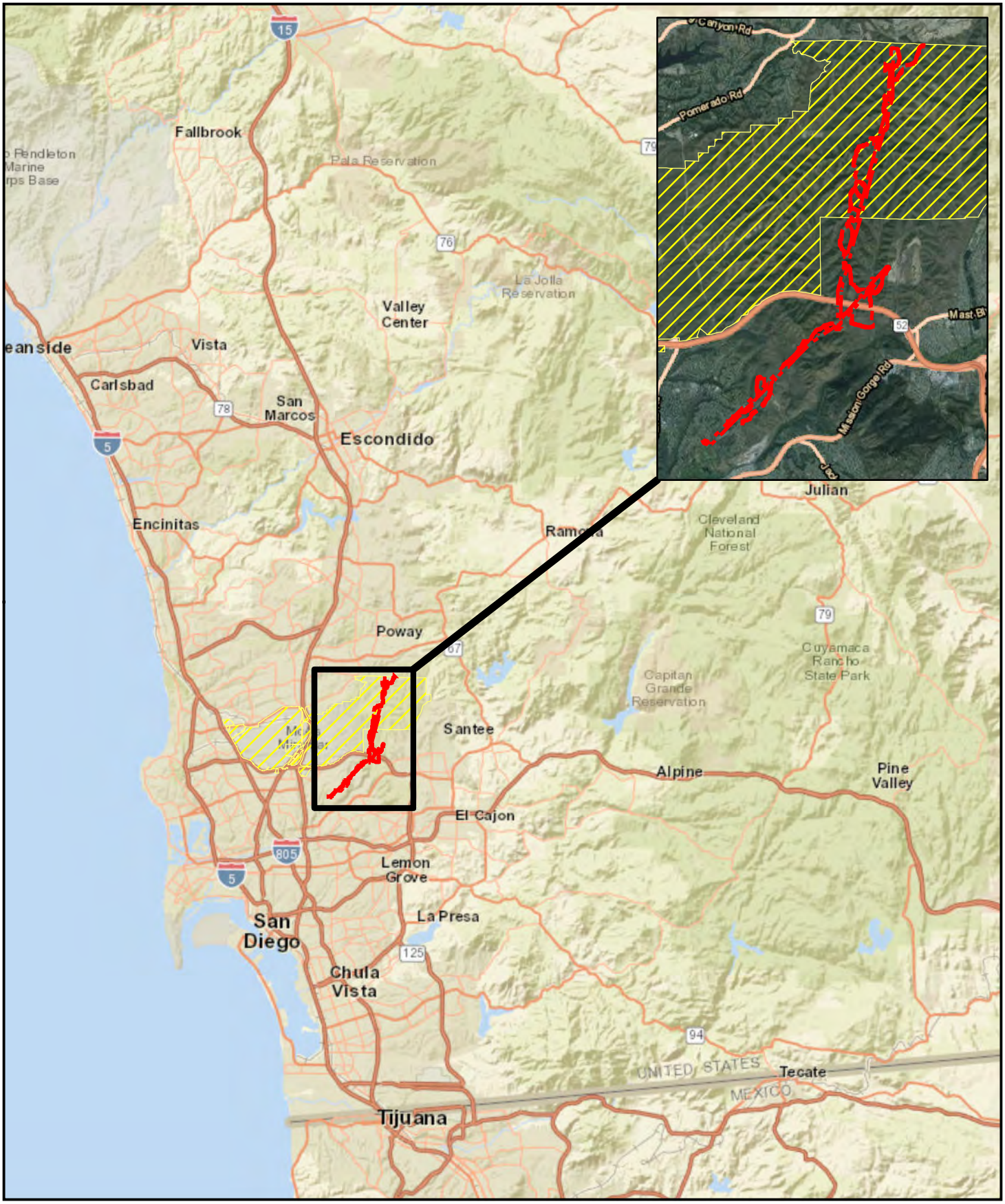
ATTACHMENT 1 – PROJECT LOCATION AND VICINITY MAPS



Legend

Biological Survey Area

MCAS Miramar

N

0 2.5 5 10

Miles

TL636 & 639

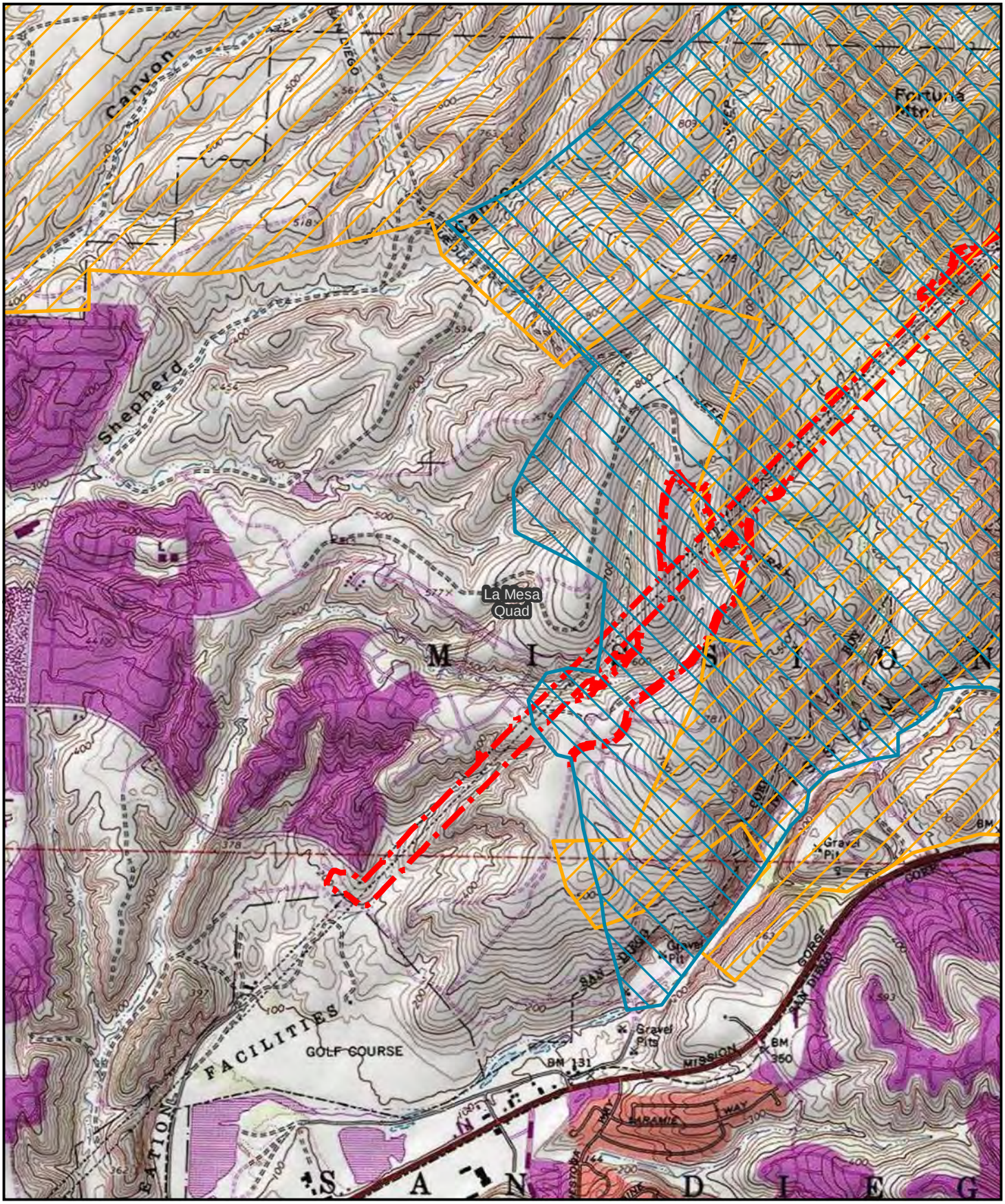
Project Vicinity & Location Map

Figure 1

Name: 20990 QCB Rpt Fig1 Vicin & Loc_rev.Mxd

Print Date: 6/29/2017, Author: stondre

CHAMBERS GROUP



Legend

- Biological Survey Area
- 1:24,000 Quads
- SDG&E QCB Low-effect HCP Survey Area
- USFWS Recommended QCB Survey Area

N

0 500 1,000 2,000
Feet

TL636 & 639
Survey Location on a USGS
7.5-minute Quadrangle Topo Map
Figure 2

Name: 20990 QCB Rpt Fig2 Loc USGS.Mxd
Print Date: 7/6/2017, Author: stondre

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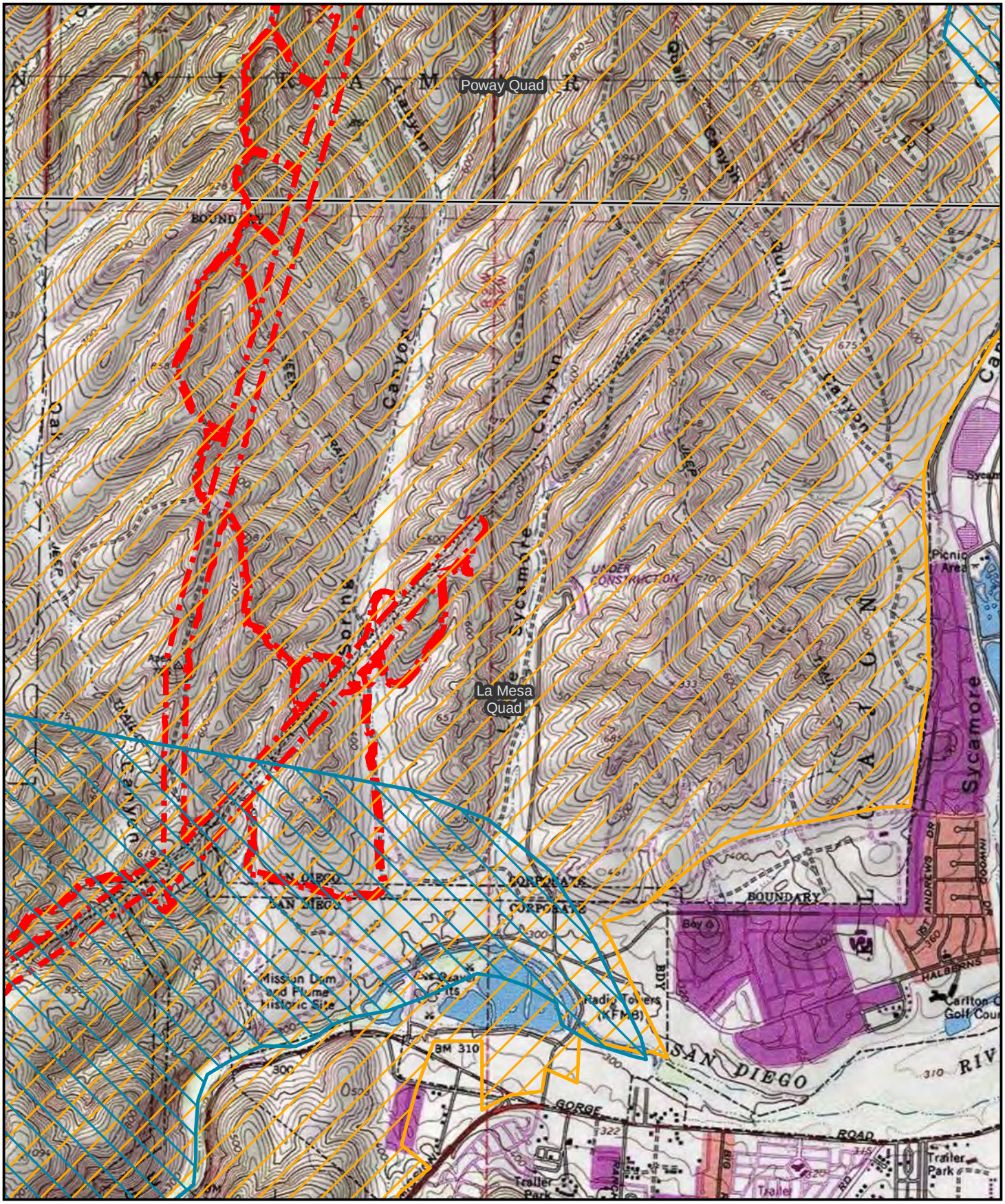

Legend

- Biological Survey Area
- 1:24,000 Quads
- SDG&E QCB Low-effect HCP Survey Area
- USFWS Recommended QCB Survey Area

N

0 500 1,000 2,000
Feet

TL636 & 639
Survey Location on a USGS 7.5-minute Quadrangle Topo Map

Figure 2

Name: 20990 QCB Rpt Fig2 Loc USGS.Mxd
Print Date: 7/6/2017, Author: stondre

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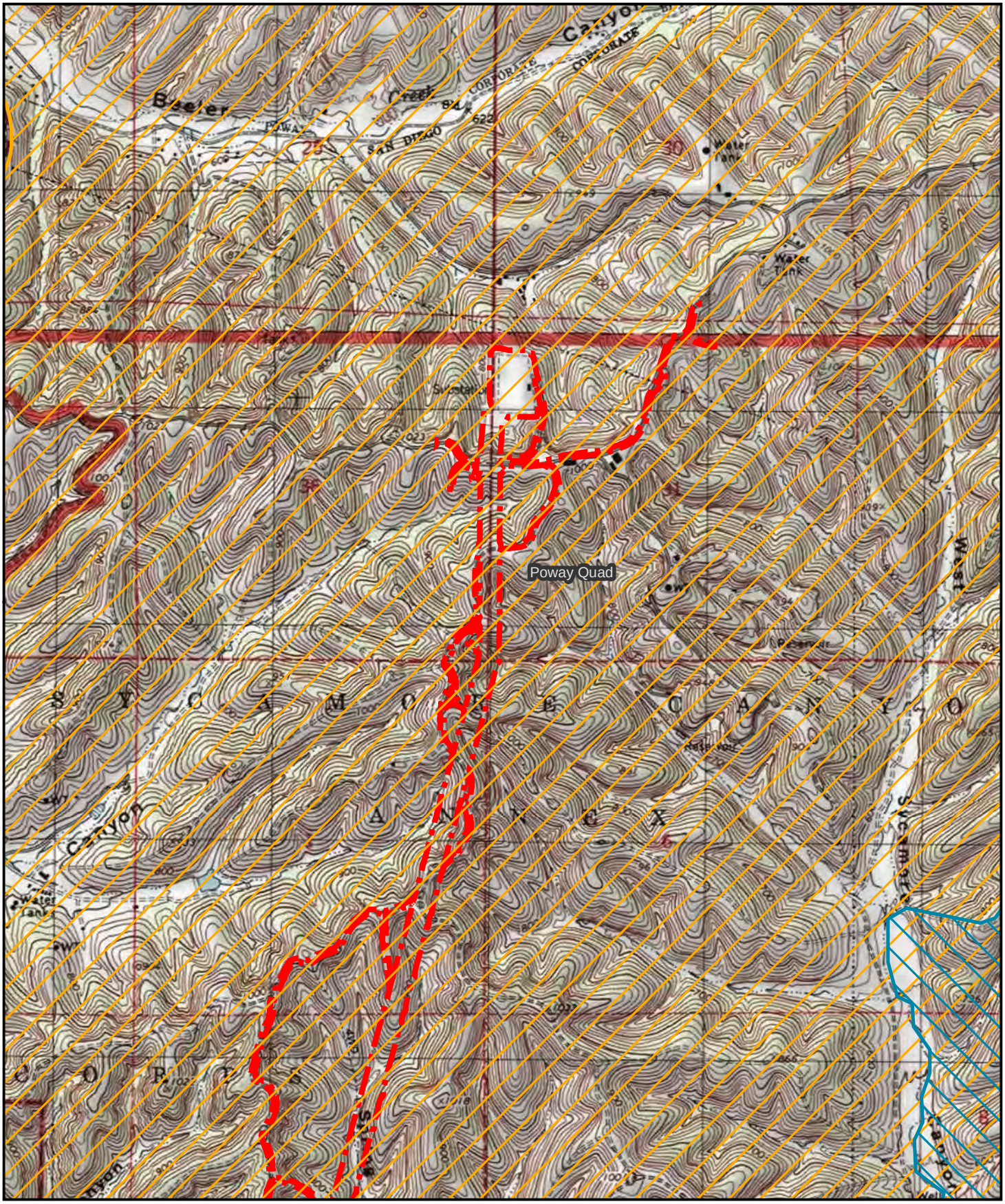

Legend

- Biological Survey Area
- 1:24,000 Quads
- SDG&E QCB Low-effect HCP Survey Area
- USFWS Recommended QCB Survey Area

N

0 500 1,000 2,000
Feet

TL636 & 639
Survey Location on a USGS
7.5-minute Quadrangle Topo Map
Figure 2

Name: 20990 QCB Rpt Fig2 Loc USGS.Mxd
Print Date: 7/6/2017, Author: stondre

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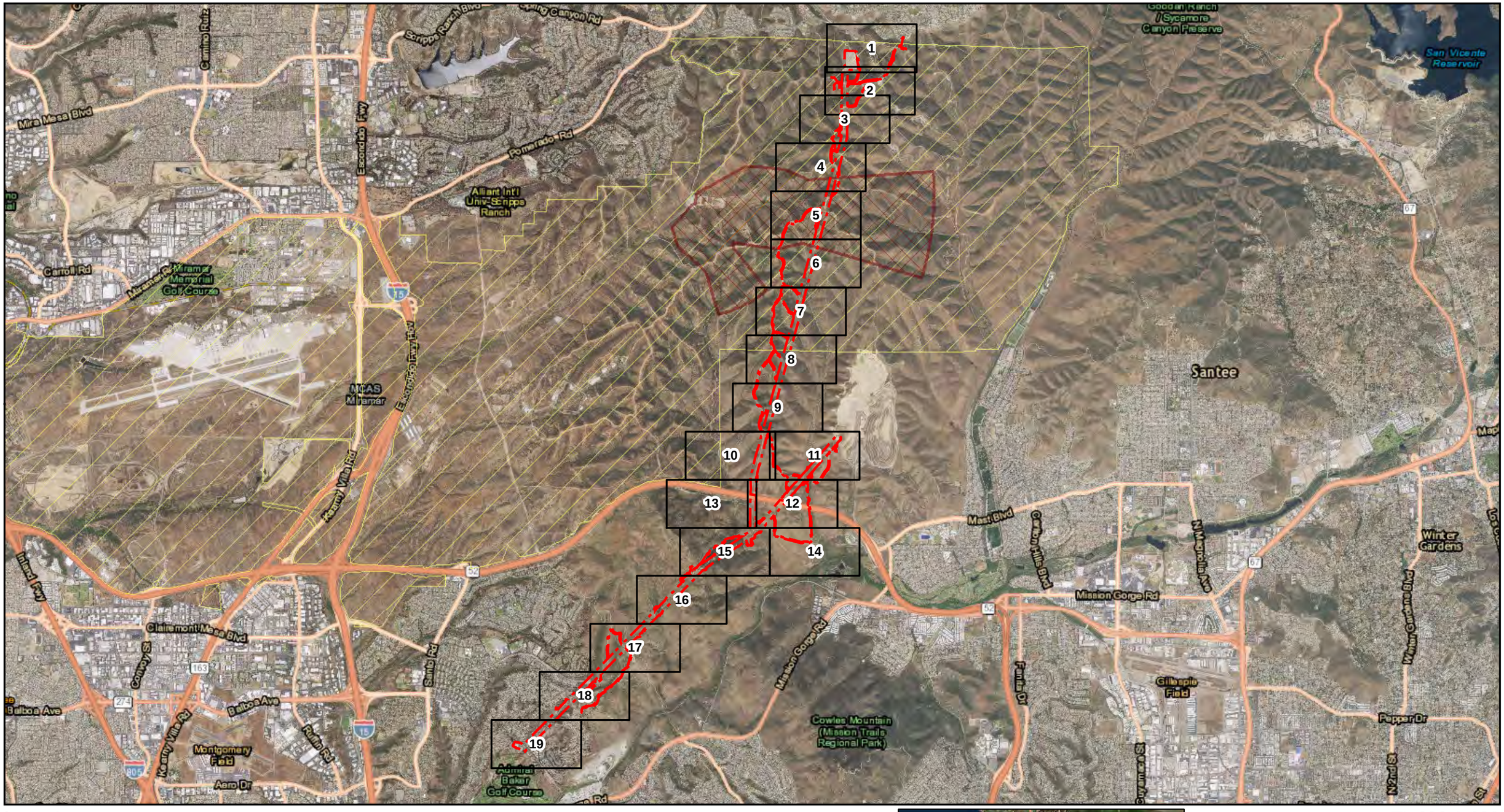
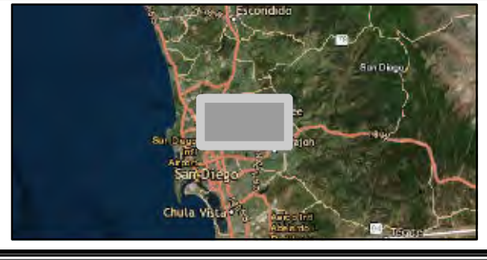
ATTACHMENT 2 –VEGETATION COMMUNITIES MAPS



Legend

- Miramar Range 100
- MCAS Miramar
- Biological Survey Area



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TL 636 & 639
Vegetation Communities Map
Page: Overview Map
Attachment 2

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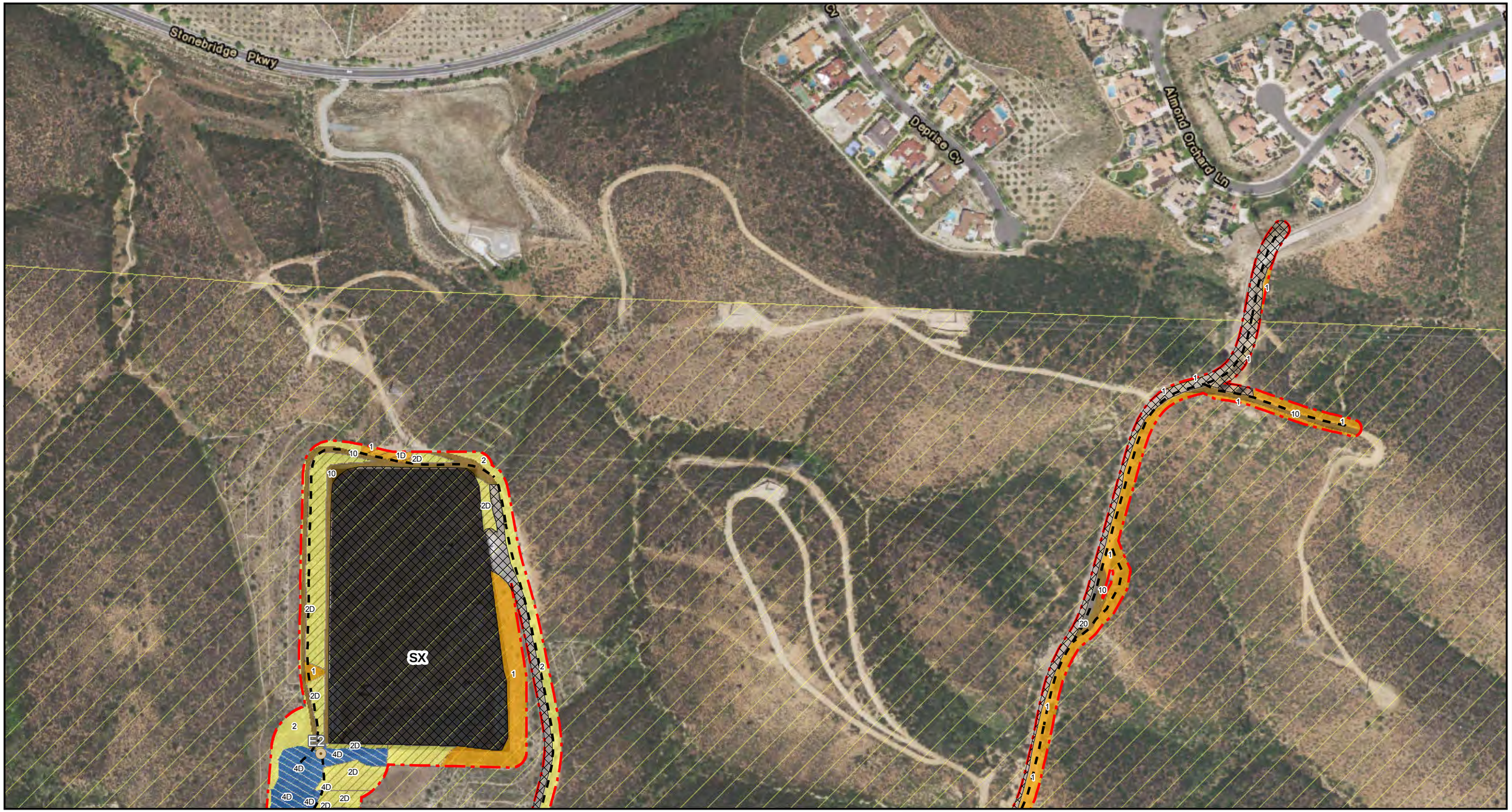
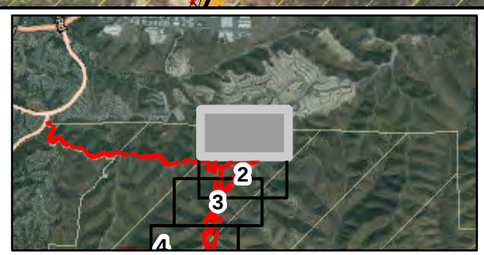


Legend

- Project Structure
- Substation
- Access Road
- MCAS Miramar
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 1D, Disturbed Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 2D, Disturbed California sagebrush-California buckwheat scrub
- 4D, Disturbed California goldfields - Dwarf plantain - Small fescue flower fields
- 10, Bare Ground
- 20, Disturbed



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TL 636 & 639
Vegetation Communities Map
Page: Page 1

Attachment 2

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Name: 20990 QCB Rpt Attach2 Vegetation_rev5.Mxd
Print Date: 10/17/2017, Author: msimmons

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E2
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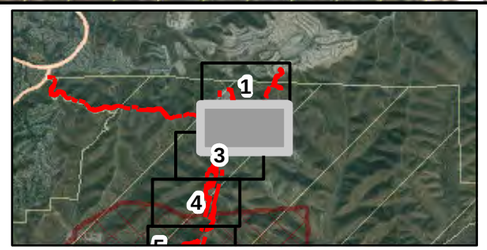
Legend

- Project Structure
- Existing Structure (approx. location)
- Substation
- Access Road
- MCAS Miramar
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 2D, Disturbed California sagebrush-California buckwheat scrub
- 3, Thick leaf yerba santa scrub
- 3D, Disturbed thick leaf yerba santa scrub
- 4, California goldfields - Dwarf plantain - Small fescue flower fields
- 4D, Disturbed California goldfields - Dwarf plantain - Small fescue flower fields
- 10, Bare Ground



TL 636 & 639
Vegetation Communities Map
Page: Page 2
Attachment 2

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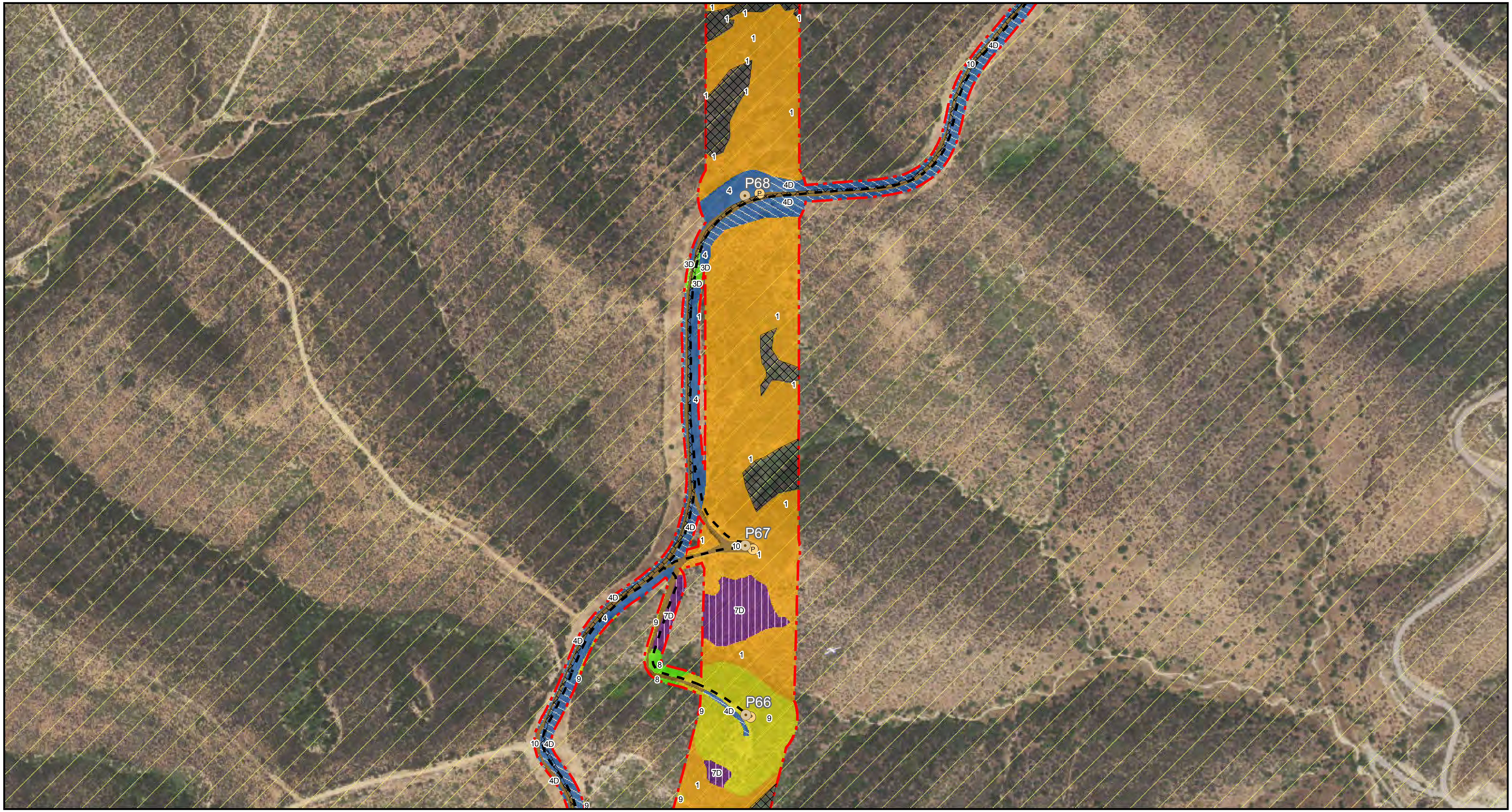
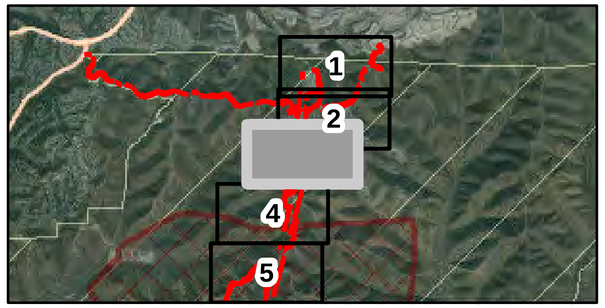


Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- MCAS Miramar
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 3D, Disturbed thick leaf yerba santa scrub
- 4, California goldfields - Dwarf plantain - Small fescue flower fields
- 4D, Disturbed California goldfields - Dwarf plantain - Small fescue flower fields
- 7D, Disturbed Purple needle grass grassland
- 8, Poison oak scrub
- 9, Scrub oak chaparral
- 10, Bare Ground



TL 636 & 639
Vegetation Communities Map
Page: Page 3
Attachment 2

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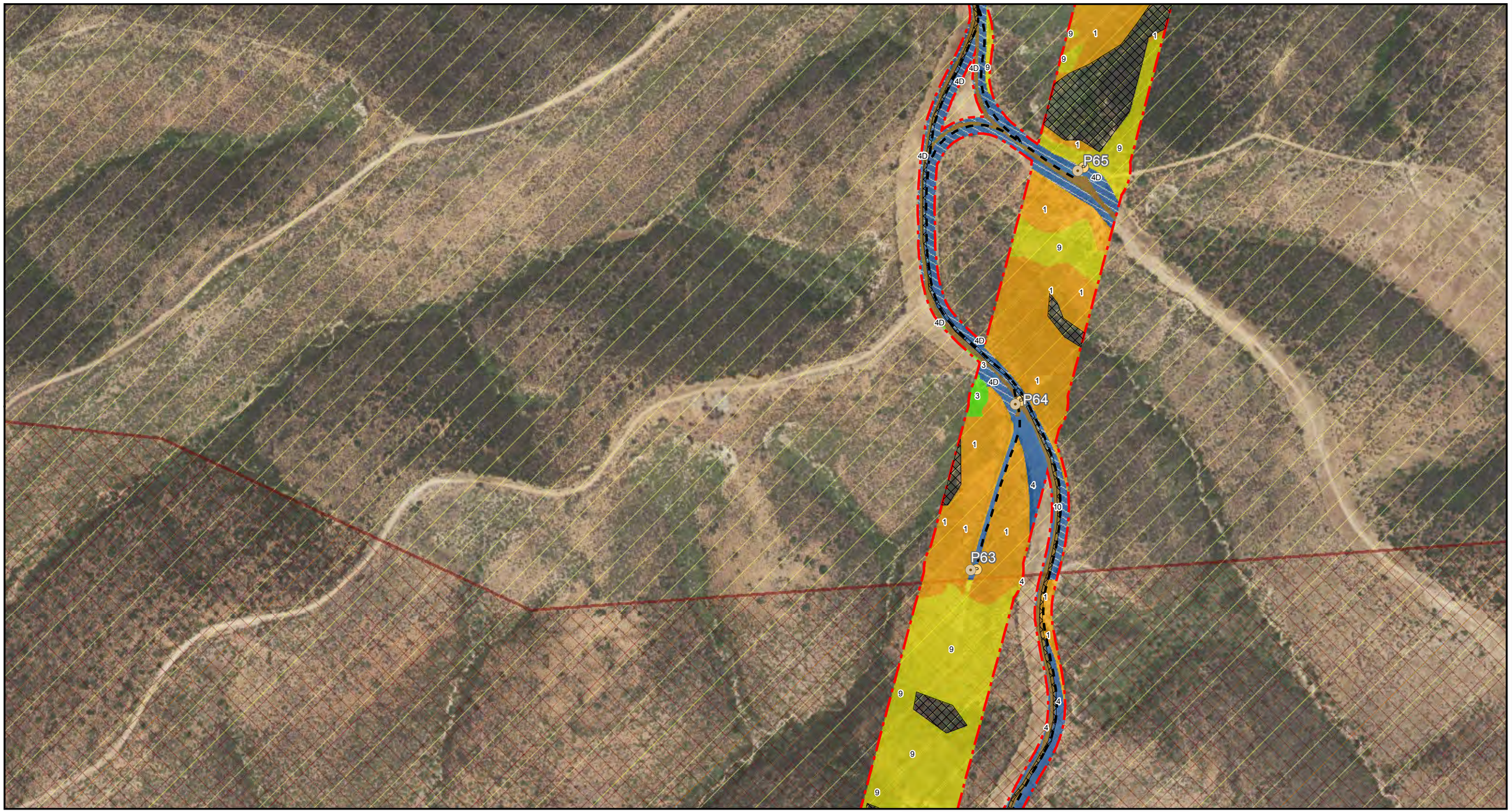
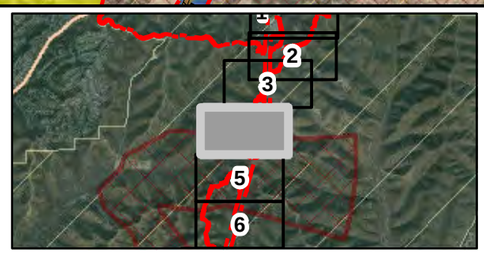


Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Miramar Range 100
- MCAS Miramar
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 3, Thick leaf yerba santa scrub
- 4, California goldfields - Dwarf plantain - Small fescue flower fields
- 4D, Disturbed California goldfields - Dwarf plantain - Small fescue flower fields
- 9, Scrub oak chaparral
- 10, Bare Ground



TL 636 & 639
Vegetation Communities Map
Page: Page 4
Attachment 2

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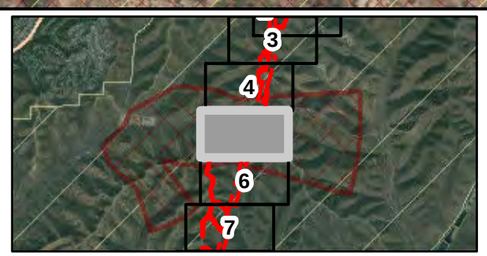
Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Miramar Range 100
- MCAS Miramar
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 3, Thick leaf yerba santa scrub
- 3D, Disturbed thick leaf yerba santa scrub
- 4, California goldfields - Dwarf plantain - Small fescue flower fields
- 4D, Disturbed California goldfields - Dwarf plantain - Small fescue flower fields
- 9, Scrub oak chaparral
- 10, Bare Ground
- 11, Annual brome grassland



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TL 636 & 639
Vegetation Communities Map
Page: Page 5
Attachment 2

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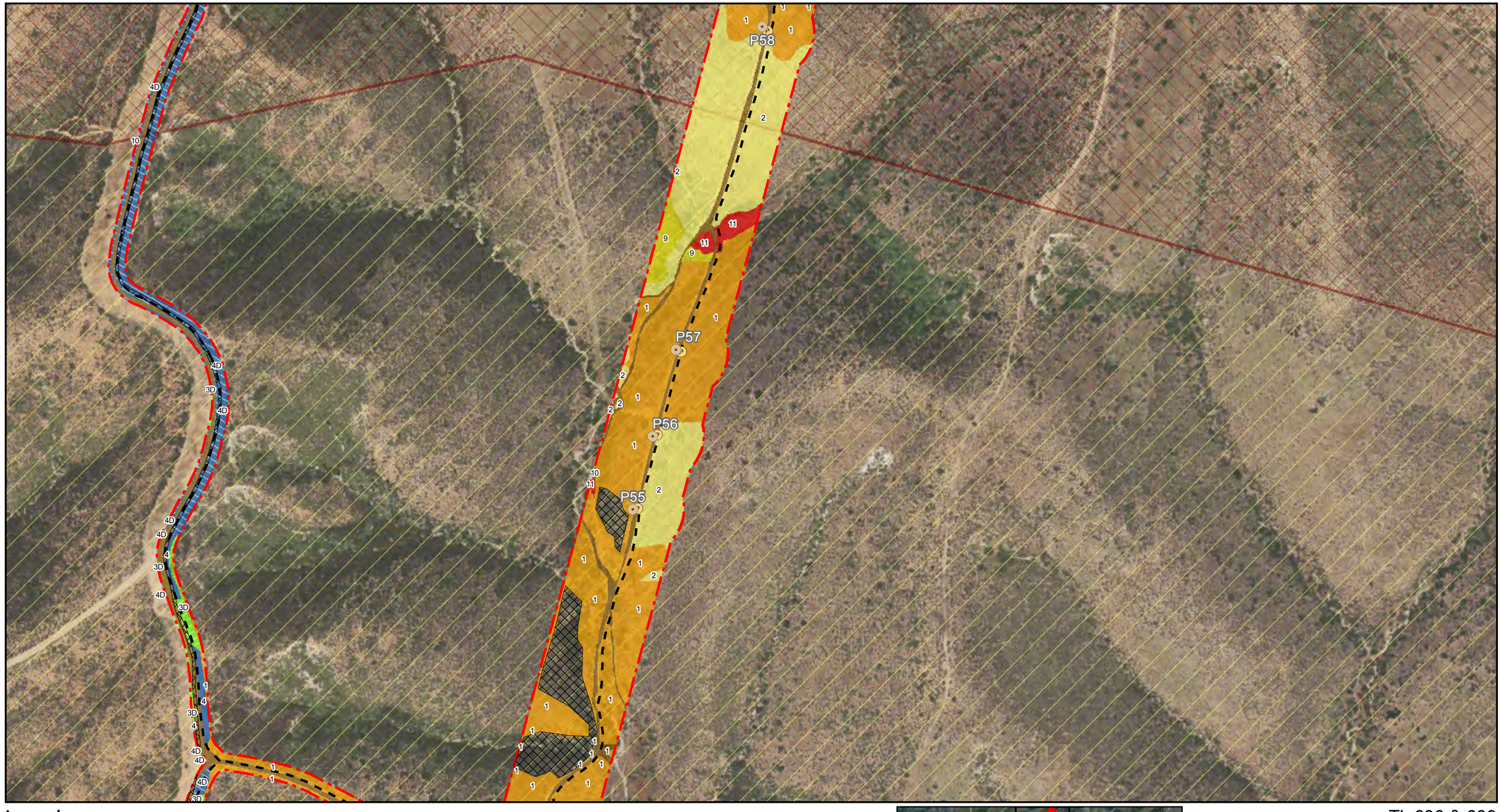
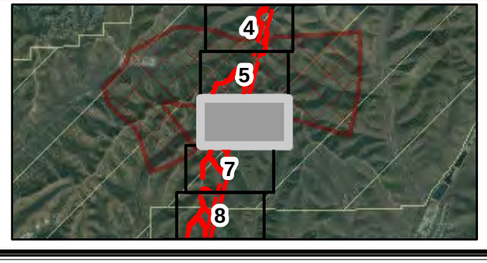


Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Miramar Range 100
- MCAS Miramar
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 3D, Disturbed thick leaf yerba santa scrub
- 4, California goldfields - Dwarf plantain - Small fescue flower fields
- 4D, Disturbed California goldfields - Dwarf plantain - Small fescue flower fields
- 9, Scrub oak chaparral
- 10, Bare Ground
- 11, Annual brome grassland



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TL 636 & 639
Vegetation Communities Map
Page: Page 6
Attachment 2

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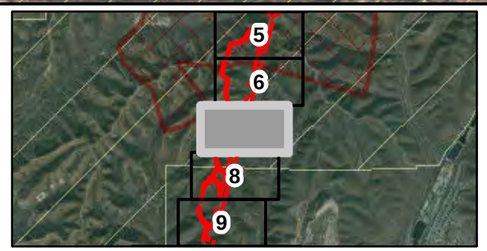
Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Miramar Range 100
- MCAS Miramar
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 3D, Disturbed thick leaf yerba santa scrub
- 4, California goldfields - Dwarf plantain - Small fescue flower fields
- 4D, Disturbed California goldfields - Dwarf plantain - Small fescue flower fields
- 10, Bare Ground



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TL 636 & 639
Vegetation Communities Map
Page: Page 7
Attachment 2

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Feet

Name: 20990 QCB Rpt Attach2 Vegetation_rev5.Mxd
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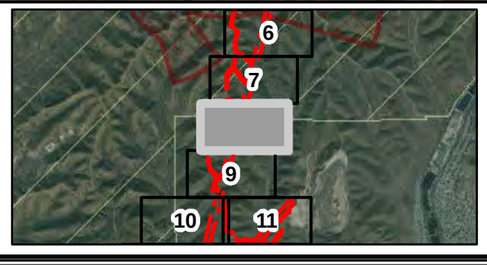
Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- MCAS Miramar
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 3, Thick leaf yerba santa scrub
- 4, California goldfields - Dwarf plantain - Small fescue flower fields
- 4D, Disturbed California goldfields - Dwarf plantain - Small fescue flower fields
- 10, Bare Ground
- 11, Annual brome grassland



TL 636 & 639
Vegetation Communities Map
Page: Page 8

Attachment 2

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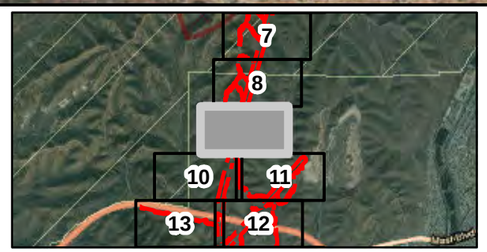
Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 4, California goldfields - Dwarf plantain - Small fescue flower fields
- 4D, Disturbed California goldfields - Dwarf plantain - Small fescue flower fields
- 9, Scrub oak chaparral
- 10, Bare Ground



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Vegetation Communities Map
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Attachment 2

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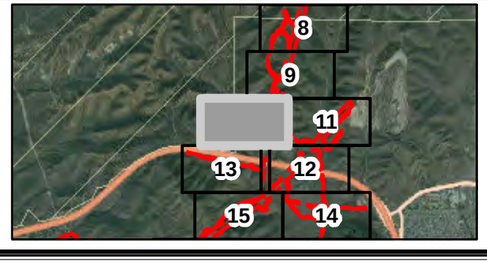
Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- MCAS Miramar
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 1D, Disturbed Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 2D, Disturbed California sagebrush-California buckwheat scrub
- 10, Bare Ground
- 11, Annual brome grassland



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TL 636 & 639
Vegetation Communities Map
Page: Page 10
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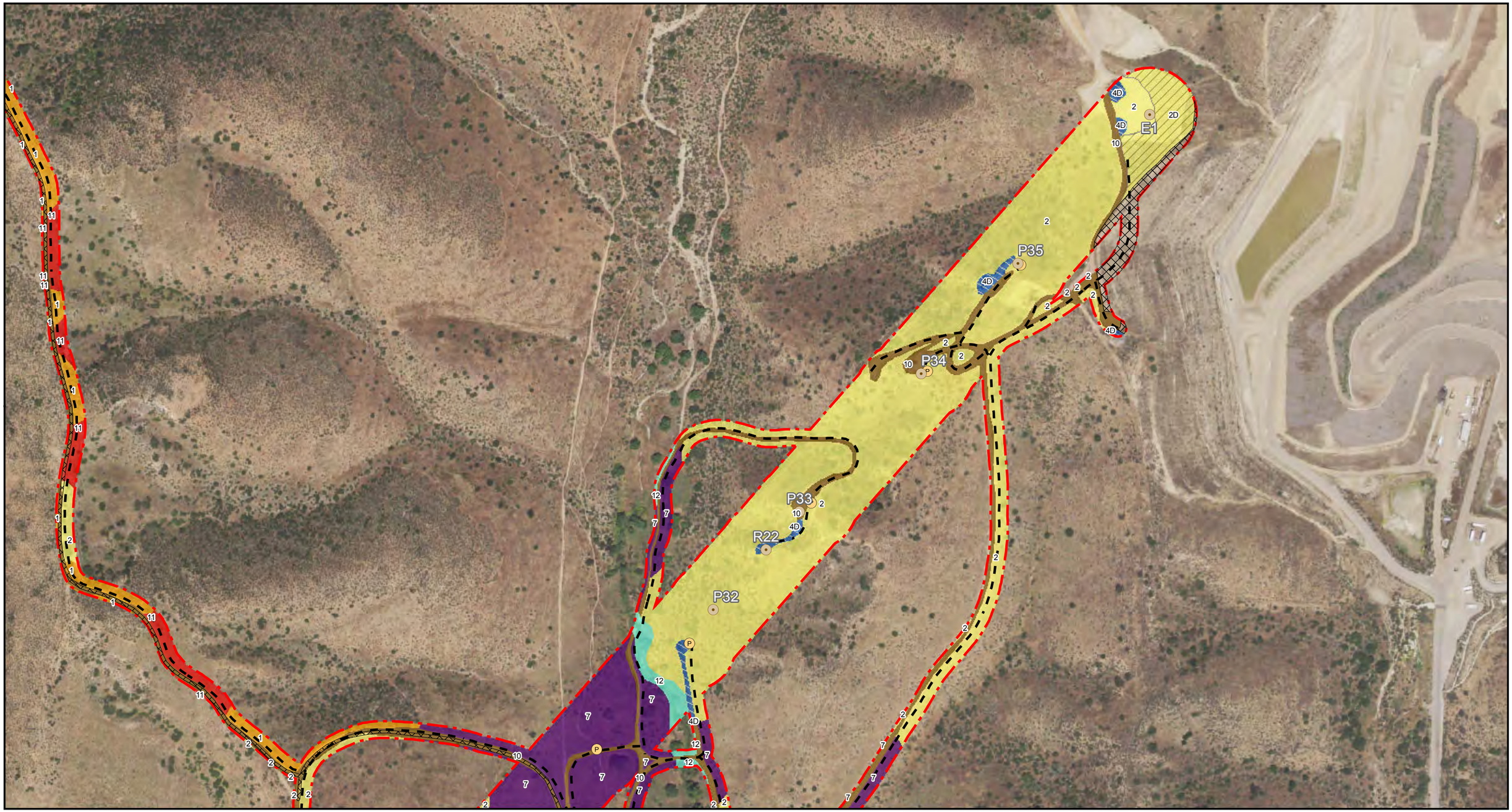
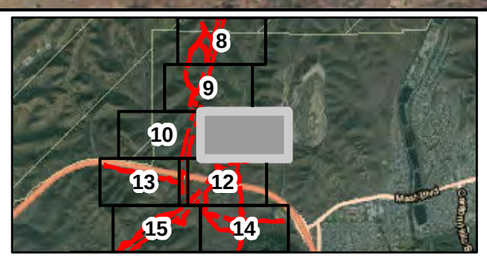


Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 2D, Disturbed California sagebrush-California buckwheat scrub
- 4D, Disturbed California goldfields - Dwarf plantain - Small fescue flower fields
- 7, Purple needle grass grassland
- 10, Bare Ground
- 11, Annual brome grassland
- 12, Arroyo willow-California sycamore woodland



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TL 636 & 639
Vegetation Communities Map
Page: Page 11
Attachment 2

0 120 240 480
Feet

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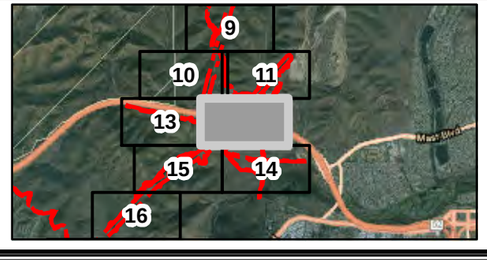
Print Date: 10/17/2017, Author: msimmons

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 2D, Disturbed California sagebrush-California buckwheat scrub
- 7, Purple needle grass grassland
- 10, Bare Ground
- 11, Annual brome grassland
- 12, Arroyo willow-California sycamore woodland
- 14, Broom Baccharis Thicket
- 14D, Disturbed Broom baccharis thickets
- 15, Cattail marshes
- 16, Pale spike rush marshes



TL 636 & 639
Vegetation Communities Map
Page: Page 12

Attachment 2

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Feet

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Print Date: 10/17/2017, Author: msimmons

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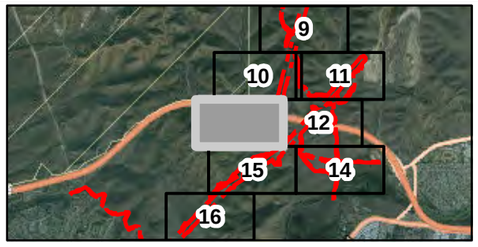
Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- MCAS Miramar
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 2D, Disturbed California sagebrush-California buckwheat scrub
- 10, Bare Ground
- 11, Annual brome grassland
- 16, Pale spike rush marshes



TL 636 & 639
Vegetation Communities Map
Page: Page 13

Attachment 2

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Feet

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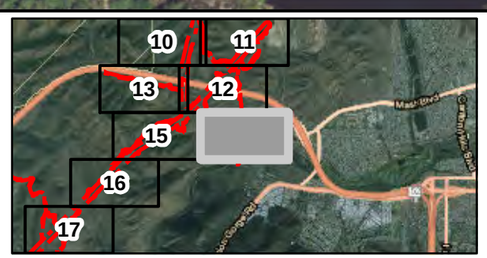
San Diego River

Legend

- Access Road
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 2, California sagebrush-California buckwheat scrub
- 7, Purple needle grass grassland
- 10, Bare Ground
- 11, Annual brome grassland
- 12, Arroyo willow-California sycamore woodland
- 14, Broom Baccharis Thicket
- 16, Pale spike rush marshes



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TL 636 & 639
Vegetation Communities Map
Page: Page 14
Attachment 2

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P25
P37
P24
P36
P23
S1
P22
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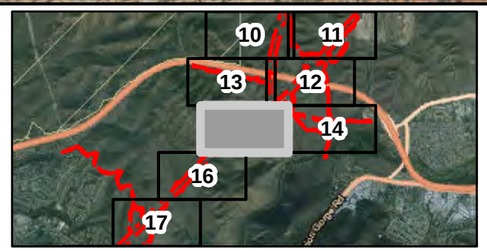
R18
P20
P19
R17

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 4D, Disturbed California goldfields - Dwarf plantain - Small fescue flower fields
- 9, Scrub oak chaparral
- 10, Bare Ground
- 12, Arroyo willow-California sycamore woodland



TL 636 & 639
Vegetation Communities Map
Page: Page 15

Attachment 2

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Print Date: 10/17/2017, Author: msimmons

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P18
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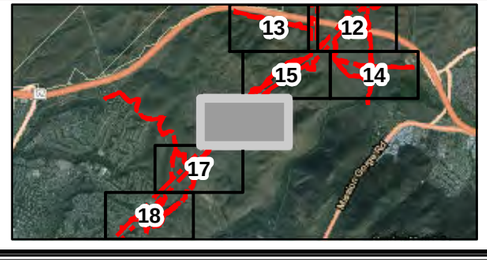
R15
P16
R14
R13
P15
R12
R11
2
2D
2S
4D
10
14
17

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 2, California sagebrush-California buckwheat scrub
- 2D, Disturbed California sagebrush-California buckwheat scrub
- 2S, Sparse California sagebrush-California buckwheat scrub
- 4D, Disturbed California goldfields - Dwarf plantain - Small fescue flower fields
- 10, Bare Ground
- 14, Broom Baccharis Thicket
- 17, Coast live oak woodland



TL 636 & 639
Vegetation Communities Map
Page: Page 16
Attachment 2

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Print Date: 10/17/2017, Author: msimmons

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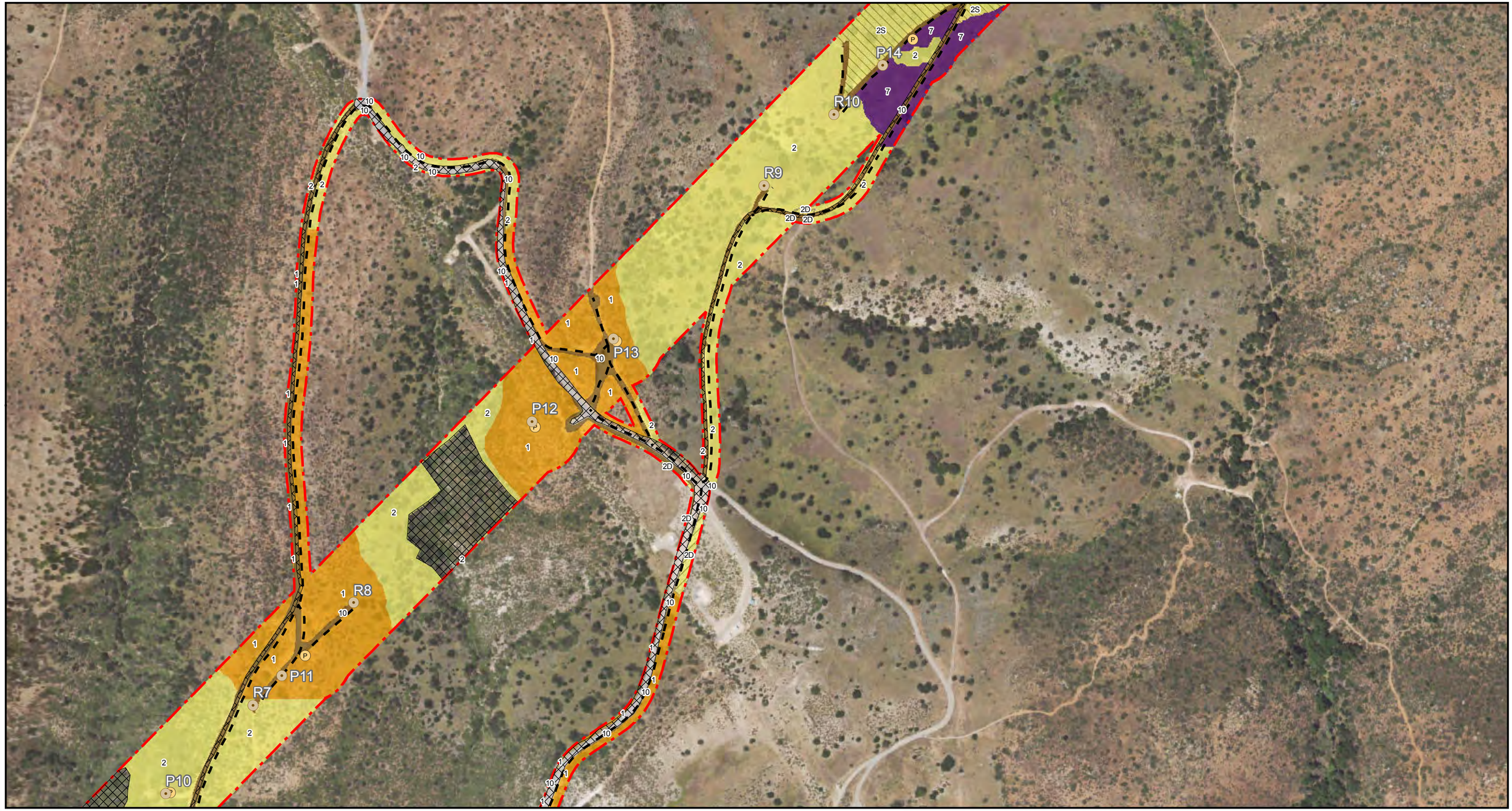
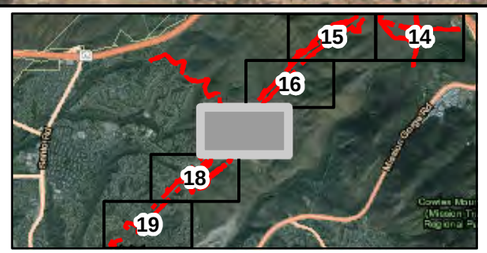


Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 2D, Disturbed California sagebrush-California buckwheat scrub
- 2S, Sparse California sagebrush-California buckwheat scrub
- 7, Purple needle grass grassland
- 10, Bare Ground



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TL 636 & 639
Vegetation Communities Map
Page: Page 17

Attachment 2

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Feet

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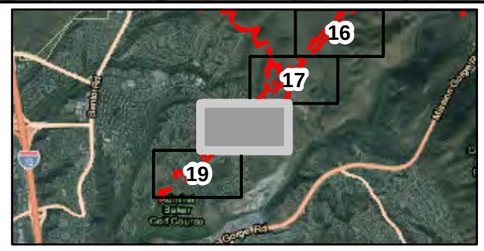
CHAMBERS GROUP

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 2D, Disturbed California sagebrush-California buckwheat scrub
- 4, California goldfields - Dwarf plantain - Small fescue flower fields
- 7, Purple needle grass grassland
- 9, Scrub oak chaparral
- 10, Bare Ground
- 14, Broom Baccharis Thicket



TL 636 & 639
Vegetation Communities Map
Page: Page 18

Attachment 2

N

0 120 240 480
Feet

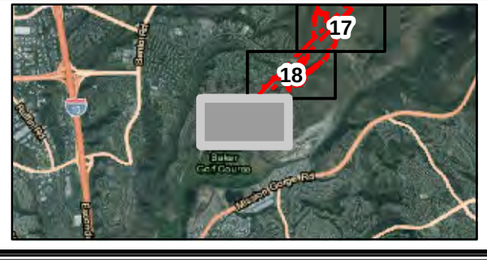
Name: 20990 QCB Rpt Attach2 Vegetation_rev5.Mxd
Print Date: 10/17/2017, Author: msimmons
CHAMBERS GROUP

Legend

- Project Structure
- Existing Structure (approx. location)
- Substation
- Access Road
- Biological Survey Area
- Excluded Habitat

Vegetation Community

- 1, Chamise – black sage chaparral
- 2, California sagebrush-California buckwheat scrub
- 2D, Disturbed California sagebrush-California buckwheat scrub
- 4D, Disturbed California goldfields - Dwarf plantain - Small fescue flower fields
- 7, Purple needle grass grassland
- 9, Scrub oak chaparral
- 10, Bare Ground
- 12, Arroyo willow-California sycamore woodland



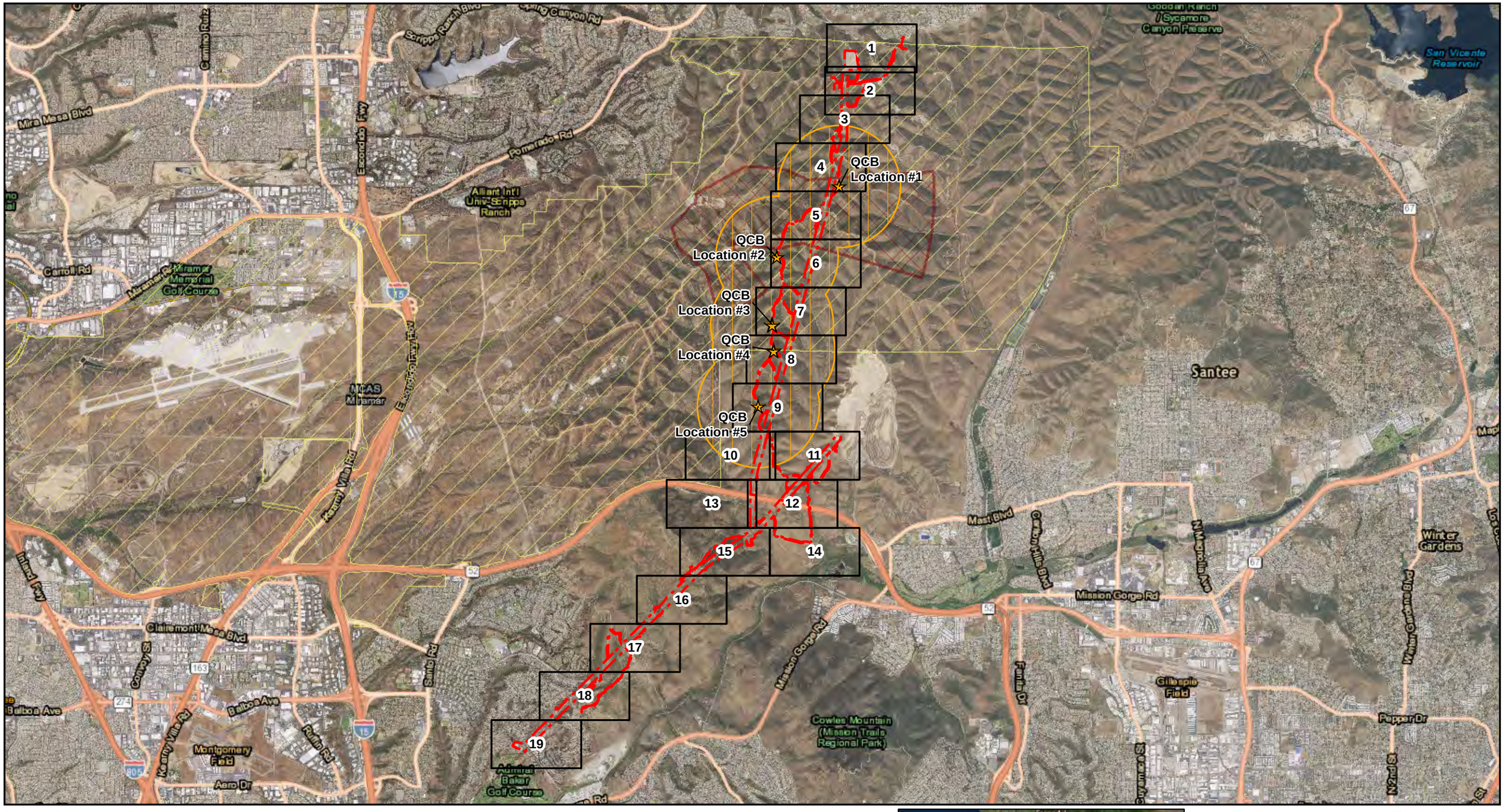
N

TL 636 & 639
Vegetation Communities Map
Page: Page 19
Attachment 2

0 120 240 480
Feet

Name: 20990 QCB Rpt Attach2 Vegetation_rev5.Mxd
Print Date: 10/17/2017, Author: msimmons

ATTACHMENT 3 – QCB HOST PLANT LOCATION AND SURVEY RESULTS MAP


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
QCB Location #1
QCB Location #2
QCB Location #3
QCB Location #4
QCB Location #5
Miramar Range 100
MCAS Miramar
Biological Survey Area
QCB Observation
QCB Occupied Territory*
*Area shown is per USFWS protocol, not SDG&E HCP
N
0 1,950 3,900 7,800
Feet
Escondido
San Diego
Chula Vista
TL 636 & 639
QCB Host Plant Location & Survey Results Map
Page: Overview Map
Attachment 3
Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons
CHAMBERS GROUP

Legend

- Project Structure
- Substation
- Access Road
- MCAS Miramar
- Biological Survey Area

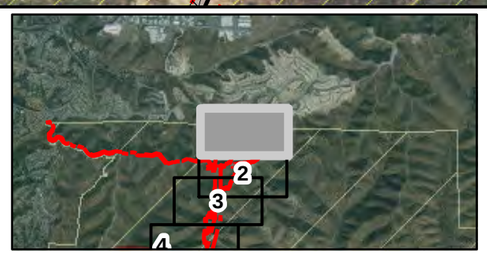
QCB Host Plant

- High Density
- Moderate Density
- Low Density
- Excluded Habitat

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location &
Survey Results Map
Page: Page 1
Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons
CHAMBERS GROUP

E2
R29
P70
P69
P68

Legend

- Project Structure
- Existing Structure (approx. location)
- Substation
- Access Road
- MCAS Miramar
- Biological Survey Area

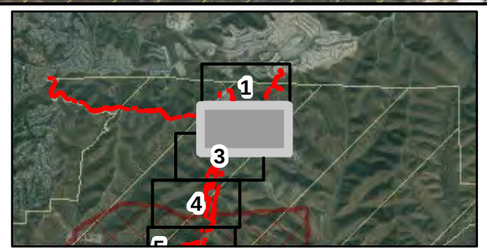
QCB Host Plant

- High Density
- Moderate Density
- Low Density
- Excluded Habitat

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map
Page: Page 2
Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons

CHAMBERS GROUP

P68

P67

P66

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- MCAS Miramar
- Biological Survey Area
- QCB Occupied Territory*
- Excluded Habitat

QCB Host Plant

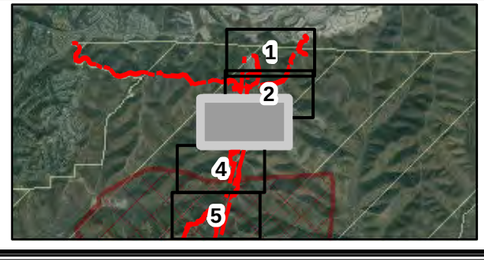
- High Density
- Moderate Density
- Low Density

*Area shown is per USFWS protocol, not SDG&E HCP

N

0 120 240 480

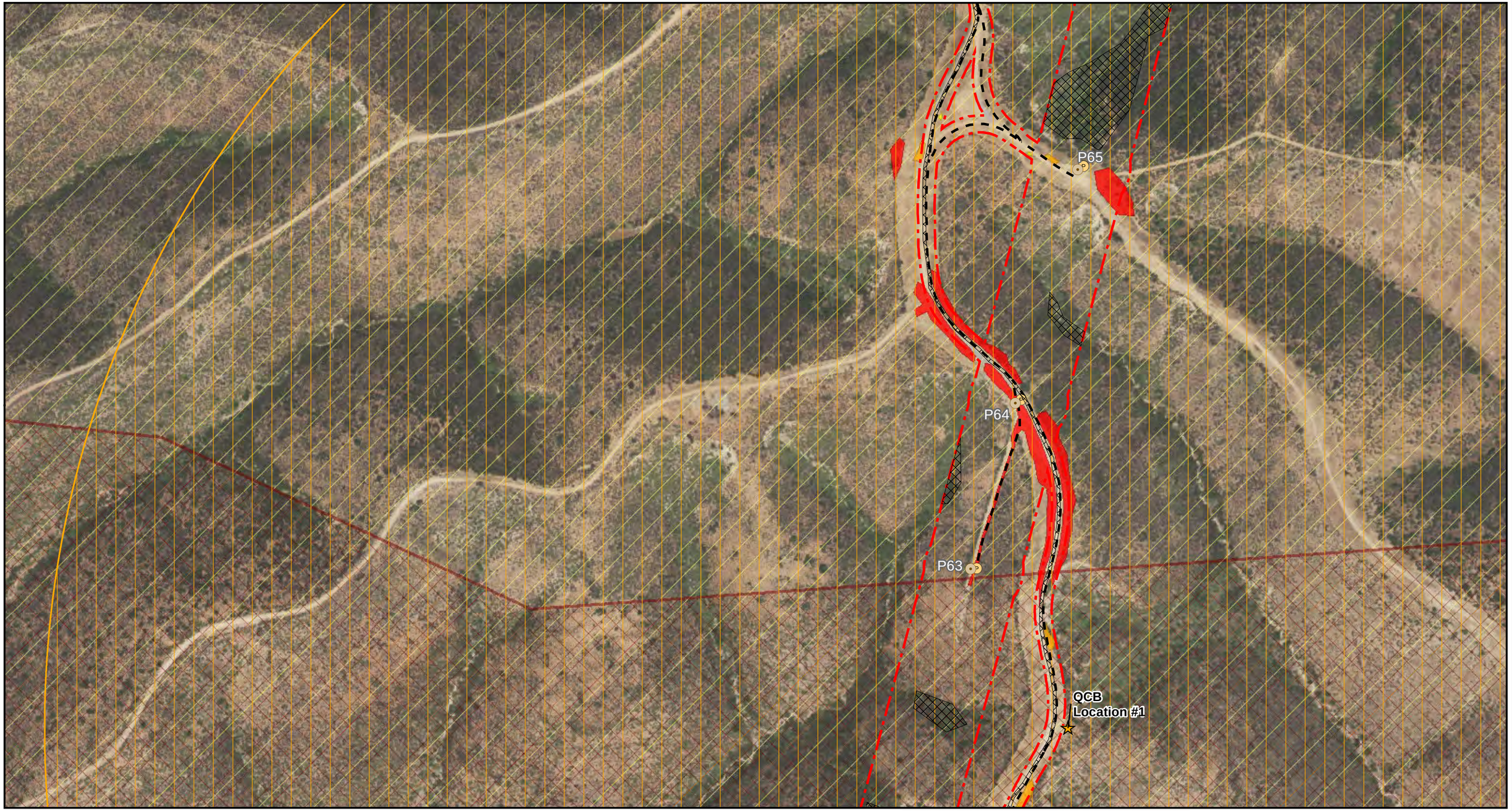
Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map
Page: Page 3
Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons

CHAMBERS GROUP



Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Miramar Range 100
- MCAS Miramar
- Biological Survey Area
- QCB Observation
- QCB Occupied Territory*

QCB Host Plant

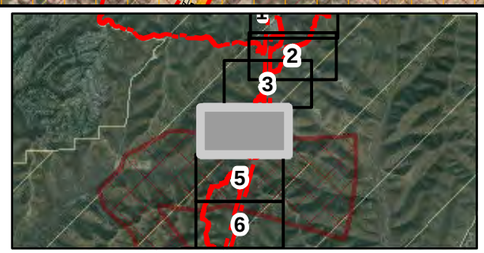
- High Density
- Moderate Density
- Low Density
- Excluded Habitat

*Area shown is per USFWS protocol, not SDG&E HCP

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map
Page: Page 4
Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons

P62
P61
R28
P60
R27
P59

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Miramar Range 100
- MCAS Miramar
- Biological Survey Area
- QCB Occupied Territory*
- Excluded Habitat

QCB Host Plant

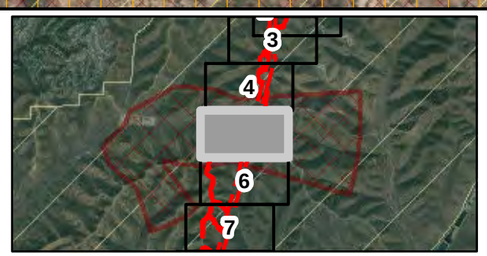
- High Density
- Moderate Density
- Low Density

*Area shown is per USFWS protocol, not SDG&E HCP

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map
Page: Page 5

Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons

CHAMBERS GROUP

P58
P57
P56
P55
QCB
Location #2

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Miramar Range 100
- MCAS Miramar
- Biological Survey Area
- QCB Observation
- QCB Occupied Territory*

QCB Host Plant

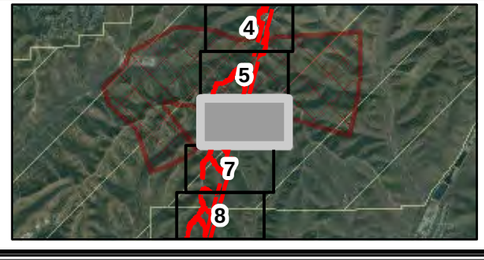
- High Density
- Moderate Density
- Low Density
- Excluded Habitat

*Area shown is per USFWS protocol, not SDG&E HCP

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map
Page: Page 6
Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons
CHAMBERS GROUP

P54
R26
P53
P52
QCB Location #3
QCB Location #3
QCB Location #3

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Miramar Range 100
- MCAS Miramar
- Biological Survey Area
- QCB Observation
- QCB Occupied Territory*

QCB Host Plant

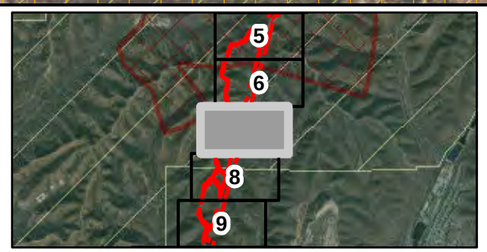
- High Density
- Moderate Density
- Low Density
- Excluded Habitat

*Area shown is per USFWS protocol, not SDG&E HCP

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map
Page: Page 7
Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons
CHAMBERS GROUP

P51

QCB
Location #4

P50

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- MCAS Miramar
- Biological Survey Area
- QCB Observation
- QCB Occupied Territory*

QCB Host Plant

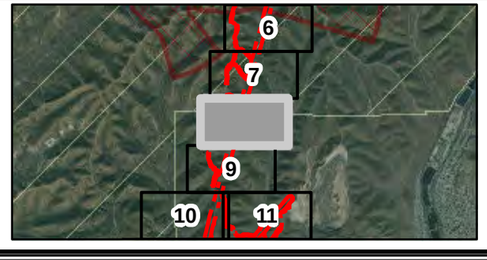
- High Density
- Moderate Density
- Low Density
- Excluded Habitat

*Area shown is per USFWS protocol, not SDG&E HCP

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map

Page: Page 8

Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons

CHAMBERS GROUP

P49

QCB
Location #5

P48

P47

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Biological Survey Area
- QCB Observation
- QCB Occupied Territory*
- Excluded Habitat

QCB Host Plant

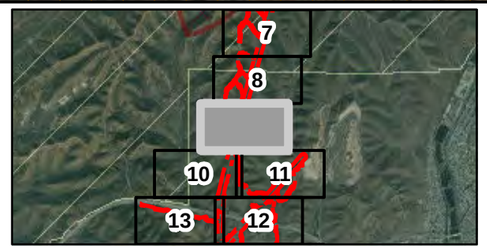
- High Density
- Moderate Density
- Low Density

*Area shown is per USFWS protocol, not SDG&E HCP

N

0 120 240 480

Feet



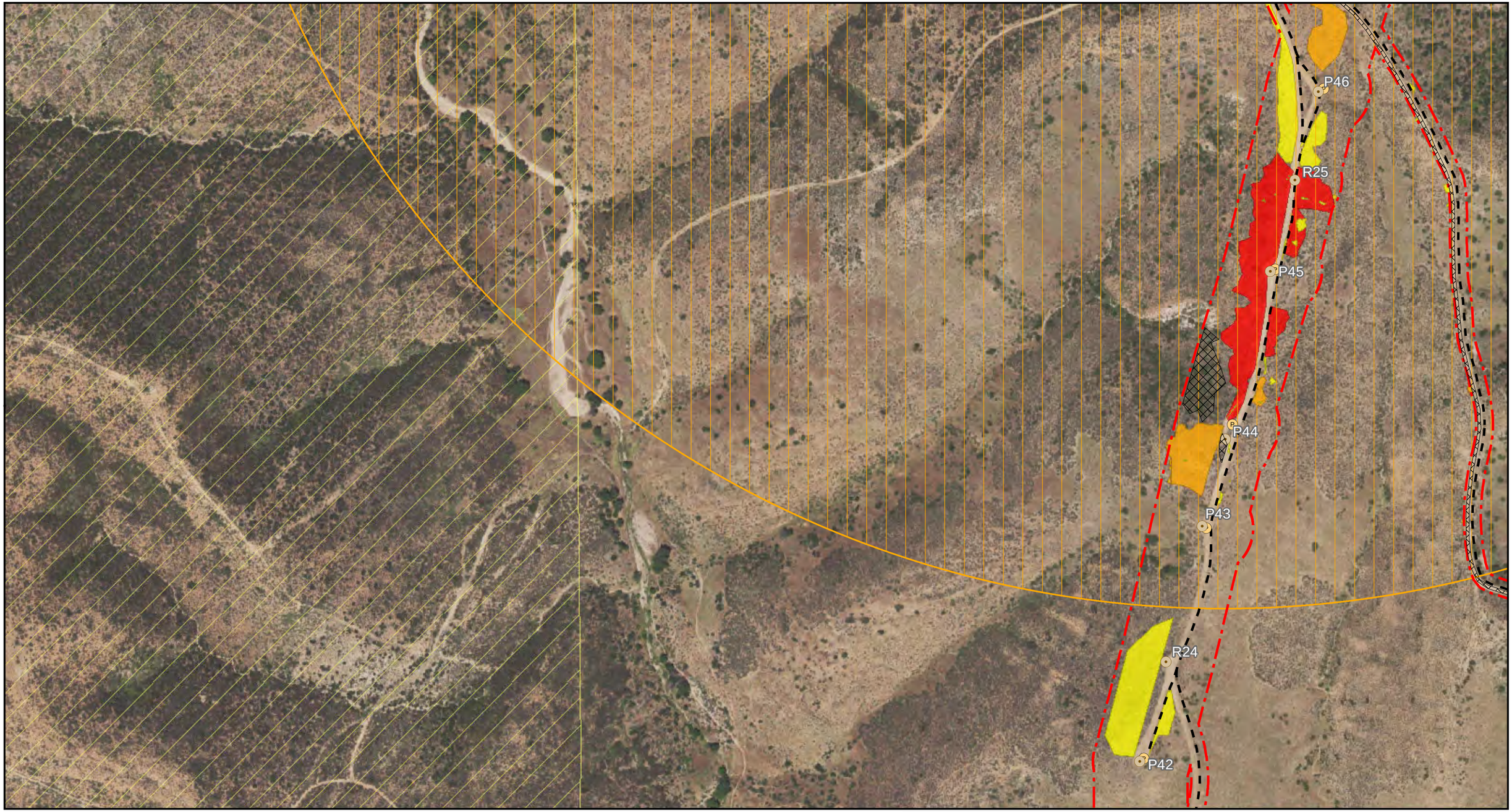
TL 636 & 639
QCB Host Plant Location & Survey Results Map

Page: Page 9

Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons

CHAMBERS GROUP



Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- MCAS Miramar
- Biological Survey Area
- QCB Occupied Territory*
- Excluded Habitat

QCB Host Plant

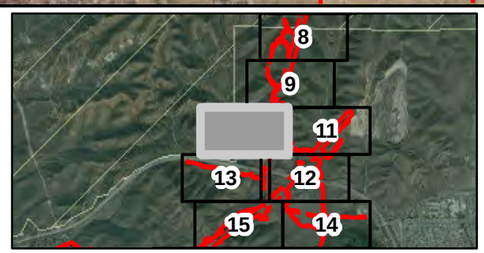
- High Density
- Moderate Density
- Low Density

*Area shown is per USFWS protocol, not SDG&E HCP

N

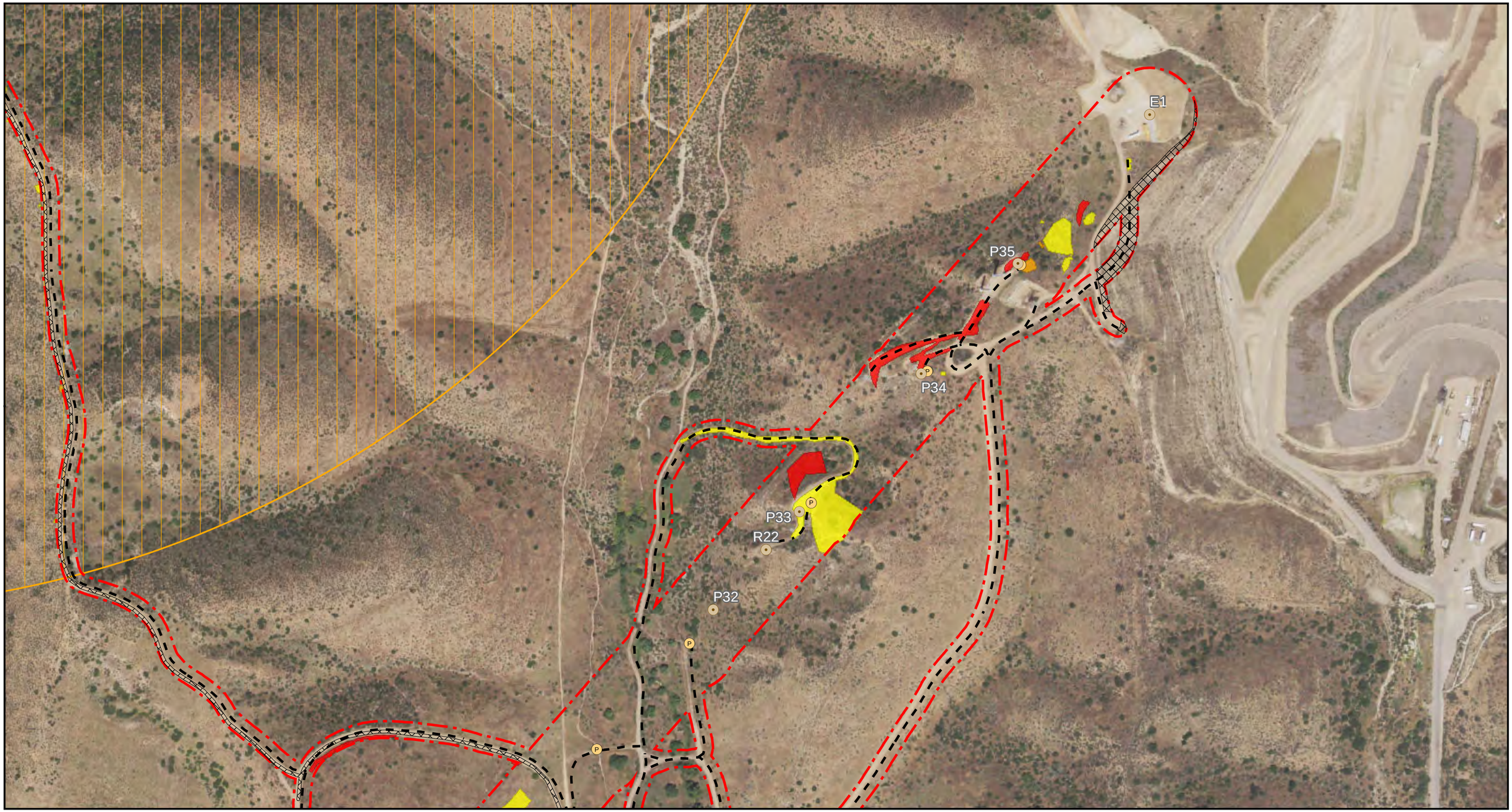
0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map
Page: Page 10
Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons



Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Biological Survey Area
- QCB Occupied Territory*

QCB Host Plant

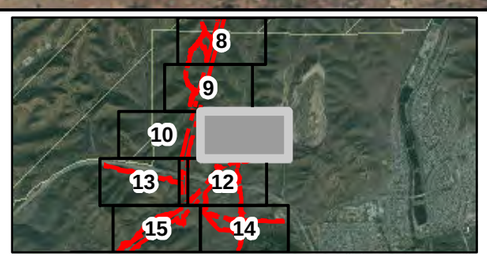
- High Density
- Moderate Density
- Low Density
- Excluded Habitat

*Area shown is per USFWS protocol, not SDG&E HCP

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map
Page: Page 11
Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons
CHAMBERS GROUP

P31
R21
P30
P41
P29
P28
52
P40
R23
P27
P39
R20
P26
P38

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Biological Survey Area

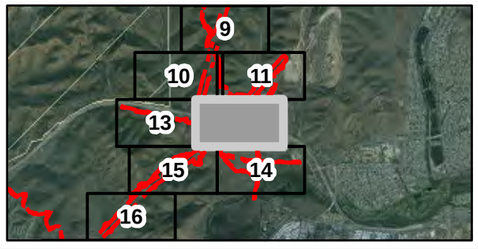
QCB Host Plant

- High Density
- Moderate Density
- Low Density
- Excluded Habitat

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map

Page: Page 12

Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons

CHAMBERS GROUP

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- MCAS Miramar
- Biological Survey Area

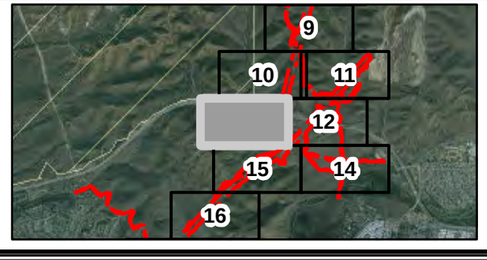
QCB Host Plant

- High Density
- Moderate Density
- Low Density
- Excluded Habitat

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map

Page: Page 13

Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons

CHAMBERS GROUP

San Diego River

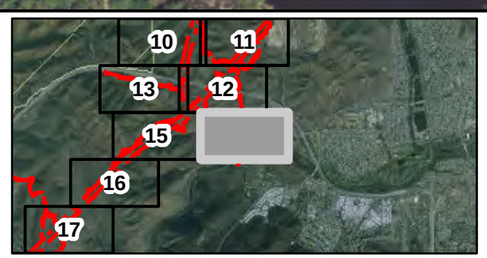
Legend

- Access Road
- Biological Survey Area
- Excluded Habitat

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location &
Survey Results Map
Page: Page 14
Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons

P25
P37
P24
P36
P23
S1
P22
R19
P21
R18
P20
P19
R17

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Biological Survey Area

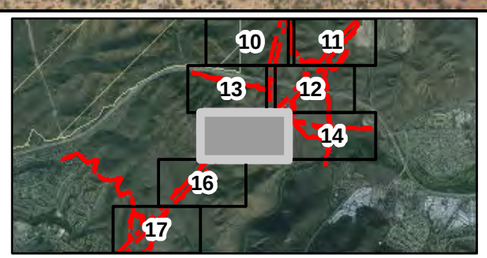
QCB Host Plant

- High Density
- Moderate Density
- Low Density
- Excluded Habitat

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map
Page: Page 15

Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons

CHAMBERS GROUP

P18
R16
P17
R15
P16
R14
R13
P15
R12
R11

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Biological Survey Area

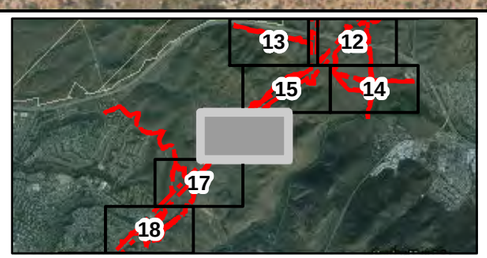
QCB Host Plant

- High Density
- Moderate Density
- Low Density
- Excluded Habitat

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map

Page: Page 16

Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons

CHAMBERS GROUP

P14
R10
R9
P13
P12
R8
P11
R7
P10

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Biological Survey Area

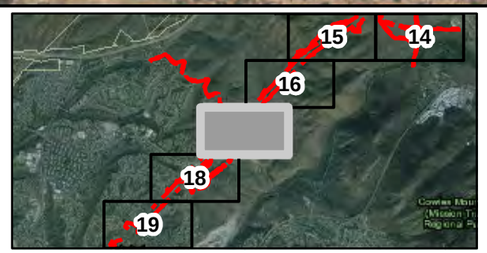
QCB Host Plant

- High Density
- Moderate Density
- Low Density
- Excluded Habitat

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map
Page: Page 17
Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons

Legend

- Project Structure
- Existing Structure (approx. location)
- Access Road
- Biological Survey Area

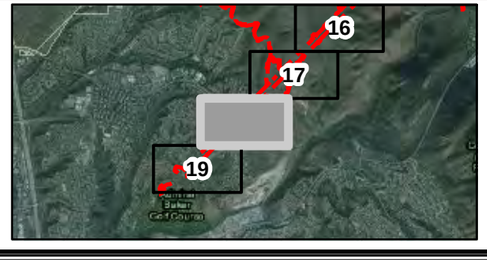
QCB Host Plant

- Moderate Density
- Excluded Habitat

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map
Page: Page 18
Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons
CHAMBERS GROUP

Legend

- Project Structure
- Existing Structure (approx. location)
- Substation
- Access Road
- Biological Survey Area

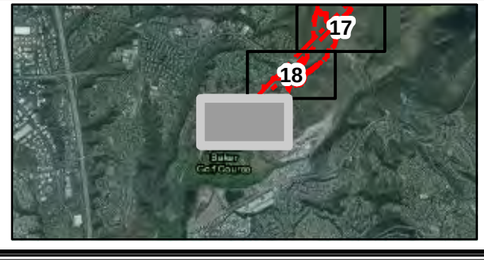
QCB Host Plant

- Moderate Density
- Excluded Habitat

N

0 120 240 480

Feet



TL 636 & 639
QCB Host Plant Location & Survey Results Map
Page: Page 19
Attachment 3

Name: 20990 QCB Rpt Attach3 Host Plants_rev2.Mxd
Print Date: 10/31/2017, Author: msimmons

ATTACHMENT 4 – SITE PHOTOGRAPHS

ATTACHMENT 4 – SITE PHOTOGRAPHS

Photo 1:

Project overview of alignment showing mix of grassland, chaparral, and coastal sage scrub habitats. Highway 52 is visible in the center of the photo. Photo taken facing south on April 20, 2017.

Photo 2:

Quino checkerspot butterfly (QCB) found in QCB Location #2. Photo taken facing west on March 18, 2017.

ATTACHMENT 4 – SITE PHOTOGRAPHS

Photo 3:

Western edge of access road along the TL 639 alignment, north of highway 52. The QCB host plant dwarf plantain (*Plantago erecta*) is present in low density on the road, and high density west of the road. This is QCB Location #4 where two QCB were observed during focused surveys. Photo taken facing northeast on March 18, 2017.

Photo 4:

QCB observed sunning on a small hilltop adjacent to firebreak within the QCB Survey Area, along the TL 639 alignment, north of Highway 52, QCB Location #1. Photo taken on April 1, 2017.

ATTACHMENT 4 – SITE PHOTOGRAPHS

Photo 5:

QCB found at QCB Location #3. This QCB was observed nectaring on *Cryptantha* sp. within a dense patch of dwarf plantain (in a firebreak) on both the east and west sides of the access road between proposed pole locations P51 and P52. Photo taken facing west on March 24, 2017.

Photo 6:

Dwarf plantain growing within the firebreak on the west side of the access road between proposed pole locations P51 and P52, just north of QCB Location #3. Note compact cryptobiotic clay soils and density of host plant within this patch in the 10,000s. Photo taken facing west on March 31, 2017.

ATTACHMENT 4 – SITE PHOTOGRAPHS

Photo 7:

High quality QCB habitat within QCB Survey Area, with ample host plant and nectar sources, south of highway 52 where TL 636 and TL 639 split. No QCB observed at this location. Photo taken facing southeast on March 20, 2017.

Photo 8:

Dwarf plantain observed on the side of the access road within the QCB Survey Area, south of Highway 52 and Fortuna Mountain. No QCB observed at this location. Photo taken facing northeast on March 15, 2017.

Photo 9:

High quality QCB habitat dominated by dwarf plantain, just north of proposed pole location P34 near the northeastern terminus of TL 636. No QCB observed at this location. Photo taken facing northeast on March 31, 2017.

Photo 10:

High quality QCB habitat, with ample nectar sources and dwarf plantain. This is just south of QCB Location #5 on the west side of the access road near proposed pole location P47. No QCB observed at this location. Photo taken facing northeast on March 15, 2017.

Photo 11:

Another view of high quality QCB habitat just south of QCB Location #5, just off the west side of the access road near proposed pole location P47. Dwarf plantain blanketed this habitat in the 10,000s. Photo taken facing northeast on March 15, 2017.

Photo 12:

Dwarf plantain and purple owls' clover (*Castilleja exserta*) observed along the western side of the QCB Survey Area, south of Fortuna Mountain. No QCB were observed at this location, despite ample host plant and nectar sources. Photo taken facing southwest on March 28, 2017.

ATTACHMENT 5 – BUTTERFLY SPECIES DETECTED

ATTACHMENT 5 – BUTTERFLY SPECIES DETECTED

Scientific Name	Common Name
CLASS INSECTA	**INSECTS**
NYMPHALIDAE	**BRUSH FOOTED BUTTERFLIES**
Euphydryas editha quino	Quino Checkerspot
Chlosyne gabbii gabbii	Gabb's Checkerspot
Phyciodes mylitta mylitta	Mylitta Crescent
Nymphalis antiopa antiopa	Mourning Cloak
Adelpha californica	California Sister
Junonia coenia grisea	Gray Buckeye
Vanessa annabella	West Coast Lady
Vanessa atalanta rubria	American Red Admiral
Vanessa cardui	Painted Lady
Vanessa virginiensis	American Lady
Vanessa sp.	N/A
Limenitis lorquinii powelli	Powell's Admiral
Agraulis vanillae	Gulf Fritillary
Speyeria callippe comstockii	Comstock's Fritillary
DANAINAE	**MILKWEED BUTTERFLIES**
Danaus plexippus plexippus	Monarch
SATYRINAE	**SATYRS**
Coenonympha tullia california	California Ringlet
HESPERIDAE	**SKIPPERS**
Heliopetes ericetorum	Northern White-Skipper
Hylephila phyleus phyleus	Fiery Skipper
Erynnis funeralis	Funereal Duskywing
Erynnis tristis tristis	Mournful Duskywing
Erynnis brizo lacustra	Lacustra Duskywing
Erynnis afranius	Afranius Duskywing
Erynnis sp.	N/A
Ochlodes agricola agricola	Rural Skipper
Poanes melane	Umber Skipper
LYCAENIDAE	**HAIRSTREAKS, COPPERS, BLUES**
Callophrys augustinus iroides	Western Elfin
Callophrys augustinus	Brown Elfin
Callophrys perplexa perplexa	Perplexing Hairstreak
Satyrium saepium	Hedgerow Hairstreak
Strymon melinus pudica	Common Gray Hairstreak
Glaucopsyche lygdamus australis	Southern Silvery Blue

ATTACHMENT 5 – BUTTERFLY SPECIES DETECTED

Scientific Name	Common Name
Plebejus acmon	Acmon Blue
Euphilotes bernardino bernardino	San Bernardino Blue
Celastrina echo echo	Echo Azure
Celastrina ladon	Spring Azure
Leptotes marina	Marine Blue
Cupido amyntula amyntula	Western Tailed Blue
Brephidium exilis exilis	Western Pygmy-Blue
N/A	Blue sp.
RIODINIDAE	**METALMARKS**
Calephelis nemesis	Fatal Metalmark
Apodemia virgulti virgulti	Behr's Metalmark
Apodemia virgulti peninsularis	Peninsular Metalmark
PAPILIONIDAE	**SWALLOWTAILS**
Papilio zelicaon	Anise Swallowtail
Papilio cresphontes	Giant Swallowtail
Papilio eurymedon	Pale Swallowtail
Papilio rutulus	Western Tiger Swallowtail
Papilio polyxenes coloro	Desert Swallowtail
PIERIDAE	**WHITES AND SULPHURS**
Anthocharis sara sara	Sara's Orangetip
Anthocharis cethura cethura	Desert Orangetip
Pieris rapae rapae	Cabbage White
Pontia sisymbrii sisymbrii	Spring White
Pontia beckerii	Becker's White
Pontia protodice	Checkered White
N/A	White sp.
Zerene Eurydice	California Dogface
Phoebis sennae marcellina	Cloudless Sulphur
Colias harfordii	Harford's Sulphur
Colias eurytheme	Orange Sulphur
Abaeis nicippe	Sleepy Orange
Nathalis iole	Dainty Sulphur
N/A	Sulphur sp.

ATTACHMENT 6 – FLOWERING PLANT SPECIES OBSERVED

ATTACHMENT 6 – FLOWERING PLANT SPECIES OBSERVED

Scientific Name	Common Name
ANGIOSPERMS (EUDICOTS)	
ADOXACEAE	**MUSKROOT FAMILY**
Sambucus nigra subsp. caerulea	blue elderberry
ANACARDIACEAE	**SUMAC OR CASHEW FAMILY**
Rhus integrifolia	lemonadeberry
APIACEAE	**CARROT FAMILY**
Daucus pusillus	rattlesnake weed
Sanicula arguta	sharp-toothed sanicle
Sanicula bipinnatifida	purple sanicle
ASTERACEAE	**SUNFLOWER FAMILY**
Baccharis pilularis	coyote brush
Baccharis salicifolia subsp. salicifolia	mule fat
Bahiopsis laciniata	San Diego sunflower
*Carduus pycnocephalus subsp. pycnocephalus**	Italian thistle
*Centaurea melitensis**	tocalote
Deinandra fasciculata	fascicled tarweed
Encelia californica	California encelia
Eriophyllum confertiflorum	golden yarrow
*Glebionis coronaria**	garland daisy
*Hedypnois cretica**	crete hedypnois
*Hypochaeris glabra**	smooth cat's-ear
Lasthenia californica	California goldfields
Lasthenia gracilis	common goldfields
Layia platyglossa	tidy-tips
Logfia filaginoides	California fluffweed
*Logfia gallica**	narrow-leaf filago
Microseris douglasii subsp. platycarpha	small-flower microseris
Osmadenia tenella	Osmadenia
Pentachaeta aurea	golden daisy
Porophyllum gracile	odora
Pseudognaphalium biolettii	bicolored cudweed
Pseudognaphalium californicum	California everlasting
Pseudognaphalium sp.	cudweed
*Sonchus asper subsp. asper**	prickly sow thistle
*Sonchus oleraceus**	common sow thistle
Stephanomeria sp.	wreath-plant
Stylocline gnaphaloides	everlasting nest straw

ATTACHMENT 6 – FLOWERING PLANT SPECIES OBSERVED

Scientific Name	Common Name
Uropappus lindleyi	silver puff
BORAGINACEAE	**BORAGE FAMILY**
Amsinckia intermedia	Rancher's fiddleneck
Cryptantha sp.	cryptantha
Eriodictyon crassifolium	thick-leaved yerba santa
Eucrypta chrysanthemifolia var. chrysanthemifolia	common eucrypta
Phacelia parryi	parry's phacelia
Phacelia sp.	phacelia
Pholistoma racemosum	San Diego fiesta flower
Plagiobothrys sp.	popcornflower
BRASSICACEAE	**MUSTARD FAMILY**
*Brassica nigra**	black mustard
Caulanthus heterophyllus	San Diego jewelflower
*Hirschfeldia incana**	shortpod mustard
Lepidium sp.	peppergrass
*Raphanus sativus**	wild radish
*Sisymbrium orientale**	oriental hedge mustard
Sisymbrium sp.	Sisymbrium sp.
CACTACEAE	**CACTUS FAMILY**
Cylindropuntia sp.	cholla sp.
CAPRIFOLIACEAE	**HONEYSUCKLE FAMILY**
Lonicera subspicata	southern honeysuckle
CARYOPHYLLACEAE	**PINK FAMILY**
*Silene gallica**	common catchfly
Silene laciniata	indian pink
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Chenopodium californicum	California goosefoot
CISTACEAE	**ROCK-ROSE FAMILY**
*Cistus incanus**	purple rock-rose
Helianthemum scoparium	peak rush-rose
CLEOMACEAE	**SPIDERFLOWER FAMILY**
Peritoma arborea	bladderpod
CONVOLVULACEAE	**MORNING-GLORY FAMILY**
Calystegia macrostegia	western bindweed
CUCURBITACEAE	**GOURD FAMILY**
Marah macrocarpa	wild cucumber

ATTACHMENT 6 – FLOWERING PLANT SPECIES OBSERVED

Scientific Name	Common Name
EUPHORBIACEAE	**SPURGE FAMILY**
Chamaesyce sp.	Chamaesyce sp.
FABACEAE	**LEGUME FAMILY**
Acmispon glaber var. glaber	coastal deerweed
Acmispon strigosus	strigose lotus
Astragalus trichopodus var. lonchus	ocean locoweed
Lathyrus vestitus var. alefeldii	San Diego sweet pea
Lupinus concinnus	Bajada lupine
Lupinus succulentus	arroyo lupine
Lupinus truncatus	collar lupine
Lupinus sp.	lupine sp.
*Medicago polymorpha**	California burclover
*Melilotus indicus**	Indian sweetclover
Trifolium depauperatum	cowbag clover
Trifolium willdenovii	tomcat clover
GENTIANACEAE	**GENTIAN FAMILY**
Zeltnera venusta	canchalagua
GERANIACEAE	**GERANIUM FAMILY**
*Erodium botrys**	broad-lobed filaree
*Erodium cicutarium**	red-stemmed filaree
Erodium sp.	filaree sp.
GROSSULARIACEAE	**GOOSEBERRY FAMILY**
Ribes speciosum	fuchsia-flowered gooseberry
LAMIACEAE	**MINT FAMILY**
Salvia apiana	white sage
Salvia columbariae	chia
Salvia mellifera	black sage
Scutellaria tuberosa	Danny's skullcap
Trichostema lanatum	woolly bluecurls
Trichostema parishii	Parish's bluecurls
MALVACEAE	**MALLOW FAMILY**
Malacothamnus fasciculatus	chaparral bushmallow
Sidalcea sparsifolia	checker mallow
MONTIACEAE	**MINER'S LETTUCE FAMILY**
Calandrinia ciliata	red maids
Claytonia perfoliata	Miner's lettuce
Claytonia sp.	miner's lettuce sp.

ATTACHMENT 6 – FLOWERING PLANT SPECIES OBSERVED

Scientific Name	Common Name
MYRSINACEAE	**MYRSINE FAMILY**
*Anagallis arvensis**	scarlet pimpernel
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**
Mirabilis laevis var. crassifolia	California wishbone bush
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Camissoniopsis sp.	primrose sp.
Clarkia purpurea subsp. quadrivulnera	four spot clarkia
OROBANCHACEAE	**BROOM-RAPE FAMILY**
Castilleja densiflora	Parish's owl's-clover
Castilleja exserta	purple owl's-clover
Cordylanthus rigidus subsp. setigerus	dark-tip bird's-beak
OXALIDACEAE	**OXALIS FAMILY**
Oxalis californica	California wood-sorrel
Oxalis sp.	sorrel
PAPAVERACEAE	**POPPY FAMILY**
Eschscholzia caespitosa	tufted poppy
Eschscholzia californica	California poppy
Papaver californicum	fire poppy
Platystemon californicus	cream cups
PHRYMACEAE	**LOPSEED FAMILY**
Mimulus aurantiacus	coast monkey-flower
Mimulus brevipes	wide-throated monkey-flower
PLANTAGINACEAE	**PLANTAIN FAMILY**
Antirrhinum coulterianum	white snapdragon
Antirrhinum nuttallianum	Nuttall's snapdragon
Collinsia heterophylla	Chinese houses
Nuttallanthus texanus	large blue toadflax
Penstemon spectabilis var. spectabilis	showy penstemon
Plantago erecta	prairie plantain
Plantago ovata	woolly plantain
Plantago patagonica	woolly plantain
POLEMONIACEAE	**PHLOX FAMILY**
Gilia sp.	gilia sp.
Linanthus dianthiflorus	ground-pink
POLYGONACEAE	**BUCKWHEAT FAMILY**
Chorizanthe sp.	spineflower sp.
Eriogonum fasciculatum	California buckwheat

ATTACHMENT 6 – FLOWERING PLANT SPECIES OBSERVED

Scientific Name	Common Name
RHAMNACEAE	**BUCKTHORN FAMILY**
Ceanothus tomentosus	woolly-leaved ceanothus
ROSACEAE	**ROSE FAMILY**
Adenostoma fasciculatum	chamise
RUBIACEAE	**MADDER FAMILY**
Galium nuttallii subsp. nuttallii	San Diego bedstraw
RUTACEAE	**RUE FAMILY**
Cneoridium dumosum	bushrue
SOLANACEAE	**NIGHTSHADE FAMILY**
Solanum parishii	Parish's nightshade
VERBENACEAE	**VERVAIN FAMILY**
Verbena sp.	verbena sp.
VIOLACEAE	**VIOLET FAMILY**
Viola pedunculata	johnny-jump-up
ANGIOSPERMS (MONOCOTS)	
AGAVACEAE	**AGAVE FAMILY**
Hesperoyucca whipplei	Our Lord's candle
ALLIACEAE	**ONION FAMILY**
Allium praecox	early onion
IRIDACEAE	**IRIS FAMILY**
Sisyrinchium bellum	blue-eyed grass
LILIACEAE	**LILY FAMILY**
Calochortus splendens	lilac mariposa lily
Calochortus weedii var. weedii	Weed's mariposa
Muilla maritima	sea muilla
THEMIDACEAE	**BRODIAEA FAMILY**
Bloomeria clevelandii	San Diego goldenstar
Bloomeria crocea var. crocea	common goldenstar
Dichelostemma capitatum	blue dicks
**Non-Native Species, +Ornamental, Unlikely to be Invasive*	

ATTACHMENT 7 – WEATHER CONDITIONS

ATTACHMENT 7A – WEATHER CONDITIONS

SDG&E LOW-EFFECT QCB HCP MAPPED AREA (SOUTH OF HIGHWAY 52)

Survey #	Date	Surveyor (s)	Time (military)		Temperature (degrees Fahrenheit)		Wind (miles per hour)		Cloud Cover (%)		Precipitation	
			Start	End	Start	End	Start	End	Start	End	Start	End
HA*	02/24/17	John Dicus Melanie Dicus	0700	1545	48	60	0-1	2-8	0	0	0	0
	02/24/17	Laurie Gorman Travis Cooper Christina Congedo	0700	1600	47	60	0-1	2-8	0	0	0	0
1	02/25/17	John Dicus Melanie Dicus	0920	1530	60	65	0-1	0-1	0	20	0	0
	02/25/17	Laurie Gorman Travis Cooper	0945	1530	60	65	0-1	2-4	3	50	0	0
2	03/01/17	John Dicus Melanie Dicus	0900	1500	62	71	0-1	1-5	0	0	0	0
	03/02/17	Laurie Gorman Travis Cooper	0930	1600	72	73	0-2	1-4	5	5	0	0
	03/02/17	Alicia Cooper Hill	1120	1450	78	82	0-1	0-2	1	0	0	0
3	03/08/17	Laurie Gorman Travis Cooper	0815	1500	61	79	0-1	1-3	10	5	0	0
	03/09/17	John Dicus Melanie Dicus	0835	1445	67	84	0-1	0-3	5	0	0	0
4	03/15/17	Laurie Gorman Travis Cooper	0900	1600	72	81	0-1	0-1	50	0	0	0
	03/16/17	John Dicus Melanie Dicus	0850	1555	63	78	0-1	2-5	0	1	0	0
5	03/20/17	John Dicus Melanie Dicus	1130	1645	70	69	0-1	1	95	0	0	0
	03/20/17	Laurie Gorman Travis Cooper	1130	1800	70	62	0-1	2-6	95	5	0	0
6	03/29/17	John Dicus Melanie Dicus	0900	1515	63	82	0-2	0-4	0	0	0	0
	03/30/17	Laurie Gorman Travis Cooper	0850	1620	68	77	4-7	4-7	20	0	0	0
7	04/02/17	John Dicus Melanie Dicus	0915	1600	63	79	0-1	0-2	0	0	0	0
	04/04/17	Alicia Cooper Hill Travis Cooper	0920	1600	62	74	0-1	2-4	10	0	0	0

ATTACHMENT 7A – WEATHER CONDITIONS

SDG&E LOW-EFFECT QCB HCP MAPPED AREA (SOUTH OF HIGHWAY 52)

Survey #	Date	Surveyor (s)	Time (military)		Temperature (degrees Fahrenheit)		Wind (miles per hour)		Cloud Cover (%)		Precipitation	
			Start	End	Start	End	Start	End	Start	End	Start	End
8	04/10/17	Laurie Gorman Travis Cooper	0900	1620	61	78	0-1	4-7	0	0	0	0
	04/11/17	John Dicus Melanie Dicus	0900	1500	64	71	0-1	1-5	5	10	0	0
9	04/16/17	John Dicus Melanie Dicus	0830	1445	63	77	0-1	2-6	20	0	0	0
	04/19/17	Laurie Gorman Travis Cooper	0945	1530	71	74	1-3	2-6	90	0	0	0
10	04/23/17	John Dicus Melanie Dicus	0830	1445	65	71	1-3	2-6	20	0	0	0
	04/28/17	Alicia Cooper Hill Travis Cooper	0900	1415	68	84	0-1	1-3	5	0	0	0
11	04/30/17	John Dicus Melanie Dicus	0845	1430	71	85	0-1	2-7	0	0	0	0
	05/02/17	Alicia Cooper Hill Travis Cooper	0845	1420	73	85	0-1	1-2	0	0	0	0
12	05/12/17	Alicia Cooper Hill Travis Cooper	1155	1630	70	79	0-1	1-2	100	0	0	0
	05/13/17	John Dicus Melanie Dicus	0900	1500	65	73	0-1	1-5	40	15	0	0

*Habitat Assessment

ATTACHMENT 7B – WEATHER CONDITIONS

USFWS RECOMMENDED QUINO SURVEY AREA (NORTH OF HIGHWAY 52)

Survey #	Date	Surveyor (s)	Time (military)		Temperature (°Fahrenheit)		Wind (miles per hour)		Cloud Cover (%)		Precipitation	
			Start	End	Start	End	Start	End	Start	End	Start	End
HA*	03/16/17	Darin Busby Erik LaCoste	0800	1630	61	73	0-1	3-5	0	0	0	0
	03/16/17	Laurie Gorman Erik Olmos	0900	1700	70	64	0-1	0-1	0	0	0	0
	03/17/17	Laurie Gorman Erik Olmos	0830	1240	61	71	0-1	0-1	0	0	0	0
	03/17/17	Melissa Busby Darin Busby Erik LaCoste	0830	1630	62	78	0-3	3-7	0	0	0	0
	03/18/17	Melissa Busby Erik Lacoste	1000	1630	63	78	2-4	2-6	0	5	0	0
1	03/17/17	Melissa Busby Darin Busby Erik LaCoste	0830	1630	62	78	0-3	3-7	0	0	0	0
	03/18/17	John Dicus Melanie Dicus	0940	1615	64	70	0-1	5	25	10	0	0
	03/18/17	Melissa Busby Erik Lacoste	1000	1630	63	78	2-4	2-6	0	5	0	0
	03/18/17	Alicia Cooper Hill	0950	1630	64	82	0-1	1-3	15	5	0	0
2	03/24/17	John Dicus Melanie Dicus Laurie Gorman	0930	1530	60	65	0-1	7	0	0	0	0
	03/24/17	Darin Busby Erik LaCoste Travis Cooper	0920	1630	64	73	0-1	7-10	0	0	0	0
3	03/31/17	John Dicus Melanie Dicus Laurie Gorman	0850	1415	60	70	0-1	2-6	0	0	0	0
	03/31/17	Travis Cooper Erik LaCoste	0900	1600	61	74	4-7	4-7	0	0	0	0
	04/01/17	Erik LaCoste	0900	1630	68	76	2-4	4-7	0	0	0	0
4	04/05/17	John Dicus Melanie Dicus	0830	1545	65	80	0	2-7	5	0	0	0
	04/05/17	Travis Cooper	0845	1530	63	86	0-1	4-7	0	0	0	0

ATTACHMENT 7B – WEATHER CONDITIONS

USFWS RECOMMENDED QUINO SURVEY AREA (NORTH OF HIGHWAY 52)

Survey #	Date	Surveyor (s)	Time (military)		Temperature (°Fahrenheit)		Wind (miles per hour)		Cloud Cover (%)		Precipitation	
			Start	End	Start	End	Start	End	Start	End	Start	End
	04/07/17	Melissa Busby Darin Busby	0845	1600	63	84	0-1	4-7	0	0	0	0
	04/09/17	Erik LaCoste	0930	1630	65	69	8-12	6-10	30	0	0	0
5	04/13/17	Erik LaCoste	0915	1630	70	72	2-4	4-8	50	10	0	0
	04/14/17	Erik LaCoste	1000	1700	70	71	2-4	2-4	50	25	0	0
	04/14/17	Laurie Gorman	0920	1510	65	81	0-1	1-4	30	0	0	0
	04/15/17	John Dicus Melanie Dicus	0845	1515	67	76	0-1	1-3	0	0	0	0
6	4/20/17	Melissa Busby	0845	1600	65	76	0-1	3-4	0	0	0	0
	4/20/17	Laurie Gorman Alicia Cooper Hill Travis Cooper	0745	1245	61	82	0-1	4-7	0	0	0	0
	4/21/17	Melissa Busby	0830	1430	67	88	0-1	3-5	0	0	0	0
	4/23/17	Darin Busby	0845	1600	68	84	0-3	5-10	25	0	0	0
7	4/26/17	Melissa Busby Darin Busby	0900	1515	67	81	1-3	5-8	10	15	0	0
	4/27/17	Darin Busby	1030	1530	70	70	1-2	5-10	100	20	0	0
	4/28/17	Darin Busby	0900	1500	70	84	1-3	5-10	10	0	0	0
	4/30/17	Melissa Busby	0845	1500	78	88	2-4	8-12	0	0	0	0
8	05/05/17	Melissa Busby Darin Busby	1115	1615	70	71	1-3	3-5	100	100	0	0
	05/05/17	Travis Cooper Alicia Cooper Hill	1125	1555	70	88	0-2	1-3	100	100	0	0
9	05/11/17	Melissa Busby Darin Busby	0845	1300	62	79	1-3	5-8	10	20	0	0
	05/11/17	Travis Cooper Alicia Cooper Hill	0900	1345	73	77	1-3	1-4	10	1	0	0

*Habitat Assessment

ATTACHMENT 8 – QCB SURVEY PROJECT BIOLOGIST SIGNATURE PAGE

ATTACHMENT 8 – QCB SURVEY PROJECT BIOLOGIST SIGNATURE PAGE

All biologists performing focused, protocol-level surveys for Quino checkerspot butterfly (*Euphydryas editha quino*) during the flight season of 2017 for proposed Tie Line (TL) 636 and 639 Wood to Steel project (Proposed Project) located in San Diego County, California were permitted to survey for this species under Section 10(a)(1)(A) of the Endangered Species Act (ESA). The undersigned project biologists certify this report to be a complete and accurate account of the findings and conclusions of surveys for Quino checkerspot butterfly conducted for the Proposed Project during the 2017 flight season.

 Laurie Gorman USFWS Permit Number TE-233367-3	 Melanie Dicus USFWS Permit Number TE-049175-4
 Travis Cooper USFWS Permit Number TE-170389-6	 Darin Busby USFWS Permit Number TE-115373-3
 Alicia Cooper Hill USFWS Permit Number TE-06145B-1	 Melissa Busby USFWS Permit Number TE-080779-3
 John Dicus USFWS Permit Number TE-839960-6	 Erik LaCoste Authorized to survey independently under Darin Busby's permit (TE-115373-3)