



October 22, 2014

Mr. Robert Reitenour
Lowe Enterprises Real Estate Group, Inc.
8001 Irvine Center Drive, Suite 1460
Irvine, California 92618

VIA EMAIL
rreitenour@loweenterprises.com

Subject: Results of Special Status Plant Surveys for the Alton Parcel in Orange County, California

Dear Mr. Reitenour:

This Letter Report presents the findings of special status plant surveys conducted for the Alton Parcel (hereinafter referred to as “the study area”) located in the City of Irvine, Orange County, California. The purpose of the surveys was to determine the presence or absence of special status plant species in the study area.

PROJECT LOCATION AND DESCRIPTION

The study area is located east of Irvine Boulevard, west of the former El Toro Marine Corps Air Station, and north of Alton Parkway; Magazine Road bisects the study area 1. The 11.43-acre mitigation site for Alton Parkway, known as the Wildlife Movement Corridor, also bisects the study area linking Borrego Canyon Wash with the Orange County Great Park Wildlife Movement Corridor; this area was not surveyed because it would not be impacted. The study area is generally surrounded by commercial development, agriculture, and undeveloped open space.

The study area is located on the U.S. Geological Survey’s (USGS’) El Toro 7.5-minute quadrangle at Sections 3 and 10 of Township 6 South, Range 8 West (Exhibit 2). Topography in the study area is relatively flat with elevations ranging from approximately 420 to 500 feet above mean sea level. Vegetation types and other areas in the study area consist of ruderal, flood control channel, developed, and disturbed; vegetation in the Wildlife Movement Corridor consists of riparian scrub, xeric (dry) scrub/woodland, and mesic (moist) woodland/scrub (Exhibit 3). Soil types in the study area consist of Metz loamy sand, Myford sandy loam (9 to 30 percent slopes, eroded), riverwash, San Emigdio fine sandy loam (2 to 9 percent slopes), and Sorrento loam (0 to 2 percent slopes) (Exhibit 4). Representative photos are included in Attachment A.

The County of Orange is proposing a development plan for the site, which would identify the proposed land uses and development intensities permitted for the site. The proposed West Alton development plan will be used to guide future development on the County-owned site. A total of 930 units multi-family units are proposed for the site.

METHODS

The botanical survey were floristic in nature and consistent with the protocols created by the California Department of Fish and Wildlife (CDFW) (CDFG 2009). Prior to the field survey, a literature search was conducted to identify special status plant species reported from the vicinity of the study area. Sources reviewed include the USGS El Toro, Laguna Beach, San Juan Capistrano, and Tustin 7.5-minute quadrangles in the California Native Plant Society's Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2014) and the CDFW's California Natural Diversity Database (CNDDB) (CDFW 2014).

Rainfall received in the winter and spring determines the germination of many annual and perennial herb species. According to the National Weather Service, the region (data taken from John Wayne Airport) received 3.55 inches of precipitation between June 1, 2013, and May 31, 2014, well below the average annual precipitation of 13.3 inches (NWS 2014); the region is in the third consecutive year of below average rainfall. Reference populations were monitored for representative high status¹ annual and difficult-to-detect target species that have potential to occur in the study area to ensure that the surveys were comprehensive. This is especially relevant during periods of unusual rainfall patterns or below average rainfall. If conditions at a nearby reference population are suitable for germination and growth, then it can be inferred that conditions would also be suitable in the study area. Southern tarplant (*Centromadia parryi* ssp. *australis*) was observed blooming on June 19, 2014, in Seal Beach.

A survey was conducted on May 13, 2014, by BonTerra Psomas Senior Biologists Allison Rudalevige and Jennifer Pareti. The total number of person-hours spent was two hours. A systematic survey was conducted throughout the study area (excluding the Wildlife Movement Corridor). All plant species observed were recorded in field notes. Plant species were identified in the field or collected for later identification. Plants were identified to the taxonomic level necessary to determine whether or not they are a special status species. Plants were identified using taxonomic keys, descriptions, and illustrations in Baldwin et al. (2012), Hickman (1993), and Munz (1974). Taxonomy and nomenclature follows Baldwin et al. (2012), Hickman (1993), and current scientific journals for scientific and common names.

Special status plant species, if observed during the survey, would be mapped with a Global Positioning System (GPS) unit. For each special status plant species population observed, data would be collected on the number and phenology of individuals, microsite characteristics such as slope, aspect, soil texture, surrounding habitat, and associated species. Any voucher specimens collected would be deposited in an indexed, regional herbarium.

SURVEY RESULTS

Table 2 identifies the special status plants known to occur in the vicinity of the study area based on the literature review, and the results of the survey. No special status species were observed in the study area. A list of all plants observed within the study area is included in Attachment B.

¹ High status species include federal or State-listed Threatened or Endangered species, and California Rare Plant Rank 1B and 2B species.

TABLE 2
SPECIAL STATUS PLANT SPECIES REPORTED
FROM THE VICINITY OF THE STUDY AREA

Species	Status			Potential to Occur in the Study Area; Results of Survey
	USFWS	CDFW	CRPR	
<i>Aphanisma blitoides</i> aphanisma	-	-	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Atriplex coulteri</i> Coulter's saltbush	-	-	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Atriplex pacifica</i> south coast saltscale	-	-	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Atriplex parishii</i> Parish's brittlescale	-	-	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Atriplex serenana</i> var. <i> davidsonii</i> Davidson's saltscale	-	-	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Brodiaea filifolia</i> thread-leaved brodiaea	FT	SE	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Calochortus catalinae</i> Catalina mariposa lily	-	-	4.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Calochortus weedii</i> var. <i> intermedius</i> intermediate mariposa lily	-	-	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Camissoniopsis lewisii</i> Lewis' evening-primrose	-	-	3	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Centromadia parryi</i> ssp. <i> australis</i> southern tarplant	-	-	1B.1	Marginally suitable habitat; not observed during focused surveys.
<i>Chaenactis glabriuscula</i> var. <i> orcuttiana</i> Orcutt's pincushion	-	-	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Comarostaphylis diversifolia</i> ssp. <i> diversifolia</i> summer holly	-	-	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Convolvulus simulans</i> small-flowered morning-glory	-	-	4.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Dodecahema leptoceras</i> slender-horned spineflower	FE	SE	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Dudleya multicaulis</i> many-stemmed dudleya	-	-	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Dudleya stolonifera</i> Laguna Beach dudleya	FT	ST	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.

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Species	Status			Potential to Occur in the Study Area; Results of Survey
	USFWS	CDFW	CRPR	
<i>Euphorbia misera</i> cliff spurge	–	–	2B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Harpagonella palmeri</i> Palmer's grapplinghook	–	–	4.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Hesperocyparis forbesii</i> Tecate cypress	–	–	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Helianthus nuttallii</i> ssp. <i>parishii</i> Los Angeles sunflower	–	–	1A	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Horkelia cuneata</i> var. <i>puberula</i> mesa horkelia	–	–	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Isocoma menziesii</i> var. <i>decumbens</i> decumbent goldenbush	–	–	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i> Coulter's goldfields	–	–	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Lepidium virginicum</i> var. <i>robinsonii</i> * Robinson's pepper-grass	–	–	4.3	Marginally suitable habitat; not observed during focused surveys.
<i>Monardella hypoleuca</i> ssp. <i>intermedia</i> intermediate monardella	–	–	1B.3	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Nama stenocarpum</i> mud nama	–	–	2B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Navarretia prostrata</i> prostrate vernal pool navarretia	–	–	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Nolina cismontana</i> chaparral nolina	–	–	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Pentachaeta aurea</i> ssp. <i>allenii</i> Allen's pentachaeta	–	–	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Phacelia ramosissima</i> var. <i>austrolitoralis</i> * south coast branching phacelia	–	–	3.2	No suitable habitat; not expected to occur and not observed during focused surveys.
<i>Pseudognaphalium leucocephalum</i> white rabbit-tobacco	–	–	2B.2	No suitable habitat; not expected to occur and not observed during focused surveys.

**TABLE 2
 SPECIAL STATUS PLANT SPECIES REPORTED
 FROM THE VICINITY OF THE STUDY AREA**

Species	Status			Potential to Occur in the Study Area; Results of Survey												
	USFWS	CDFW	CRPR													
<i>Quercus dumosa</i> Nuttall's scrub oak	–	–	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.												
<i>Romneya coulteri</i> Coulter's matilija poppy			4.2	No suitable habitat; not expected to occur and not observed during focused surveys.												
<i>Senecio aphanactis</i> chaparral ragwort	–	–	2B.2	No suitable habitat; not expected to occur and not observed during focused surveys.												
<i>Sidalcea neomexicana</i> salt spring checkerbloom	–	–	2B.2	No suitable habitat; not expected to occur and not observed during focused surveys.												
<i>Suaeda esteroa</i> estuary seablite	–	–	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.												
<i>Symphotrichum defoliatum</i> San Bernardino aster	–	–	1B.2	No suitable habitat; not expected to occur and not observed during focused surveys.												
<i>Verbesina dissita</i> big-leaved crownbeard	FT	ST	1B.1	No suitable habitat; not expected to occur and not observed during focused surveys.												
LEGEND:																
USFWS: U.S. Fish and Wildlife Service; CDFW: California Department of Fish and Wildlife; CRPR: California Rare Plant Rank.																
<table border="0"> <tr> <td colspan="2"><u>Federal (USFWS)</u></td> <td colspan="2"><u>State (CDFW)</u></td> </tr> <tr> <td>FE</td> <td>Endangered</td> <td>SE</td> <td>Endangered</td> </tr> <tr> <td>FT</td> <td>Threatened</td> <td>ST</td> <td>Threatened</td> </tr> </table>					<u>Federal (USFWS)</u>		<u>State (CDFW)</u>		FE	Endangered	SE	Endangered	FT	Threatened	ST	Threatened
<u>Federal (USFWS)</u>		<u>State (CDFW)</u>														
FE	Endangered	SE	Endangered													
FT	Threatened	ST	Threatened													
<u>California Rare Plant Rank (CRPR)</u>																
1A Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere																
1B Plants Rare, Threatened, or Endangered Throughout Their Range																
2B Plants Rare, Threatened, or Endangered in California But More Common Elsewhere																
3 Plants of About Which We Need More Information – A Review List																
4 Plants of Limited Distribution – A Watch List																
<u>CRPR Threat Rank Extensions</u>																
None Plants lacking any threat information																
.1 Seriously Endangered in California (over 80% of occurrences threatened; high degree and immediacy of threat)																
.2 Fairly Endangered in California (20–80% of occurrences threatened; moderate degree and immediacy of threat)																
.3 Not very threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known)																
* Variety not currently recognized by Baldwin et al. (2012); however, it is still tracked by the CNDDDB.																

Although regional rainfall amounts were monitored to ensure the scientific adequacy of these focused surveys, there is always a minimal potential for false negative survey results as species could possibly be present on a site but may not be detectable at the time of the surveys.

Mr. Robert Reitenour
October 22, 2014
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If you have any comments or questions, please call Amber Heredia at (714) 444-9199.

Sincerely,
BonTerra Psomas



Kathleen Brady, AICP
Vice President, Environmental Services



Amber O. Heredia
Senior Project Manager, Natural Resources

Enclosures: Exhibit 1 – Project Location
 Exhibit 2 – U.S. Geological Survey 7.5-minute Quadrangle
 Exhibit 3 – Vegetation Types and Other Areas
 Exhibit 4 – Soil Types
 Attachment A – Site Photographs
 Attachment B – Plant Compendium

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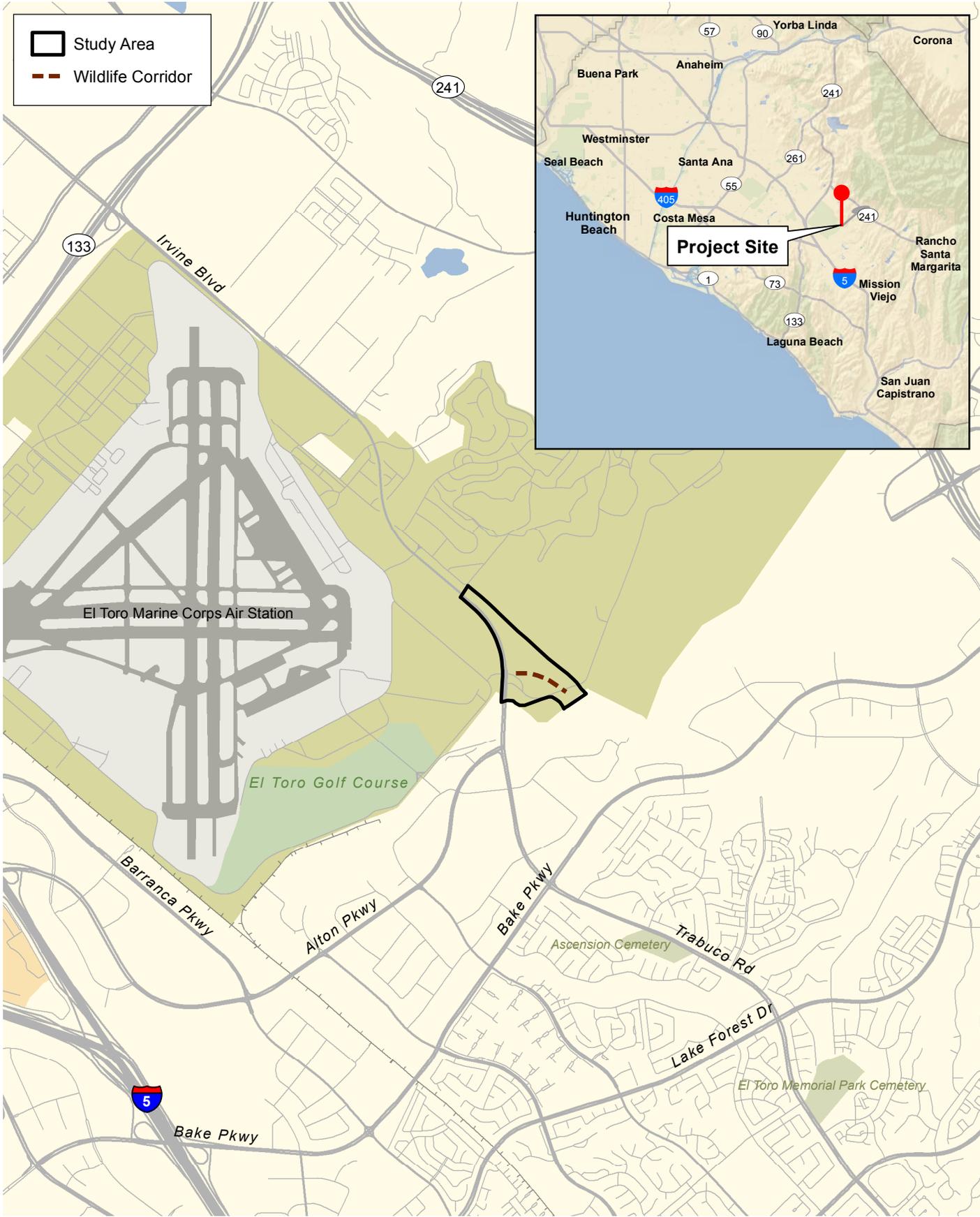
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 Study Area

 Wildlife Corridor

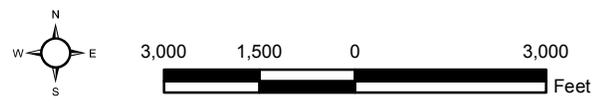


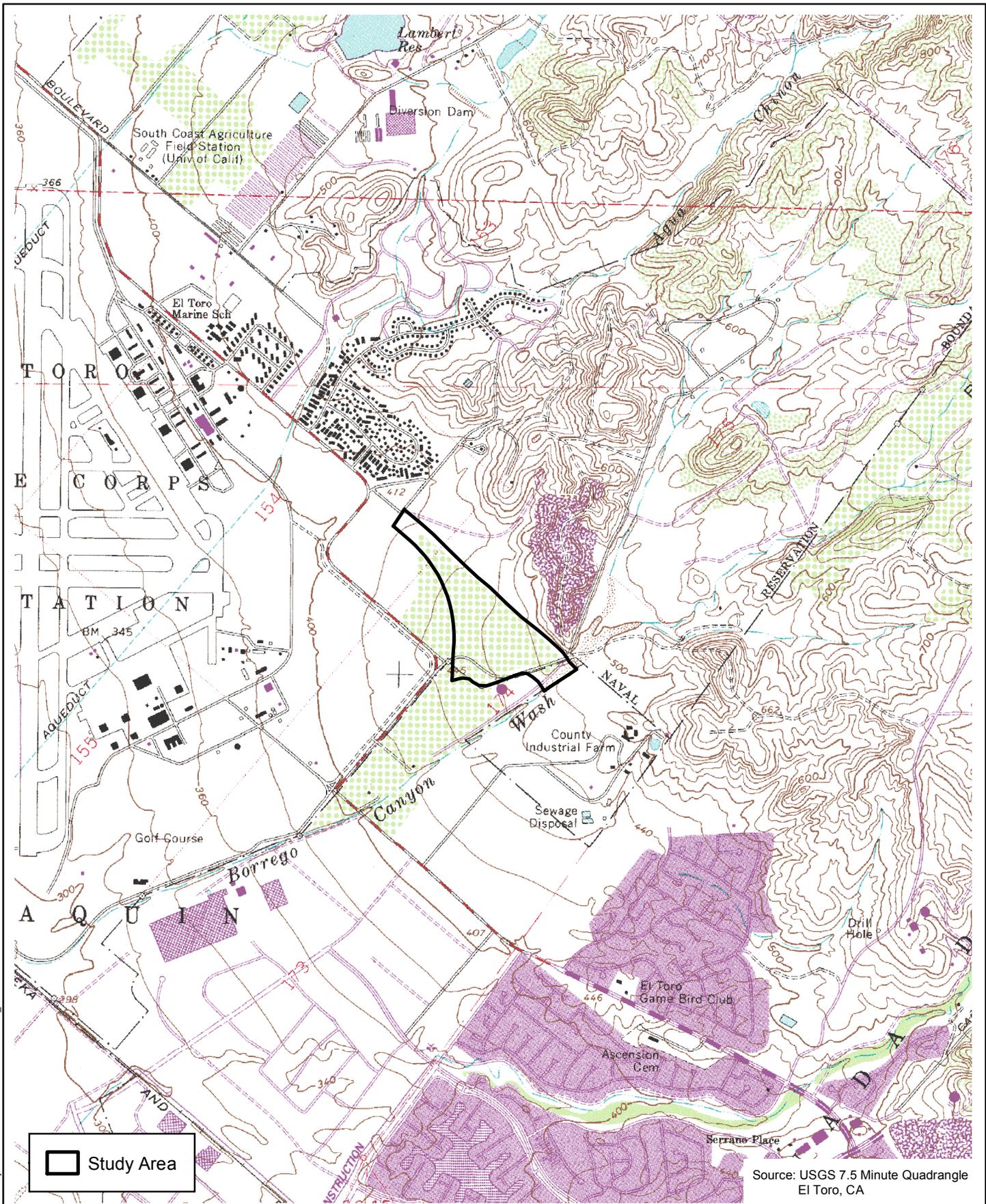
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Project Location

Exhibit 1

Alton Parcel





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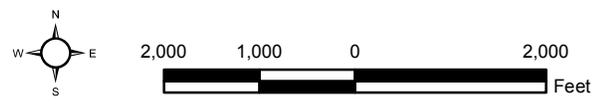
 Study Area

Source: USGS 7.5 Minute Quadrangle
El Toro, CA

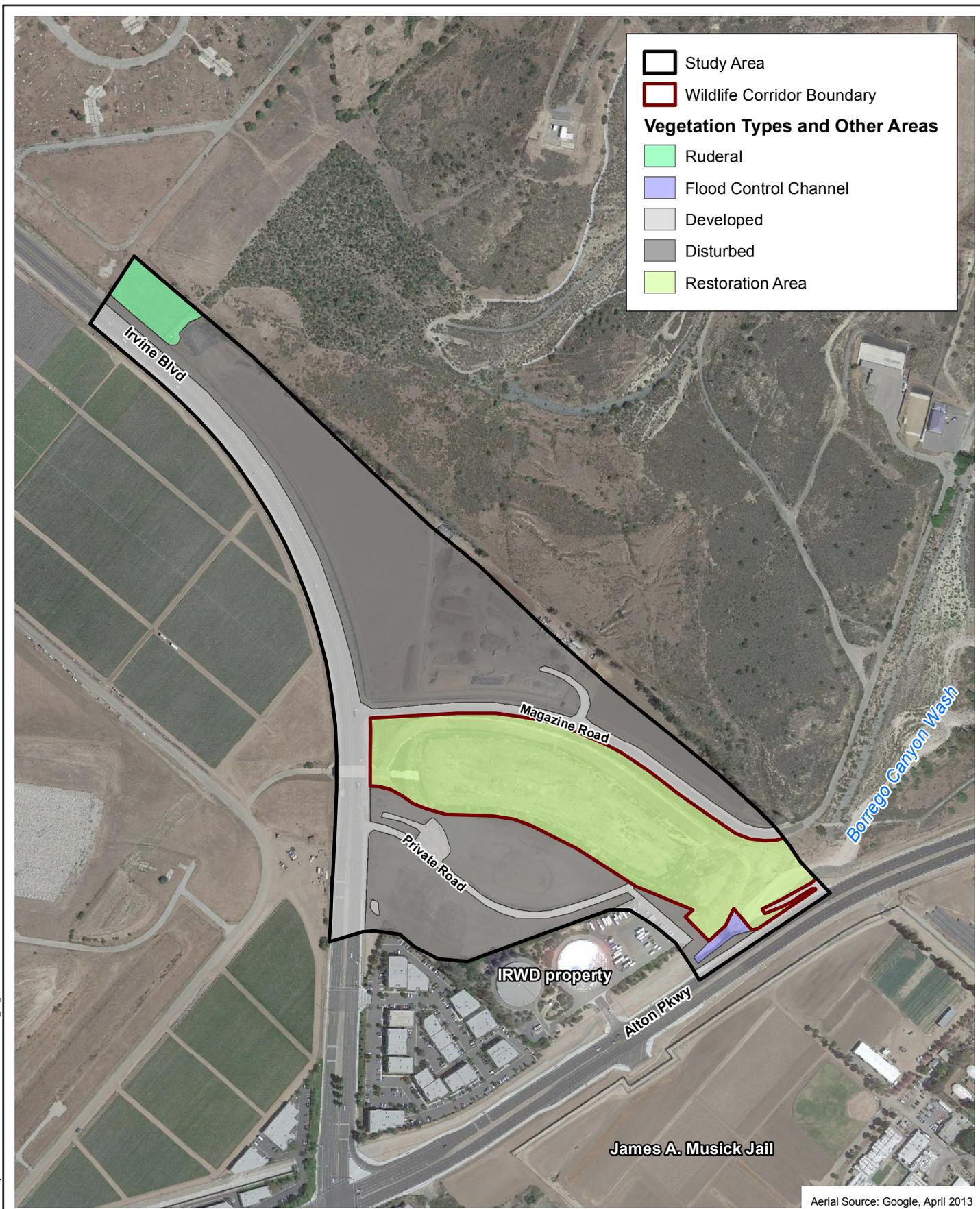
U.S. Geological Survey 7.5-Minute Quadrangle

Exhibit 2

Alton Parcel



Study Area
 Wildlife Corridor Boundary
Vegetation Types and Other Areas
 Ruderal
 Flood Control Channel
 Developed
 Disturbed
 Restoration Area



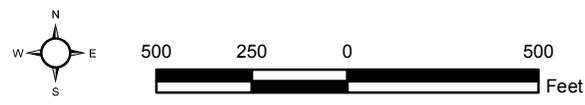
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Aerial Source: Google, April 2013

Vegetation Types and Other Areas

Exhibit 3

Alton Parcel

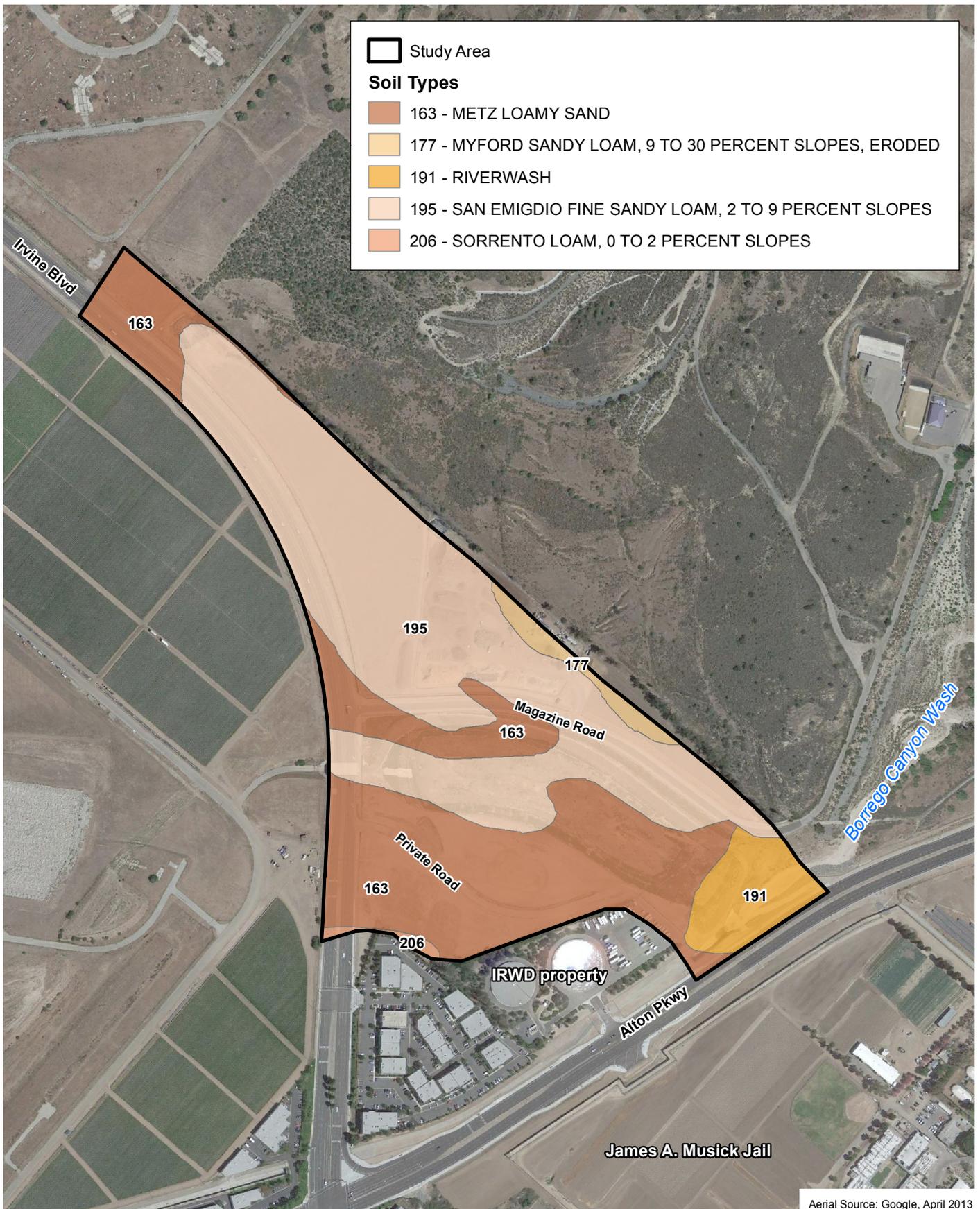


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Study Area

Soil Types

- 163 - METZ LOAMY SAND
- 177 - MYFORD SANDY LOAM, 9 TO 30 PERCENT SLOPES, ERODED
- 191 - RIVERWASH
- 195 - SAN EMIGDIO FINE SANDY LOAM, 2 TO 9 PERCENT SLOPES
- 206 - SORRENTO LOAM, 0 TO 2 PERCENT SLOPES



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Aerial Source: Google, April 2013

Soil Types

Exhibit 4

Alton Parcel



ATTACHMENT A
SITE PHOTOGRAPHS



Overview of the southern portion of the study area.



Overview of the Wildlife Corridor in the study area.

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Site Photographs

Alton Parcel

Attachment A

Bonterra
PSOMAS

ATTACHMENT B
PLANT COMPENDIUM

**PLANTS OBSERVED WITHIN THE STUDY AREA
DURING FOCUSED SURVEYS**

Species	
ANGIOSPERMAE – FLOWERING PLANTS	
EUDICOTS	
APIACEAE – CARROT FAMILY	
<i>Daucus pusillus</i>	rattlesnake weed
ASTERACEAE – SUNFLOWER FAMILY	
<i>Ambrosia acanthicarpa</i>	annual bur-sage
<i>Artemisia californica</i>	California sagebrush
<i>Baccharis pilularis</i> ssp. <i>consanguinea</i> [<i>B. pilularis</i>]	coyote brush
<i>Baccharis salicifolia</i> ssp. <i>salicifolia</i> [<i>B. salicifolia</i>]	mule fat
<i>Centaurea melitensis</i> *	toocalote, Malta star-thistle
<i>Erigeron canadensis</i> [<i>Conyza</i> c.]	common horseweed
<i>Glebionis coronaria</i> [<i>Chrysanthemum coronarium</i>]*	garland daisy
<i>Heterotheca grandiflora</i>	telegraph weed
<i>Oncosiphon piluliferum</i> *	stinknet
BORAGINACEAE – BORAGE FAMILY	
<i>Heliotropium curassavicum</i> var. <i>oculatum</i>	salt heliotrope, alkali heliotrope
BRASSICACEAE – MUSTARD FAMILY	
<i>Hirschfeldia incana</i> *	shortpod mustard
CHENOPODIACEAE – GOOSEFOOT FAMILY	
<i>Chenopodium album</i> *	lamb's quarters
<i>Salsola tragus</i> *	Russian thistle
<i>Convolvulus arvensis</i> *	bindweed
EUPHORBIACEAE – SPURGE FAMILY	
<i>Ricinus communis</i> *	castor bean
FABACEAE – LEGUME FAMILY	
<i>Medicago polymorpha</i> *	California burclover
<i>Melilotus alba</i> *	white sweetclover
GERANIACEAE – GERANIUM FAMILY	
<i>Erodium botrys</i> *	long-beaked filaree
<i>Erodium cicutarium</i> *	red-stemmed filaree
MALVACEAE – MALLOW FAMILY	
<i>Malva parviflora</i> *	cheeseweed
MYRTACEAE – MYRTLE FAMILY	
<i>Eucalyptus</i> sp.*	gum
SOLANACEAE – NIGHTSHADE FAMILY	
<i>Nicotiana glauca</i> *	tree tobacco
URTICACEAE – NETTLE FAMILY	
<i>Urtica urens</i> *	dwarf nettle
MONOCOTYLEDONES – MONOCOTS	
ARECACEAE – PALM FAMILY	
<i>Washingtonia robusta</i> *	Mexican fan palm
POACEAE – GRASS FAMILY	
<i>Bromus madritensis</i> ssp. <i>rubens</i> *	red brome
<i>Cynodon dactylon</i> *	bermuda grass
* non-native to the region it was found	



October 22, 2014

Mr. Robert Reitenour
Lowe Enterprises Real Estate Group, Inc.
8001 Irvine Center Drive, Suite 1460
Irvine, California 92618

VIA EMAIL
rreitenour@loweenterprises.com

Subject: Results of a Western Burrowing Owl Survey for the Alton Parcel in Orange County, California

Dear Mr. Reitenour:

This Letter Report presents the results of focused surveys for the western burrowing owl (*Athene cunicularia hypugaea*) for the Alton Parcel (hereinafter referred to as “the study area”) in Orange County, California. The purpose of the survey was to determine the presence or absence of the western burrowing owl during its breeding period (i.e., March 1 to August 31) on or immediately adjacent to the study area. The surveys were completed in accordance with guidelines provided in the California Burrowing Owl Consortium (CBOC) survey protocol for this species (1993), with additional technical guidelines from the California Department of Fish and Wildlife’s (CDFW) *Staff Report on Burrowing Owl Mitigation* (CDFW 2012).

PROJECT LOCATION AND DESCRIPTION

The study area is located east of Irvine Boulevard, west of the former El Toro Marine Corps Air Station, and north of Alton Parkway; Magazine Road bisects the study area. The 11.43-acre mitigation site for Alton Parkway, known as the Wildlife Corridor, also bisects the study area linking Borrego Canyon Wash with the Orange County Great Park Wildlife Corridor. The study area is generally surrounded by commercial development, agriculture, and undeveloped open space.

The study area is located on the U.S. Geological Survey’s El Toro 7.5-minute quadrangle at Sections 3 and 10 of Township 6 South, Range 8 West (Exhibit 2). Topography in the study area is relatively flat with elevations ranging from approximately 420 to 500 feet above mean sea level. Vegetation types and other areas in the study area consist of ruderal, flood control channel, developed, and disturbed; vegetation in the Wildlife Corridor consists of riparian scrub, xeric (dry) scrub/woodland, and mesic (moist) woodland/scrub (Exhibit 3).

The County of Orange is proposing a development plan for the study area, which would identify the proposed land uses and development intensities permitted for the study area. The proposed West Alton development plan will be used to guide future development on the County-owned site. A total of 930 units multi-family units are proposed for the study area.

BACKGROUND

The western burrowing owl is a grassland specialist distributed throughout western North America, where it occupies open areas with short vegetation and bare ground within shrub, desert, and grassland environments. Burrowing owls use a wide variety of arid and semi-arid environments, with well-drained, level to gently sloping areas characterized by sparse vegetation and bare ground (Haug et al. 1993; Dechant et al. 2003). Burrowing owls in Florida excavate their own burrows, but western burrowing owls depend upon the presence of burrowing mammals whose burrows are used for roosting and nesting (Haug et al. 1993). The presence or absence of colonial mammal burrows (e.g., California ground squirrels [*Spermophilus beecheyi*]) is often a major factor that limits the presence or absence of burrowing owls. Where mammal burrows are scarce, burrowing owls have been found occupying man-made cavities, such as buried and non-functioning drain pipes, stand-pipes, and dry culverts. Burrowing mammals may burrow beneath rocks; debris; or large, heavy objects such as abandoned cars, concrete blocks, or concrete pads. Large, hard objects at burrow entrances stabilize the entrance from collapse, and may inhibit excavation by predators.

Burrowing owls often use “satellite”, or non-nesting burrows, moving chicks into them from the nesting burrow, presumably to reduce the risk of predation (Desmond and Savidge 1998) and possibly to avoid nest parasites (Dechant et al. 2003). One pair may use up to ten satellite burrows (James and Seabloom 1968). Individual burrowing owls have a moderate to high site fidelity to previously used burrow complexes and often use the same burrows for nesting year after year.

The western burrowing owl was once abundant and widely distributed within coastal Southern California, but it has declined precipitously in Los Angeles, Orange, San Diego, Riverside, and San Bernardino Counties. Although a petition was submitted to list the California population of the western burrowing owl as an Endangered or Threatened species, the CDFW declined to list the burrowing owl as either Threatened or Endangered in consideration of its overall population throughout the state. However, the CDFW considers the burrowing owl to be a California Species of Special Concern (CDFW 2011).

SURVEY METHODOLOGY

The Burrowing Owl Survey Protocol and Mitigation Guidelines, which were prepared by the CBOC (CBOC 1993) and adopted by the CDFW, detail a sequence of surveys based on the findings of each previous level of survey. In addition, the CDFW has also published a document entitled *Staff Report on Burrowing Owl Mitigation* to assist biological consultants and agency personnel in conducting breeding and non-breeding season surveys more effectively (CDFW 2012). The CBOC protocol follows a sequence of surveys that are separated in three phases: (1) habitat assessment; (2) burrow surveys; and (3) crepuscular (dawn or dusk) owl surveys.

The habitat assessment was conducted on April 1, 2014, by BonTerra Psomas Biologists Jonathan Aguayo and Allison Rudalevige. The habitat assessment was conducted by walking the study area to visually inspect it and assess its potential to support burrowing owls.

Mr. Aguayo conducted the burrow survey on April 15, 2014. Mr. Aguayo walked through all suitable habitat in the study area using transects spaced no more than 65 feet apart in order to ensure 100 percent visual coverage of the ground surface. Any natural or man-made cavities large enough to allow a burrowing owl to enter were inspected for evidence of occupation. Evidence of occupation may include prey remains, cast pellets, white-wash, feathers, and observations of owls adjacent to burrows. The burrow survey was conducted at least five days after rain, which could have washed away potential sign. When possible, areas containing suitable habitat within 500 feet of the study area were also surveyed. Surveys beyond private property boundaries were sometimes limited to what could be observed with binoculars.

The CDFW guidelines specify time periods in which the four focused crepuscular surveys should be conducted during the breeding season: at least one survey between February 15 and April 15; three surveys between April 15 and July 15; with at least one survey after June 15. Surveys should be conducted at least three weeks apart. Mr. Aguayo conducted the focused crepuscular surveys on April 15; May 29; June 20 and July 14, 2014. These surveys were conducted from either one hour before sunrise to two hours after, or from two hours before sunset to one hour after. The surveys were conducted when light conditions were sufficient to observe burrowing owl flights. All potential habitat within the study area was surveyed by walking in straight-line transects to allow 100 percent visual coverage of the study area. The transects were spaced no more than approximately 65 feet apart in order to ensure 100 percent visual coverage of the ground surface. At the start of each transect and, at least, every 300 feet, the study area was scanned for burrowing owls or burrowing owl sign (e.g., pellets, prey remains, whitewash, or decoration) using binoculars. Periodically, binoculars were used to inspect holes; crevices; and potential perches such as rocks, fence posts, and other elevated structures for the presence of owls while listening for owl calls. All wildlife observed were recorded in field notes (Attachment B). Survey times and weather conditions are summarized in Table 1 below.

**TABLE 1
SUMMARY OF BURROWING OWL SURVEYS**

Survey Number	Date	Time (Start/End)	Surveyor(s)	Weather Conditions		
				Temperature (°F) (Start/End)	Wind (mph) (Start/End)	Cloud Cover (%) (Start/End)
Habitat Assessment	4/1/2014	12:00 PM–1:00 PM	Aguayo, Rudalevige	83/84	0–5/0–5	Clear/Clear
Burrow Survey	4/15/2014	5:00 AM–5:30 AM	Aguayo	52/52	0–2/0–2	Clear/Clear
Crepuscular Survey 1	4/15/2014	5:00 AM–5:30 AM	Aguayo	52/52	0–2/0–2	Clear/Clear
Crepuscular Survey 2	5/13/2014	5:00 AM–6:00 AM	Aguayo	65/68	0–5/0–5	Clear
Crepuscular Survey 3	6/9/2014	5:30 AM–6:30 AM	Aguayo	60/62	0–3/0–3	100/100
Crepuscular Survey 4	7/1/2014	6:30 AM–7:00 AM	Aguayo	70/70	0–1/0–1	100/100

°F: Fahrenheit; mph: miles per hour; %: percent

SURVEY RESULTS

Suitable habitat and potentially suitable burrows for burrowing owl is present in the study area within areas mapped as ruderal and disturbed (Exhibit 3). Vegetation in these areas was low in stature at the time of the surveys. These areas supported scattered California ground squirrel burrows. Dirt mounds, abandoned irrigation pipes, rock and debris piles, and other objects that could be utilized by the burrowing owl existed in the study area. However, no burrowing owls, occupied owl burrows, or other evidence of owl presence (i.e., cast pellets, white-wash, feathers, or prey remains) were observed during the focused surveys. However, no burrowing owls, occupied owl burrows, or other evidence of owl presence (i.e., cast pellets, white-wash, feathers, or prey remains) were observed during the focused surveys. Representative photographs are included in Attachment A. A complete list of all wildlife species observed during the surveys is provided in Attachment B of this report.

CONCLUSIONS

The ruderal and disturbed areas present on the study area provide habitat that could potentially support burrowing owl in the future. Per CDFW guidelines, a pre-construction burrowing owl survey is required within 30 days prior to any ground disturbance. Pre-construction surveys for burrowing owl can be conducted year-round.

If an active burrow is observed during pre-construction surveys in the non-breeding season (i.e., September 1–February 28), a qualified Biologist will monitor the burrow location. When the owl is away from the nest, the Biologist will install one-way doors to exclude the owl from the burrow, monitor the burrow for 48 hours, and will then hand-excavate the burrow so the burrowing owl cannot return to the burrow.

If an active burrow is observed during pre-construction surveys in the breeding season (i.e., March 1–August 31), the active burrow will be protected until nesting activity has ended to ensure compliance with Section 3503.5 of the *California Fish and Game Code*. To protect the active burrow, restrictions to construction activities will be required within a buffer area around the active burrow. The extent of the buffer will be determined by a Biologist following CDFW (2012) guidelines. Any encroachment into the buffer area around the active burrow will only be allowed if the Biologist determines that the proposed activity will not disturb the nest occupants. Construction can proceed when the qualified Biologist has determined that fledglings have left the burrow.

BonTerra Psomas appreciates the opportunity to assist on this project. If you have any comments or questions, please call Amber Heredia at (714) 444-9199.

Sincerely,
BonTerra Psomas



Kathleen Brady
Vice President, Environmental Services



Amber O. Heredia
Senior Project Manager, Natural Resources

Enclosures: Exhibits 1–3
Attachment A – Site Photographs
Attachment B – Wildlife Compendium

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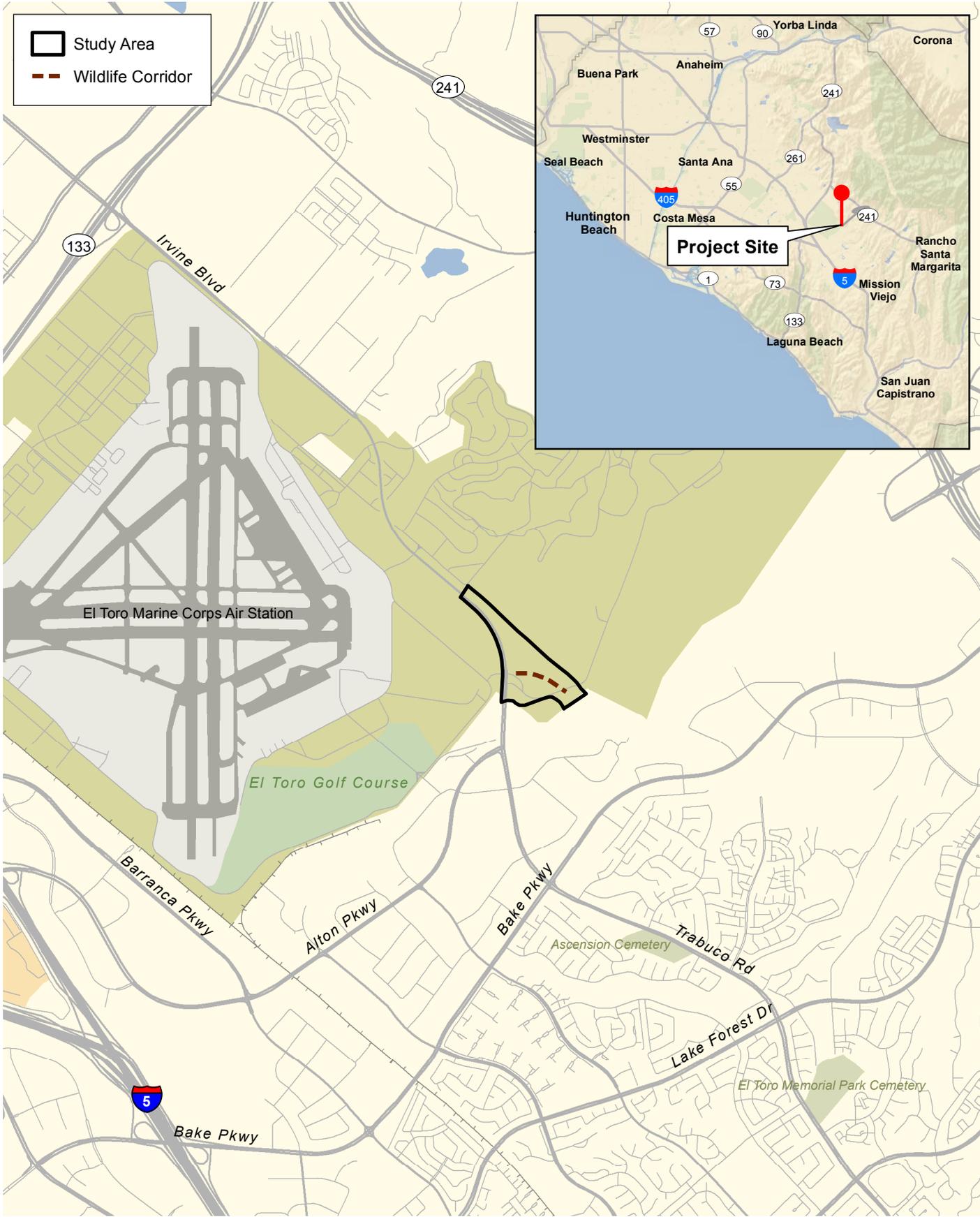
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 Study Area
 Wildlife Corridor

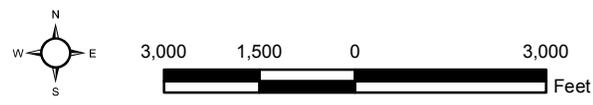


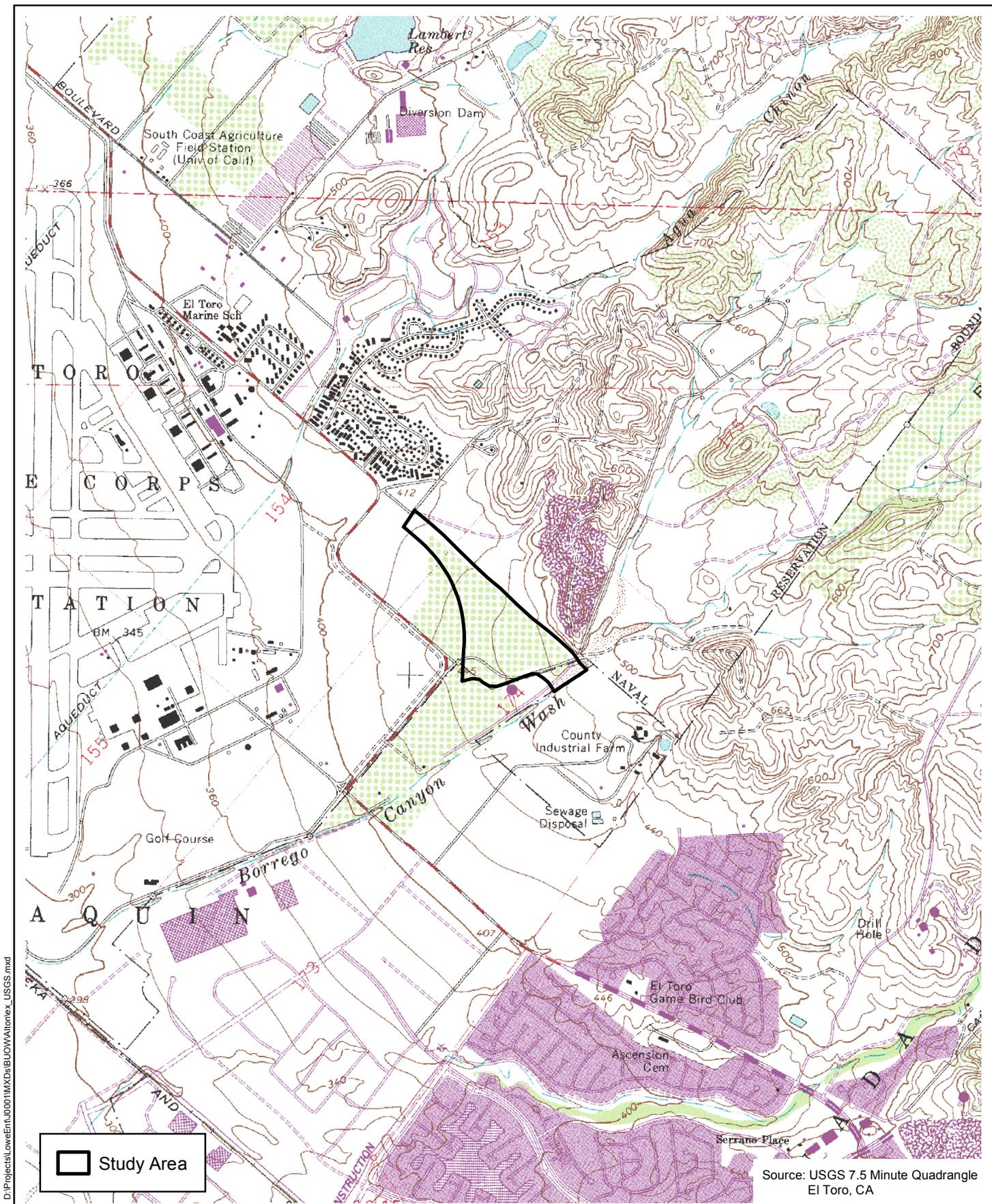
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Project Location

Exhibit 1

Alton Parcel



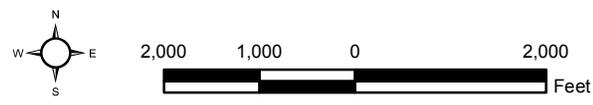


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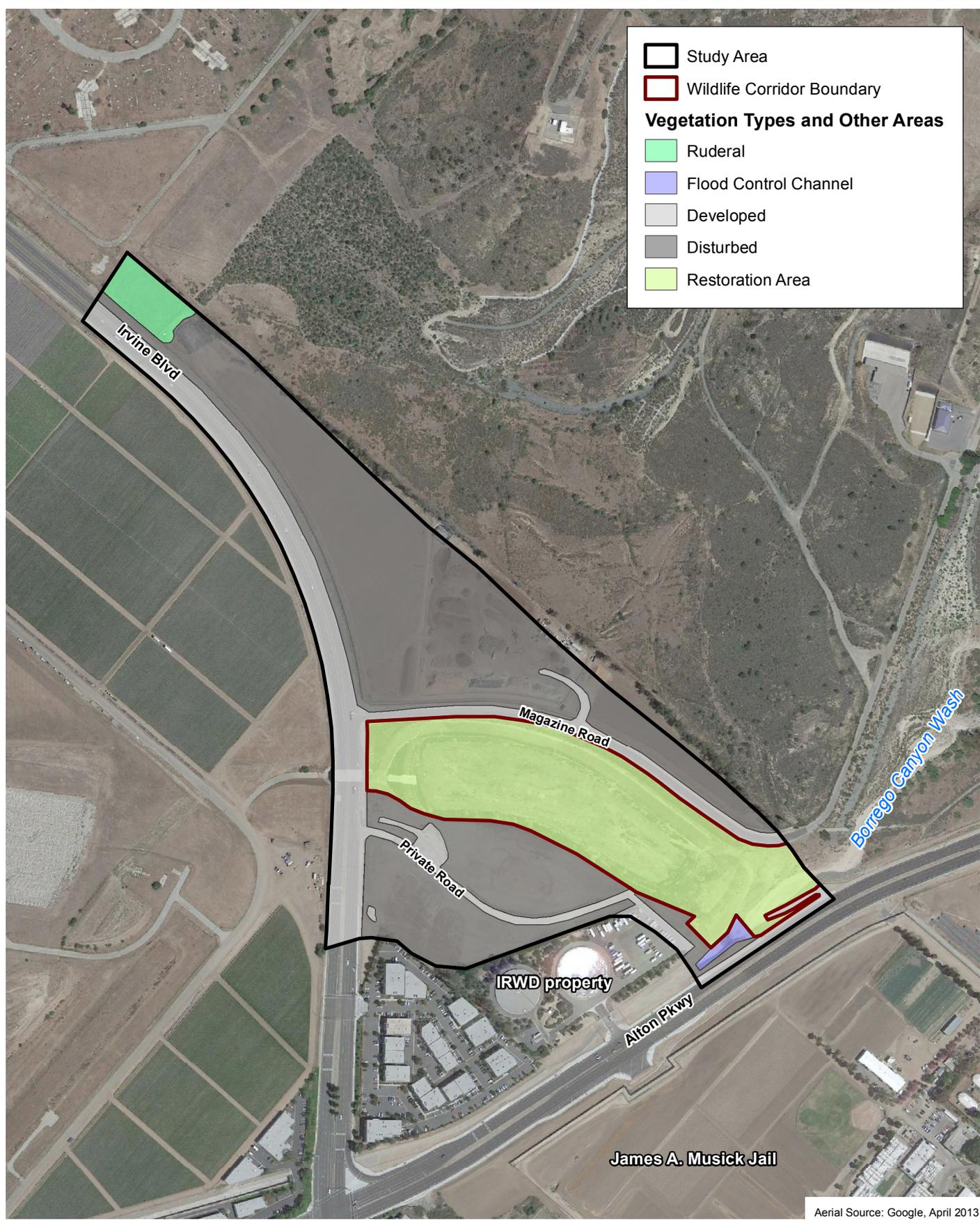
U.S. Geological Survey 7.5-Minute Quadrangle

Exhibit 2

Alton Parcel



Study Area
 Wildlife Corridor Boundary
Vegetation Types and Other Areas
 Ruderal
 Flood Control Channel
 Developed
 Disturbed
 Restoration Area



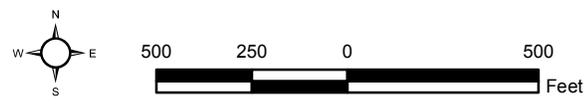
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Aerial Source: Google, April 2013

Vegetation Types and Other Areas

Exhibit 3

Alton Parcel



ATTACHMENT A
SITE PHOTOGRAPHS



Representative habitat located in the western portion of the study area.



View of dirt mound containing multiple burrows located in the western portion of the study area. The burrows were occupied by California ground squirrels.

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Site Photographs

Alton Parcel

Attachment A

Bonterra
PSOMAS

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ATTACHMENT B
WILDLIFE COMPENDIUM

WILDLIFE SPECIES OBSERVED DURING SURVEYS

Species	
REPTILES	
LEPIDOSAURIA – LIZARDS AND SNAKES	
<i>PHRYNOSOMATIDAE</i> – ZEBRA-TAILED, FRINGE-TOED, SPINY, TREE, SIDE-BLOTCHED, AND HORNED LIZARDS	
<i>Sceloporus occidentalis</i>	western fence lizard
BIRDS	
AVES – BIRDS	
<i>CATHARTIDAE</i> – NEW WORLD VULTURES	
<i>Cathartes aura</i>	turkey vulture
<i>ACCIPITRIDAE</i> – HAWKS, KITES, EAGLES, AND ALLIES	
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>COLUMBIDAE</i> – PIGEONS AND DOVES	
<i>Zenaida macroura</i>	mourning dove
<i>FRINGILLIDAE</i> – FINCHES	
<i>Carpodacus mexicanus</i>	house finch
MAMMALS	
MAMMALIA – MAMMALS	
<i>LEPORIDAE</i> – HARES AND RABBITS	
<i>Sylvilagus audubonii</i>	desert cottontail
<i>SCIURIDAE</i> – SQUIRRELS	
<i>Spermophilus beecheyi</i>	California ground squirrel
* introduced species	



October 23, 2014

Ms. Stacey Love
Recovery Permit Coordinator
U.S. Fish and Wildlife Service
6010 Hidden Valley Road, Suite 101
Carlsbad, California 92011

VIA EMAIL AND MAIL
Stacey_Love@fws.gov

Subject: Results of a Coastal California Gnatcatcher Survey for the Alton Parcel in the City of Irvine, Orange County, California

Dear Ms. Love:

This Letter Report presents the results of focused surveys for the coastal California gnatcatcher (*Polioptila californica californica*) for the Alton Parcel (hereinafter referred to as “the study area”) located in the City of Irvine, Orange County, California. A Biologist who holds the necessary Federal Endangered Species Act survey permit conducted the surveys to determine the presence or absence of the coastal California gnatcatcher on or immediately adjacent to the study area. Survey methods followed U.S. Fish and Wildlife Service (USFWS) survey protocol for the coastal California gnatcatcher within a Natural Community Conservation Planning (NCCP) area.

PROJECT LOCATION AND DESCRIPTION

The study area is located east of Irvine Boulevard, west of the former El Toro Marine Corps Air Station, and north of Alton Parkway; Magazine Road bisects the study area. The 11.43-acre mitigation site for Alton Parkway, known as the Wildlife Corridor, also bisects the study area linking Borrego Canyon Wash with the Orange County Great Park Wildlife Corridor. The study area is generally surrounded by commercial development, agriculture, and undeveloped open space. The study area is within the Central-Coastal Subregion NCCP.

The study area is located on the U.S. Geological Survey’s El Toro 7.5-minute quadrangle at Sections 3 and 10 of Township 6 South, Range 8 West (Exhibit 2). Topography in the study area is relatively flat with elevations ranging from approximately 420 to 500 feet above mean sea level (msl). Vegetation types and other areas in the study area consist of ruderal, flood control channel, developed, and disturbed; vegetation in the Wildlife Corridor consists of riparian scrub, xeric (dry) scrub/woodland, and mesic (moist) woodland/scrub (Exhibit 3).

The coastal California gnatcatcher survey included all coastal sage scrub within the study area, even marginally suitable areas with shrubs that are typically too small in size and stature to support gnatcatcher (Exhibit 2). Coastal sage scrub in the study area is dominated by California sagebrush (*Artemisia californica*), deerweed (*Acmispon glaber* var. *glaber*), California buckwheat (*Eriogonum fasciculatum*), and California brittlebush (*Encelia californica*). The largest patch of coastal sage scrub is located within the Wildlife Corridor in the western portion of the study area. Vegetation in this area is taller and denser than other areas. Another large patch of coastal sage scrub occurs on a north-facing slope within the Wildlife Corridor in the southeastern portion of the study area; this patch is tall and

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dense. Small-stature coastal sage scrub are located within the Wildlife Corridor on a south-facing slope, small flat area, and narrow strip in the northeastern portion of the study area. Vegetation in this area is shorter and sparser. Photographs of representative habitat in the study area are provided in Attachment A.

The County of Orange is proposing a development plan for the study area, which would identify the proposed land uses and development intensities permitted for the study area. The proposed West Alton development plan will be used to guide future development on the County-owned site. A total of 930 units multi-family units are proposed for the study area.

BACKGROUND

The coastal California gnatcatcher is a federally Threatened species and a California Species of Special Concern. This species occurs in most of Baja California, Mexico's arid regions, but this subspecies is extremely localized in the United States, where it predominantly occurs in coastal regions of highly urbanized Los Angeles, Orange, Riverside, and San Diego Counties (Atwood 1992). In California, this subspecies is an obligate resident of coastal sage scrub vegetation types. The breeding season for the coastal California gnatcatcher ranges from late February to July. Nests are generally located in various materials in sagebrush about three feet above ground. Brood parasitism by brown-headed cowbirds (*Molothrus ater*) and loss of habitat to urban development have been cited as causes of coastal California gnatcatcher population decline (Unitt 1984; Atwood 1990).

Taxonomic studies indicate that the California gnatcatcher consists of four subspecies, which extend from southwestern California to southern Baja California, Mexico (Atwood and Lerman 2006; Mellink and Rea 1994). The coastal California gnatcatcher, the northernmost gnatcatcher subspecies, is restricted to lowland areas from central Ventura County through Los Angeles, San Bernardino, Riverside, Orange, and San Diego counties to the Baja California, Mexico border (Atwood and Lerman 2006; Mellink and Rea 1994). Formerly, the coastal California gnatcatcher was common from the San Fernando Valley, east along the base of the San Gabriel Mountains to Claremont (Atwood 1990). The coastal California gnatcatcher is now rare in the northern part of its range with a few sightings from Santa Clarita to Tujunga Wash, though a small population persists near Moorpark in Ventura County.

The coastal California gnatcatcher has been recorded from sea level to approximately 3,000 feet above msl (USFWS 2003); however, greater than 90 percent of gnatcatcher records are from between sea level and 820 feet above msl along the coast and between sea level and 1,800 feet above msl inland (Atwood and Bolsinger 1992). USFWS estimates regarding the population size of the coastal California gnatcatcher in Southern California have been about 3,000 pairs (Atwood and Bontrager 2001). In the 5-year Review: Summary and Evaluation for the gnatcatcher, the USFWS states that a recent study (Winchell and Doherty 2008) estimated that there were approximately 1,324 gnatcatcher pairs over approximately 111,000 acres on public and quasi-public lands in Orange and San Diego Counties. Because the Winchell and Doherty study only covered a portion of the U.S. range (focusing on the coast and limited to one year), this study cannot extrapolate beyond the sampling region; however, the USFWS states that it is likely there are more gnatcatchers in the U.S. portion of the range than was suggested by earlier estimates (USFWS 2010). The coastal California gnatcatcher typically occurs within coastal and inland sage scrub vegetation types, which often occur in a patchy distribution pattern throughout the gnatcatcher's range. Coastal California gnatcatchers also use chaparral, grassland, and riparian habitats that are in proximity to sage scrub for dispersal and foraging (Atwood et al. 1998; Campbell et al. 1998; USFWS 2003). Availability of these non-sage scrub areas is essential during certain times of the year, particularly during drought conditions or for dispersal, foraging, or nesting (USFWS 2003).

The coastal California gnatcatcher typically occurs in coastal and inland sage scrub vegetation types. Sage scrub often occurs in a patchy distribution pattern throughout the range of the gnatcatcher. Coastal California gnatcatchers also use chaparral, grassland, and riparian habitats that are in proximity to sage

scrub. These non-sage scrub habitats are used for dispersal and foraging (Atwood et al. 1998; Campbell et al. 1998; USFWS 2003). Availability of these non-sage scrub areas is essential during certain times of the year, particularly during drought conditions or for dispersal, foraging, or nesting (USFWS 2003).

The USFWS published a Revised Final Rule designating critical habitat for the coastal California gnatcatcher in 2007 (USFWS 2007). This revised rule designates 197,303 acres of critical habitat in San Diego, Orange, Riverside, San Bernardino, Los Angeles, and Ventura Counties, California. The study area is not located within designated critical habitat for the coastal California gnatcatcher; however, adjacent properties to the northeast and east are located within critical habitat (Exhibit 3).

SURVEY METHODOLOGY

The USFWS’s survey protocol for the coastal California gnatcatcher requires three visits, conducted at least one week apart, to all potentially occupied habitat areas for surveys within an NCCP area (USFWS 1997a, 1997b). All visits must take place during the morning hours, and no more than 100 acres of suitable habitat may be surveyed per visit. Although USFWS protocol for the species only requires three surveys, BonTerra Psomas Biologist Jonathan Aguayo (USFWS Permit #TE96514A-0) conducted six surveys for the gnatcatcher. Surveys for the coastal California gnatcatcher were conducted on April 15 and 29; May 13 and 29; and June 9 and 20, 2014.

Mr. Aguayo avoided weather conditions that were too cold (below 55 degrees Fahrenheit [°F]), too hot (i.e., above 95°F), or too windy (i.e., wind speed greater than 15 miles per hour) in order to meet the weather conditions under the USFWS survey protocol requirements for optimal gnatcatcher detection (Table 1). Mr. Aguayo conducted the surveys by slowly walking through all appropriate habitats while listening and watching for gnatcatcher activity, and by using a combination of recordings of gnatcatcher vocalizations and “pishing” sounds to elicit responses from any gnatcatchers present. The frequency of vocalization playback and “pishing” varied depending on conditions such as habitat patch size, topography in each area, and ambient noise conditions. All wildlife species detected during the surveys were recorded (Attachment B).

TABLE 1
SUMMARY OF SURVEY CONDITIONS FOR THE
COASTAL CALIFORNIA GNATCATCHER SURVEYS

Survey Number	Date	Time (Start/End)	Surveyor	Weather Conditions		
				Temperature (°F) (Start/End)	Wind (mph) (Start/End)	Cloud Cover (%) (Start/End)
1	April 15, 2014	7:30 AM–9:00 AM	Aguayo	57/61	0–1/0–5	100/40
2	April 29, 2014	6:00 AM–8:00 AM	Aguayo	61/66	0–1/0–1	Clear/Clear
3	May 13, 2014	9:00 AM–11:00 AM	Aguayo	74/86	0–5/0–10	Clear/Clear
4	May 29, 2014	7:30 AM–9:00 AM	Aguayo	63/69	0–5/0–5	100/80
5	June 9, 2014	9:00 AM–11:00 AM	Aguayo	65/70	0–1/0–5	100/20
6	June 20, 2014	7:30 AM–9:00 AM	Aguayo	64/66	0–1/0–5	100/100

°F: Fahrenheit; mph: miles per hour; %: percent

RESULTS

No coastal California gnatcatchers were observed during the surveys.

Notable wildlife species incidentally observed during the surveys included yellow-breasted chat (*Icteria virens*) (California Species of Special Concern) and least Bell's vireo (*Vireo bellii pusillus*) (federally and State-Endangered). These species are tracked by the California Natural Diversity Database (CNDDDB). CNDDDB forms for these species are included in Attachment C of the Least Bell's Vireo Survey Report for the study area (BonTerra Psomas 2014), and will be submitted to the California Department of Fish and Wildlife with that report.

Brown-headed cowbirds were consistently observed during the late May and June surveys; one to five cowbirds were observed on each of the later survey visits. A complete list of wildlife species that were observed during the surveys can be found in Attachment B.

BonTerra Psomas appreciates the opportunity to assist on this project. If you have any comments or questions, please call Amber Heredia at (714) 444-9199.

Sincerely,

BonTerra Psomas



Amber O. Heredia
Senior Project Manager, Natural Resources



Jonathan Aguayo
Biologist

I certify that the information in this survey report and in the enclosed exhibits fully and accurately presents my work.



Jonathan Aguayo
(TE96514A-0)

Enclosures: Exhibits 1-3
Attachment A – Site Photographs
Attachment B – Wildlife Compendium

cc: Robert Reitenour, Lowe Enterprises Real Estate Group, Inc.

REFERENCES

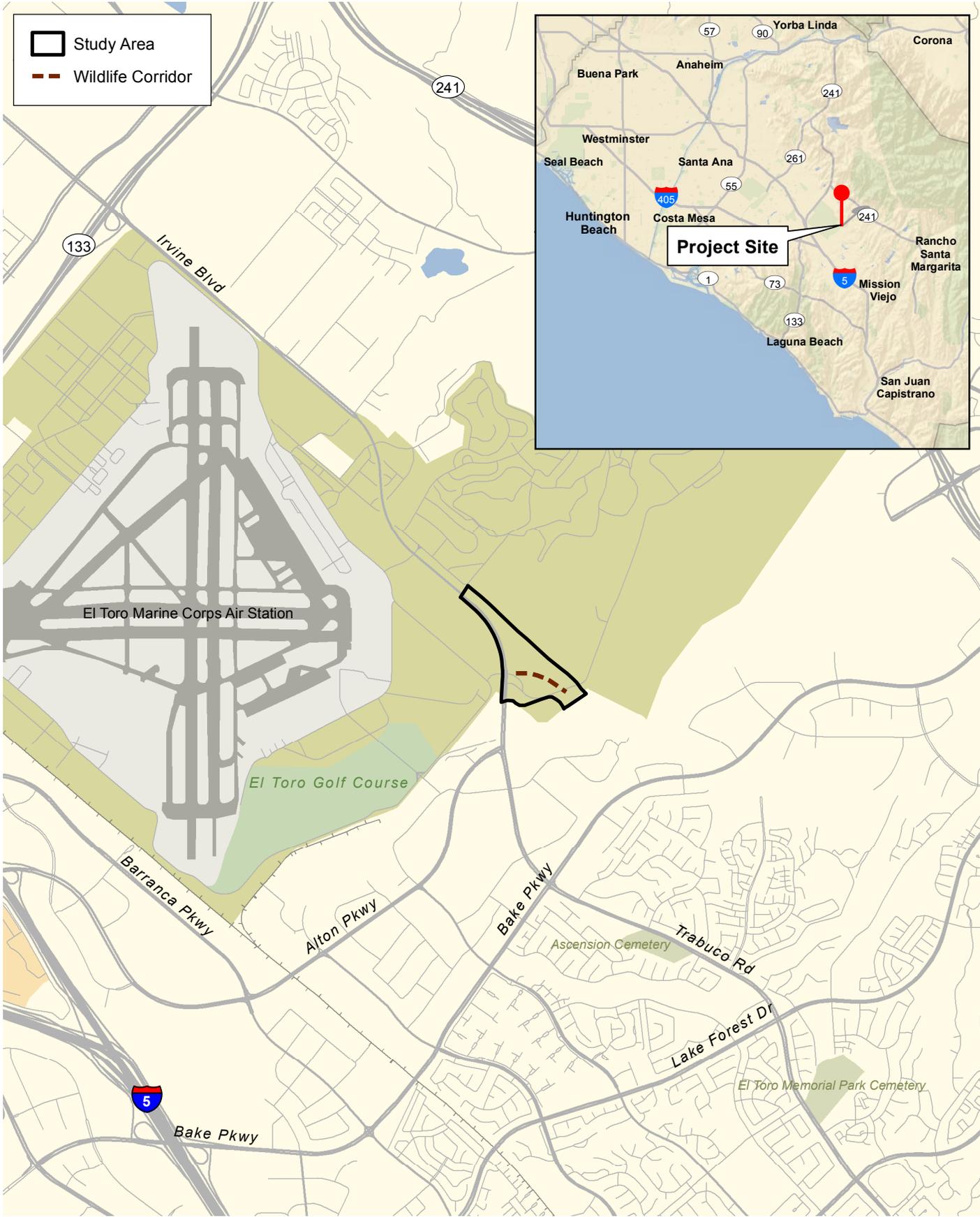
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Ms. Stacey Love
October 23, 2014
Page 6

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Study Area
 Wildlife Corridor



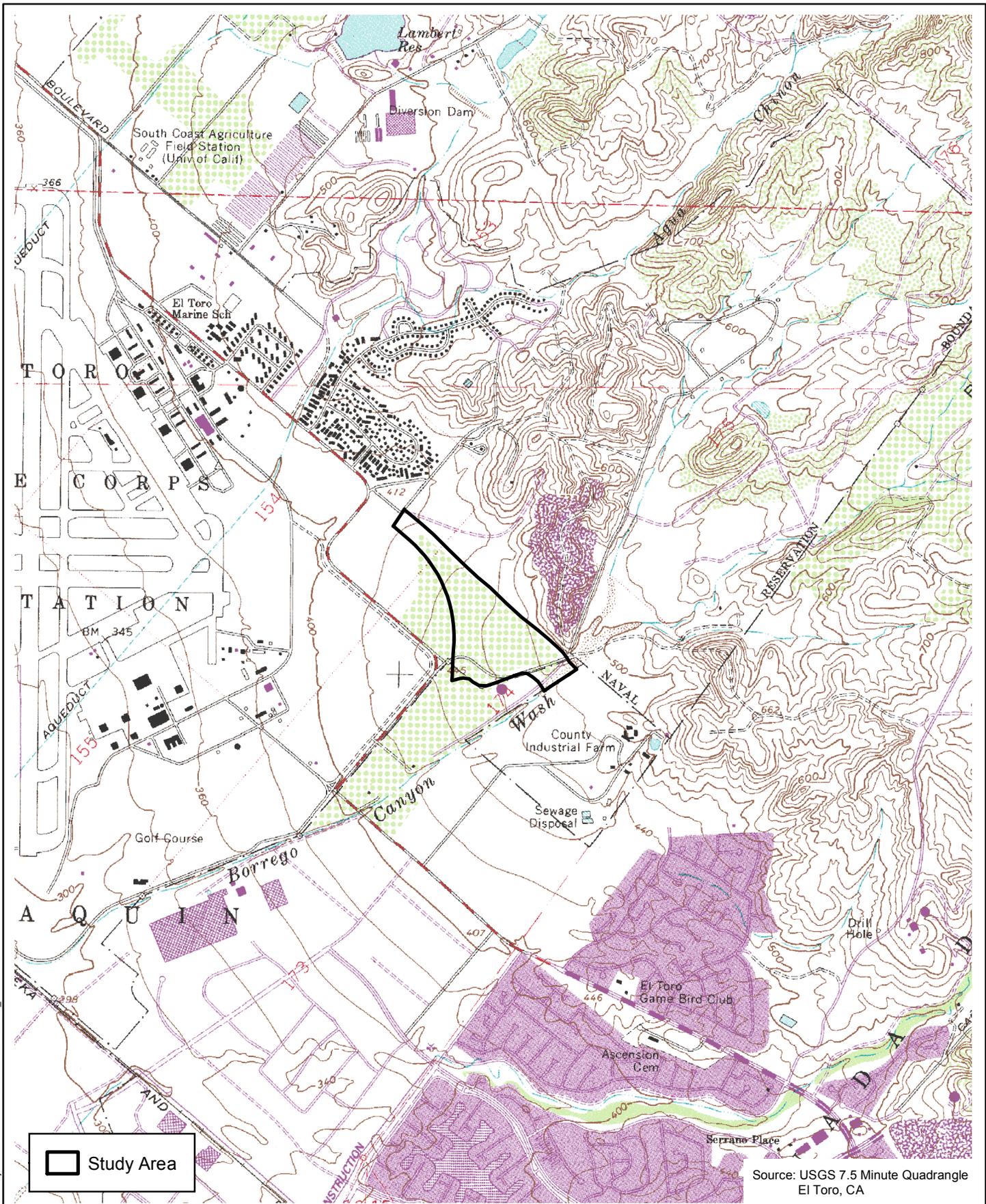
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Project Location

Exhibit 1

Alton Parcel



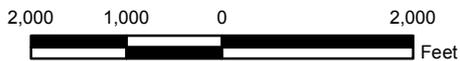


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U.S. Geological Survey 7.5-Minute Quadrangle

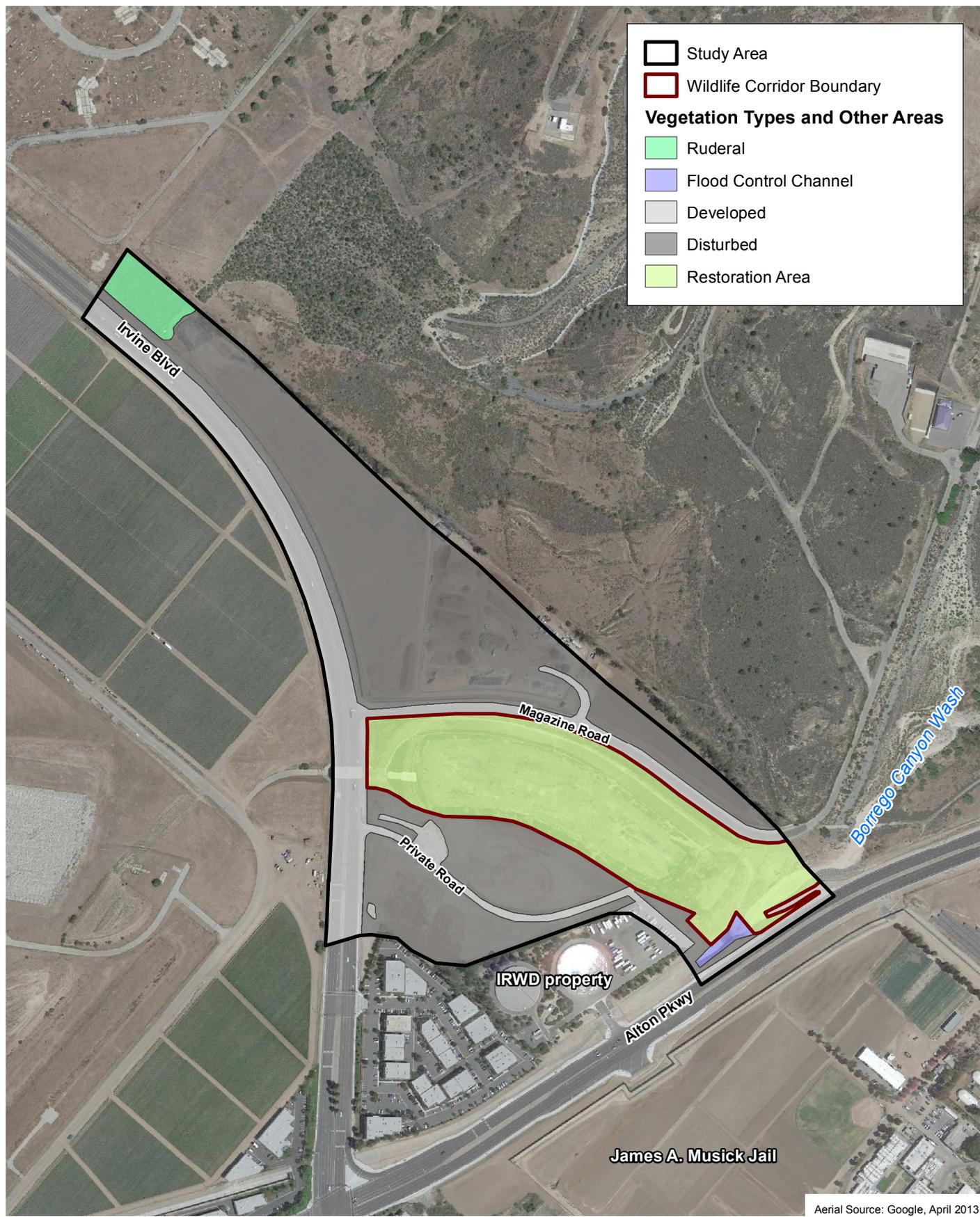
Exhibit 2

Alton Parcel



Bonterra
PSOMAS

Study Area
 Wildlife Corridor Boundary
Vegetation Types and Other Areas
 Ruderal
 Flood Control Channel
 Developed
 Disturbed
 Restoration Area



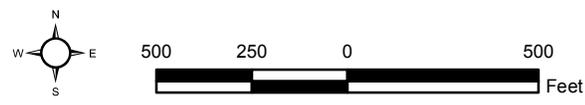
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Aerial Source: Google, April 2013

Vegetation Types and Other Areas

Exhibit 3

Alton Parcel



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ATTACHMENT A
SITE PHOTOGRAPHS



Small-stature coastal sage scrub located within the Wildlife Corridor in the northeastern portion of the study area. Photo taken facing west.



View of coastal sage scrub within the Wildlife Corridor in the western portion of the study area. Photo taken facing south.

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Site Photographs

Alton Parcel

Attachment A-1

Bonterra
PSOMAS



View of coastal sage scrub located within the Wildlife Corridor in the southeastern portion of the study area. Photo taken facing west.



Small-stature coastal sage scrub within the Wildlife Corridor in the northeastern of the study area. Photo taken facing northeast.

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Site Photographs

Alton Parcel

Attachment A-2

Bonterra
PSOMAS

ATTACHMENT B
WILDLIFE COMPENDIUM

WILDLIFE SPECIES OBSERVED DURING SURVEYS

Species	
AMPHIBIANS	
AMPHIBIA – AMPHIBIANS RANIDAE – TRUE FROGS	
<i>Lithobates catesbeianus</i> [<i>Rana catesbeiana</i>] *	bullfrog
REPTILES	
LEPIDOSAURIA – LIZARDS AND SNAKES PHRYNOSOMATIDAE – ZEBRA-TAILED, FRINGE-TOED, SPINY, TREE, SIDE-BLOTCHED, AND HORNED LIZARDS	
<i>Sceloporus occidentalis</i>	western fence lizard
COLUBRIDAE – COLUBRID SNAKES	
<i>Lampropeltis getula</i>	California kingsnake
BIRDS	
AVES – BIRDS	
CATHARTIDAE – NEW WORLD VULTURES	
<i>Cathartes aura</i>	turkey vulture
ACCIPITRIDAE – HAWKS, KITES, EAGLES, AND ALLIES	
<i>Buteo jamaicensis</i>	red-tailed hawk
FALCONIDAE – FALCONS	
<i>Falco sparverius</i>	American kestrel
CHARADRIIDAE – PLOVERS	
<i>Charadrius vociferus</i>	killdeer
COLUMBIDAE – PIGEONS AND DOVES	
<i>Columba livia</i> *	rock pigeon
<i>Streptopelia decaocto</i> *	Eurasian collared-dove
<i>Zenaida macroura</i>	mourning dove
APODIDAE – SWIFTS	
<i>Aeronautes saxatalis</i>	white-throated swift
TROCHILIDAE – HUMMINGBIRDS	
<i>Calypte anna</i>	Anna's hummingbird
TYRANNIDAE – TYRANT FLYCATCHERS	
<i>Empidonax difficilis</i>	Pacific-slope flycatcher
<i>Sayornis nigricans</i>	black phoebe
<i>Sayornis saya</i>	Say's phoebe
<i>Tyrannus vociferans</i>	Cassin's kingbird
VIREONIDAE – VIREOS	
<i>Vireo bellii pusillus</i>	least Bell's vireo
CORVIDAE – CROWS AND JAYS	
<i>Aphelocoma californica</i>	western scrub-jay
<i>Corvus brachyrhynchos</i>	American crow
<i>Corvus corax</i>	common raven
HIRUNDINIDAE – SWALLOWS	
<i>Stelgidopteryx serripennis</i>	northern rough-winged swallow
<i>Petrochelidon pyrrhonota</i>	cliff swallow
<i>Hirundo rustica</i>	barn swallow

WILDLIFE SPECIES OBSERVED DURING SURVEYS

Species	
<i>AEGITHALIDAE – BUSHTITS</i>	
<i>Psaltriparus minimus</i>	bushtit
<i>TROGLODYTIDAE – WRENS</i>	
<i>Thryomanes bewickii</i>	Bewick's wren
<i>SYLVIIDAE – SYLVIID WARBLERS</i>	
<i>Chamaea fasciata</i>	wrentit
<i>BOMBYCILLIDAE – WAXWINGS</i>	
<i>Bombycilla cedrorum</i>	cedar waxwing
<i>PARULIDAE – WARBLERS</i>	
<i>Setophaga coronata</i> [<i>Dendroica coronata</i>]	yellow-rumped warbler
<i>Setophaga townsendi</i> [<i>Dendroica townsendi</i>]	Townsend's warbler
<i>Cardellina pusilla</i> [<i>Wilsonia pusilla</i>]	Wilson's warbler
<i>Icteria virens</i>	yellow-breasted chat
<i>EMBERIZIDAE – SPARROWS AND JUNCOS</i>	
<i>Pipilo maculatus</i>	spotted towhee
<i>Melospiza crissalis</i> [<i>Pipilo crissalis</i>]	California towhee
<i>Melospiza melodia</i>	song sparrow
<i>Zonotrichia leucophrys</i>	white-crowned sparrow
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<i>ICTERIDAE – BLACKBIRDS</i>	
<i>Molothrus ater</i>	brown-headed cowbird
<i>Icterus cucullatus</i>	hooded oriole
<i>FRINGILLIDAE – FINCHES</i>	
<i>Carpodacus mexicanus</i>	house finch
<i>Spinus [Carduelis] psaltria</i>	lesser goldfinch
<i>Spinus [Carduelis] tristis</i>	American goldfinch
MAMMALS	
MAMMALIA – MAMMALS	
<i>LEPORIDAE – HARES AND RABBITS</i>	
<i>Sylvilagus bachmani</i>	brush rabbit
<i>SCIURIDAE – SQUIRRELS</i>	
<i>Spermophilus beecheyi</i>	California ground squirrel
<i>CANIDAE – WOLVES AND FOXES</i>	
<i>Canis latrans</i>	coyote
* introduced species	



October 23, 2014

Ms. Stacey Love
Recovery Permit Coordinator
U.S. Fish and Wildlife Service
6010 Hidden Valley Road, Suite 101
Carlsbad, California 92011

VIA EMAIL
Stacey_Love@fws.gov

Subject: Results of the Least Bell's Vireo Survey for the Alton Parcel, Orange County, California

Dear Ms. Love:

This Letter Report presents the results of focused surveys to determine the presence or absence of the least Bell's vireo (*Vireo bellii pusillus*) on the Alton Parcel (hereinafter referred to as the "study area") located in the City of Irvine, Orange County, California (Exhibit 1). A qualified Biologist with the necessary experience conducted the surveys according to U.S. Fish and Wildlife Service (USFWS) protocol for this species.

PROJECT DESCRIPTION AND LOCATION

The study area is located east of Irvine Boulevard, west of the former El Toro Marine Corps Air Station, and north of Alton Parkway; Magazine Road bisects the study area. The 11.43-acre mitigation site for Alton Parkway, known as the Wildlife Corridor, also bisects the study area linking Borrego Canyon Wash with the Orange County Great Park Wildlife Corridor. The study area is generally surrounded by commercial development, agriculture, and undeveloped open space. The study area is within the Central-Coastal Subregion Natural Communities Conservation Plan.

The study area is located on the U.S. Geological Survey's El Toro 7.5-minute quadrangle at Sections 3 and 10 of Township 6 South, Range 8 West (Exhibit 2). Topography in the study area is relatively flat with elevations ranging from approximately 420 to 500 feet above mean sea level. Vegetation types and other areas in the study area consist of ruderal, flood control channel, developed, and disturbed; vegetation in the Wildlife Corridor consists of riparian scrub, xeric (dry) scrub/woodland, and mesic (moist) woodland/scrub (Exhibit 3).

The County of Orange is proposing a development plan for the study area, which would identify the proposed land uses and development intensities permitted for the study area. The proposed West Alton development plan will be used to guide future development on the County-owned site. A total of 930 units multi-family units are proposed for the study area.

The least Bell's vireo survey included all suitable riparian habitats within the study area, even marginally suitable areas with shrubs that were small and sparse (Exhibit 3). Riparian scrub and transitional riparian scrub is dominated by mule fat (*Baccharis salicifolia* ssp. *salicifolia*), mugwort (*Artemisia douglasiana*), and deergrass (*Muhlenbergia rigens*). Other species include California sagebrush (*Artemisia californica*), deerweed (*Acmispon glaber* var. *glaber*), California buckwheat (*Eriogonum fasciculatum*), arroyo willow (*Salix lasiolepis*), needle grass (*Stipa* sp.), and verbena (*Verbena* sp.). The riparian scrub and transitional riparian scrub is part of the Wildlife Corridor. The riparian scrub in this area consists of approximately six feet tall mule fat and seedling willows. Mule fat is sparse in the western portion of the study area and dense in the eastern portion of the study area. Photographs of representative habitat in the study area are provided in Attachment A.

BACKGROUND

The least Bell's vireo was formerly more common and widespread, but is now a rare, local summer resident of Southern California's lowland riparian woodlands (Grinnell and Miller 1986; Garrett and Dunn 1981). The substantial population decline of this species over the latter half of the twentieth century is attributable to the loss and degradation of riparian habitats and brood parasitism by the brown-headed cowbird (*Molothrus ater*). As a result, the least Bell's vireo was listed by the California Department of Fish and Wildlife (CDFW) as Endangered on October 2, 1980, and by the USFWS as Endangered on May 2, 1986 (USFWS 1986).

Bell's vireo is a Neotropical migrant that breeds in central and southwestern North America from northern Mexico to Southern California, Nevada, and Utah; east to Louisiana; and north to North Dakota, Wisconsin, and Indiana in the central U.S. (AOU 1998). Although not well known, the winter range of the least Bell's vireo is believed to be the west coast of Central America from southern Sonora, Mexico south to northwestern Nicaragua, including the cape region of Baja California, Mexico (Brown 1993). Of the four Bell's vireo subspecies, only two breed in California: the least Bell's vireo and the Arizona Bell's vireo (*V. b. arizonae*); the latter breeds in the Colorado River Valley (Garrett and Dunn 1981; Rosenberg et al. 1991). Though the least Bell's vireo was formerly considered a common breeder in riparian habitats throughout the Central Valley and other low-elevation riverine systems in California and Baja California, Mexico (Franzreb 1989), the least Bell's vireo had been eliminated from much of its historical range at the time of listing (Franzreb 1989; Brown 1993). The least Bell's vireo has increased tenfold since its listing to 2,968 territories, and it has begun to recolonize portions of its former range where it had been extirpated (USFWS 2006). The increase is credited to improvements in habitat abundance and quality and effective cowbird control. Continued cowbird control and exotic plant removal in riparian areas are considered necessary for the foreseeable future in order to continue this trend (USFWS 2006).

The breeding habitat of the least Bell's vireo is primarily riparian dominated by willows (*Salix* spp.) with dense understory vegetation; shrubs such as mule fat and California rose (*Rosa californica*) are often a component of the understory (Goldwasser 1981). The least Bell's vireo is often found in areas that include trees such as willow, western sycamore (*Platanus racemosa*), or cottonwood (*Populus* sp.), particularly where the canopy is within or immediately adjacent to an understory layer of vegetation (Salata 1983). The least Bell's vireo generally nests in early successional stages of riparian habitats, with nest sites frequently located in willows that are between four and ten years of age (RECON 1988; Franzreb 1989). The most critical factor in habitat structure is the presence of a dense understory shrub layer from approximately two to ten feet above ground (Goldwasser 1981; Salata 1983; Franzreb 1989).

On February 2, 1994, the USFWS issued their final determination of critical habitat for the least Bell's vireo (USFWS 1994), identifying approximately 37,560 acres as critical habitat in Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, and San Diego Counties. The study area is not located in designated critical habitat for this species.

SURVEY METHODOLOGY

The USFWS protocol for the least Bell’s vireo requires that at least eight surveys be conducted from April 10 to July 31 with a ten-day interval between each site visit. BonTerra Psomas Biologist Jonathan Aguayo conducted surveys on April 15 and 29; May 13 and 29; June 9 and 20; and July 1 and 14, 2014.

Mr. Aguayo systematically surveyed the riparian habitat by walking slowly and methodically along the margins of riparian habitat or by using meandering transects through riparian habitat. As the least Bell’s vireo survey protocol does not require the playback of least Bell’s vireo vocalizations, recorded least Bell’s vireo vocalizations were not used during the surveys. “Pishing” sounds were used opportunistically to elicit responses from any potential least Bell’s vireo present.

All surveys were conducted under optimal weather conditions and during early morning hours when bird activity is at its peak (Table 1). All bird species detected during the survey were recorded, including notable observations of special status species or other birds (e.g., brown headed cowbird). A complete list of wildlife species observed during the surveys is included in Attachment B.

**TABLE 1
 SUMMARY OF SURVEY CONDITIONS FOR
 LEAST BELL’S VIREO SURVEYS**

Survey Number	Date	Time (Start/End)	Surveyor	Weather Conditions		
				Temperature (°F) (Start/End)	Wind (mph) (Start/End)	Cloud Cover (%) (Start/End)
1	April 15, 2014	7:30 AM–9:00 AM	Aguayo	57/61	0–1/0–5	100/40
2	April 29, 2014	6:00 AM–8:00 AM	Aguayo	61/66	0–1/0–1	Clear/Clear
3	May 13, 2014	9:00 AM–11:00 AM	Aguayo	74/86	0–5/0–10	Clear/Clear
4	May 29, 2014	7:30 AM–9:00 AM	Aguayo	63/69	0–5/0–5	100/80
5	June 9, 2014	9:00 AM–11:00 AM	Aguayo	65/70	0–1/0–5	100/20
6	June 20, 2014	7:30 AM–9:00 AM	Aguayo	64/66	0–1/0–5	100/100
7	July 1, 2014	6:30 AM–8:30 AM	Aguayo	69/71	0–1/0–5	100/100
8	July 14, 2014	9:00 AM–11:00 AM	Aguayo	73/74	0–3/0–3	100/100

°F: Fahrenheit; mph: miles per hour; %: percent

SURVEY RESULTS

An individual male least Bell’s vireo was observed in the study area during consecutive visits on April 29 and May 13, 2014. This male sang continuously and moved around frequently indicating that he was most likely unpaired. Habitat at this location consists of riparian scrub dominated by mule fat that was approximately six feet tall. The vireo was not observed after the May 13, 2014, site visit. It is assumed that since the male was unsuccessful in attracting a mate in this location, he moved to another location outside of the study area. A copy of the California Natural Diversity Database (CNDDDB) form for this observation is

Ms. Stacey Love
October 23, 2014
Page 4

One California Species of Special Concern was observed during the surveys: yellow-breasted chat (*Icteria virens*). Yellow-breasted chat has potential to nest within or near the study area. A CNDDDB form for this species is also included in Attachment C and will be submitted to the CDFW.

Brown-headed cowbirds were consistently observed during the late May and June surveys; one to five cowbirds were observed on each of the later survey visits. A complete list of all wildlife species observed during the surveys is provided in Attachment B.

BonTerra Psomas appreciates the opportunity to assist on this project. If you have any comments or questions, please call Amber Heredia at (714) 444-9199.

Sincerely,
BonTerra Psomas



Amber O. Heredia
Senior Project Manager, Natural Resources



Jonathan Aguayo
Biologist

I certify that the information in this Survey Report and enclosed exhibits fully and accurately represents my work.



Jonathan Aguayo
Biologist

Enclosures: Exhibits 1–4
Attachment A – Site Photographs
Attachment B – Wildlife Compendium
Attachment C – CNDDDB Forms
Attachment D – Least Bell's Vireo Survey Data Summary Form

cc: Robert Reitenour, Lowe Enterprises Real Estate Group, Inc.

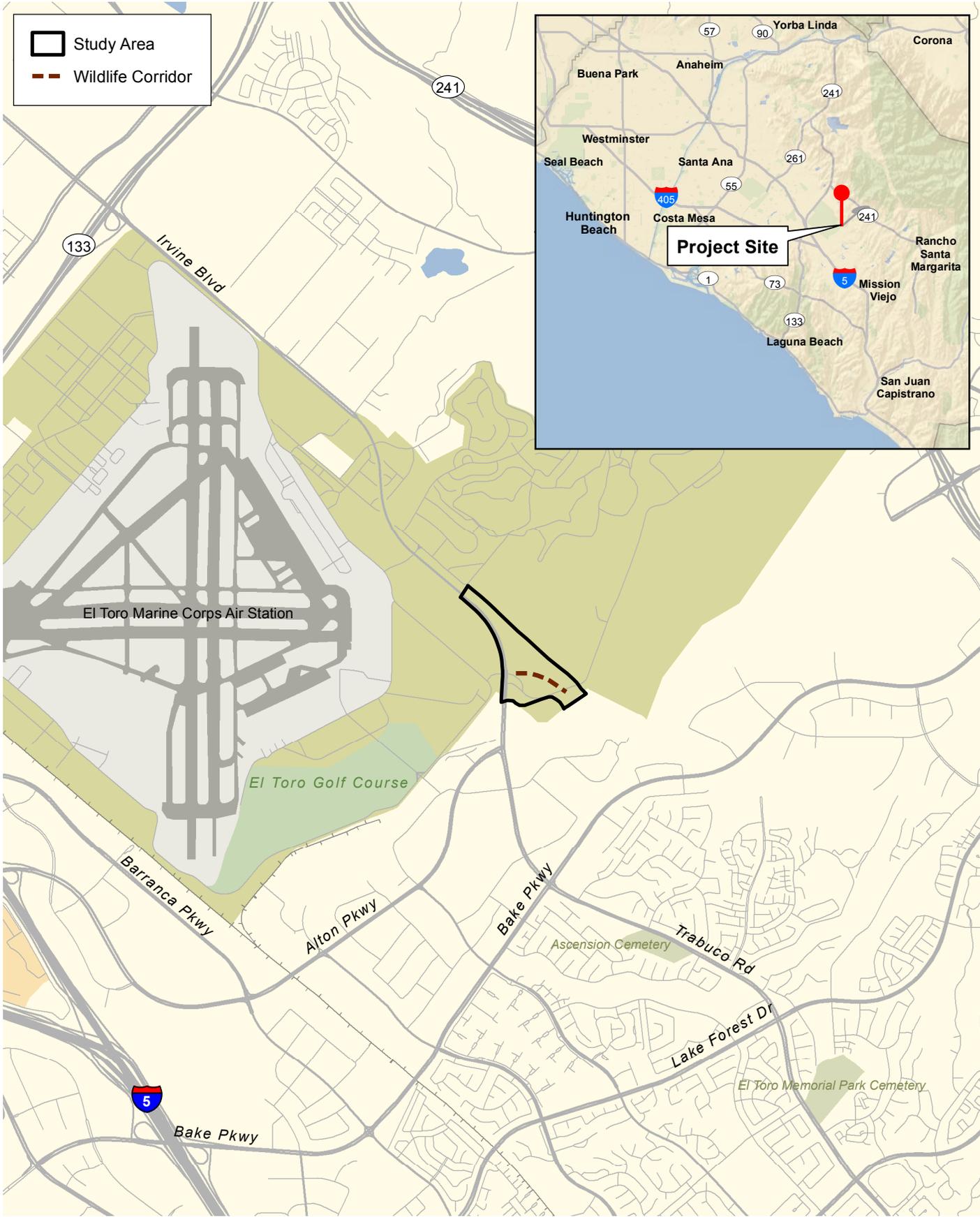
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- . 1994 (February 2). Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Least Bell's Vireo. *Federal Register* 59(22): 4845–4867. Washington, D.C.: USFWS.
- . 1986 (May 2). Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Least Bell's Vireo. *Federal Register* 51(85):16474–16482. Washington, D.C.: USFWS.



 Study Area

 Wildlife Corridor



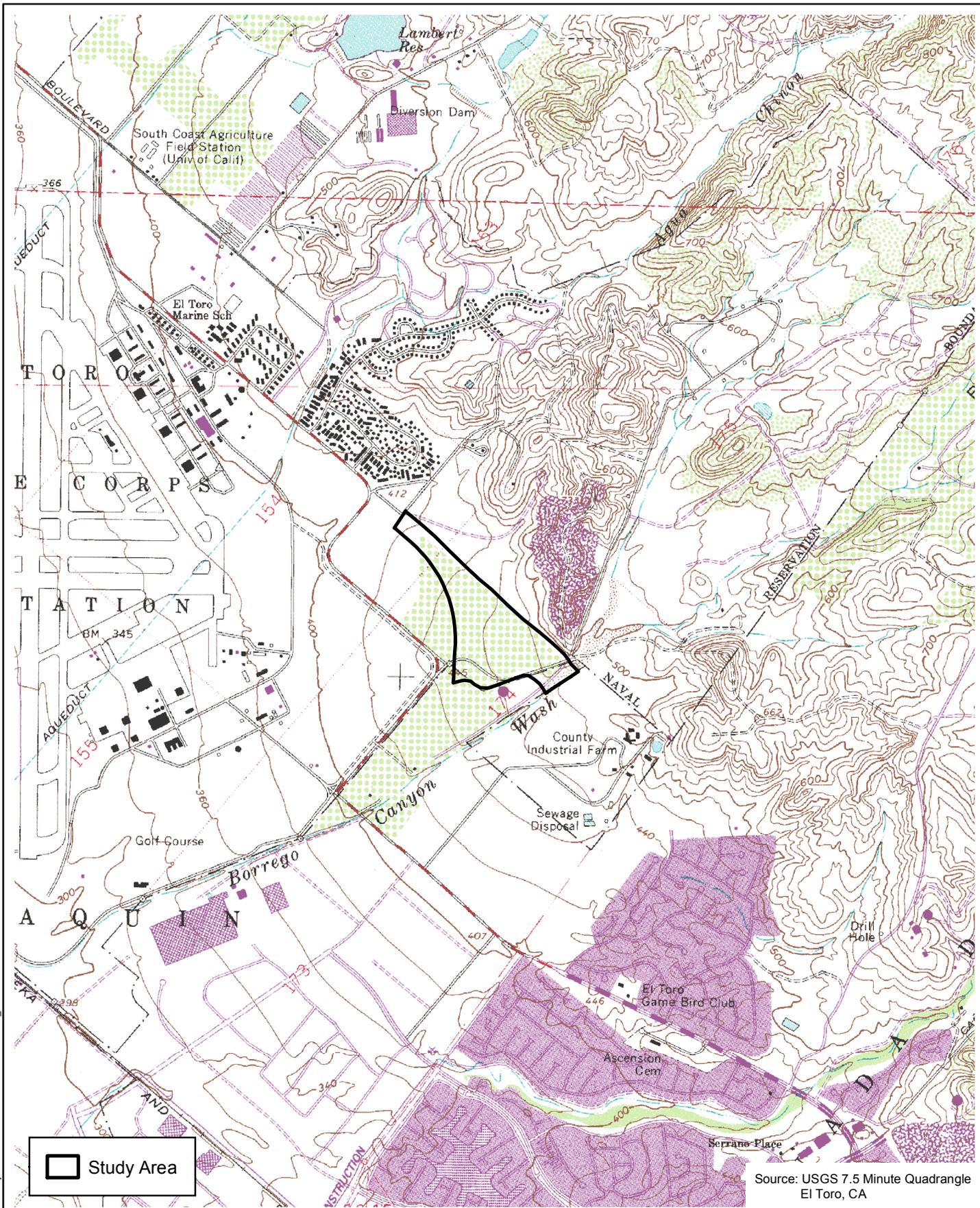
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Project Location

Exhibit 1

Alton Parcel





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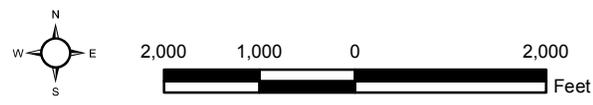
Study Area

Source: USGS 7.5 Minute Quadrangle
El Toro, CA

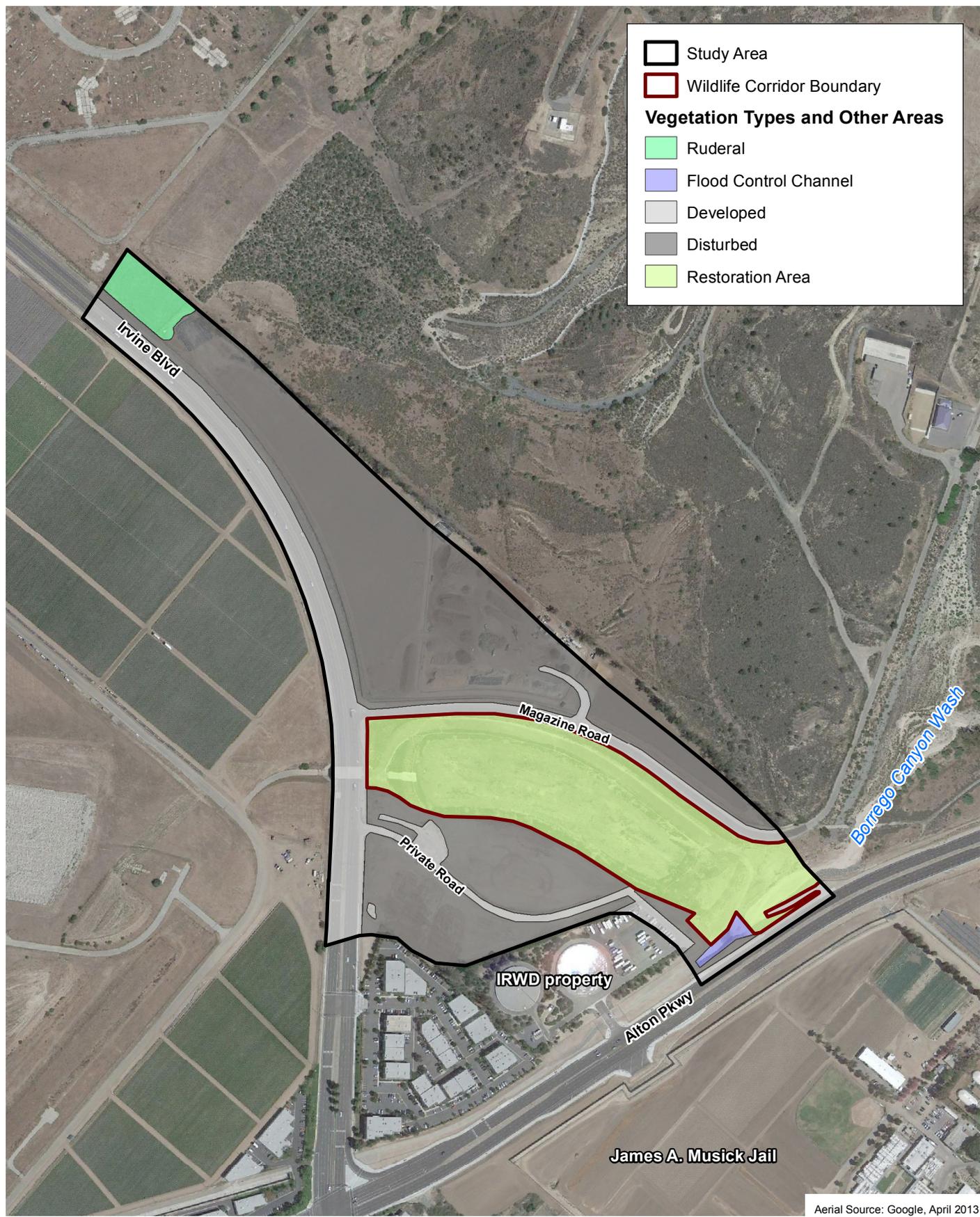
U.S. Geological Survey 7.5-Minute Quadrangle

Exhibit 2

Alton Parcel



Study Area
 Wildlife Corridor Boundary
Vegetation Types and Other Areas
 Ruderal
 Flood Control Channel
 Developed
 Disturbed
 Restoration Area



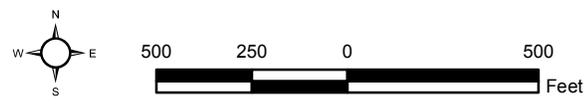
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Aerial Source: Google, April 2013

Vegetation Types and Other Areas

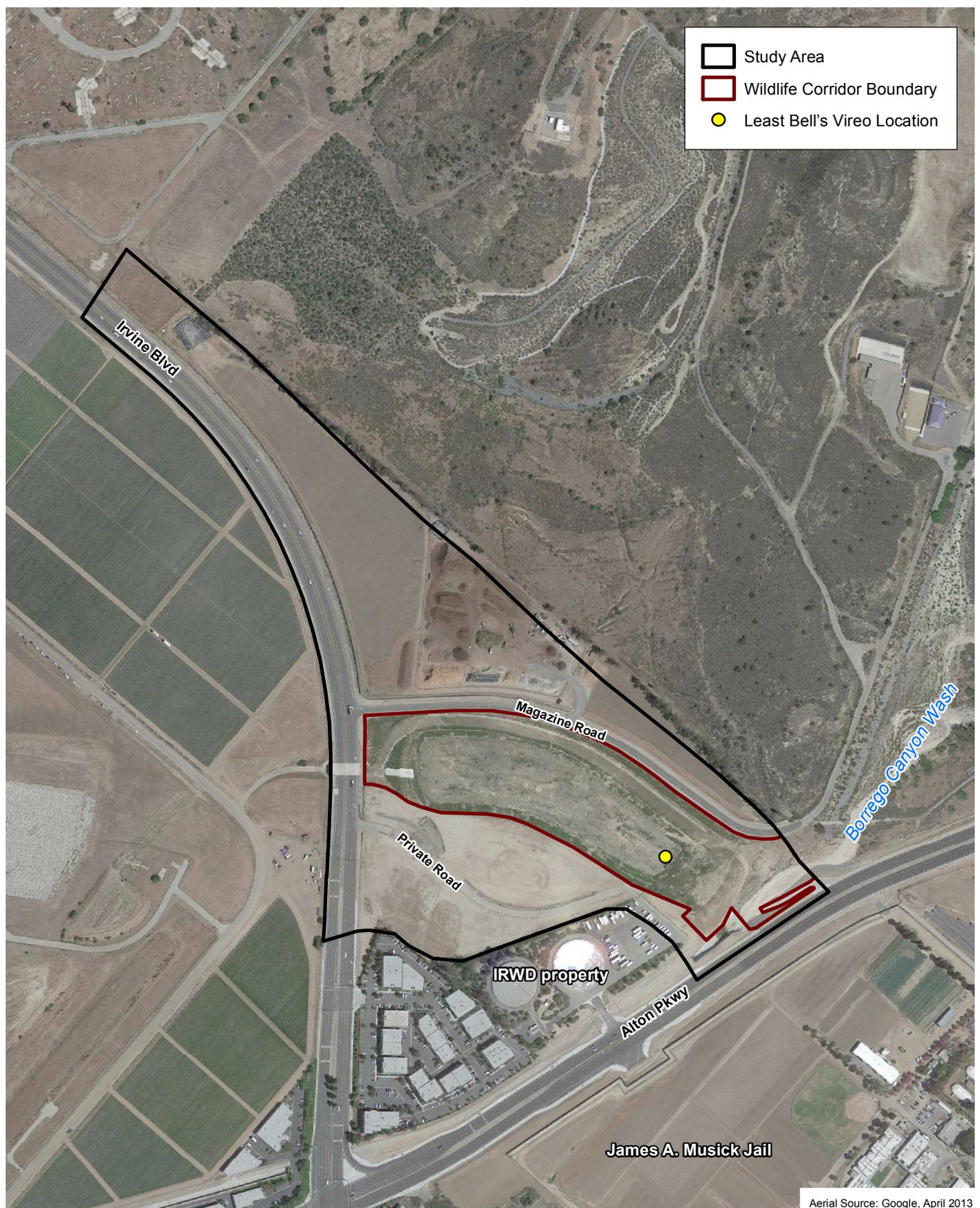
Exhibit 3

Alton Parcel



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Least Bell's Vireo Location

Exhibit 4

Alton Parcel



ATTACHMENT A
SITE PHOTOGRAPHS



Riparian scrub consisting of mule fat and seedling willows within the Wildlife Corridor in the western portion of the study area. Photo taken facing east.



View of dense mule fat scrub with scattered willows where an individual male least Bell's vireo was observed within the Wildlife Corridor in the eastern portion of the study area. Photo taken facing west.

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Site Photographs

Alton Parcel

Attachment A

Bonterra
PSOMAS

ATTACHMENT B
WILDLIFE COMPENDIUM

WILDLIFE SPECIES OBSERVED DURING SURVEYS

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MAMMALS	
MAMMALIA – MAMMALS	
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<i>Spermophilus beecheyi</i>	California ground squirrel
<i>CANIDAE – WOLVES AND FOXES</i>	
<i>Canis latrans</i>	coyote
* introduced species	

ATTACHMENT C

CNDDDB FORMS

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/13/2014

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Vireo bellii pusillus

Common Name: least Bell's vireo

Species Found? Yes No _____ If not, why? _____

Total No. Individuals 1 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____

Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Jonathan Aguayo, BonTerra Psomas

Address: 2 Executive Circle, Suite 175
Irvine, CA 92614

E-mail Address: Jonathan.Aguayo@psomas.com

Phone: (714) 444-9199

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

The study area is located east of Irvine Boulevard, west of the former El Toro Marine Corps Air Station, and north of Alton Parkway; Magazine Road bisects the study area. The study area is located on the USGS El Toro 7.5-minute quadrangle at Sections 3 and 10 of Township 6 South, Range 8 West.

County: Orange County Landowner / Mgr.: County

Quad Name: El Toro Elevation: 450-500 ft

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ ¼ of _____ ¼, Meridian: H M S GPS Make & Model Garmin eTrek Vista

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy ~ 15 ft meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: LBV: E434888, N3725483

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Riparian scrub and transitional riparian scrub is dominated by mule fat (*Baccharis salicifolia* ssp. *salicifolia*), mugwort (*Artemisia douglasiana*), and deergrass (*Muhlenbergia rigens*). Other species include California sagebrush (*Artemisia californica*), deerweed (*Acmispon glaber* var. *glaber*), California buckwheat (*Eriogonum fasciculatum*), arroyo willow (*Salix lasiolepis*), needle grass (*Stipa* sp.), and verbena (*Verbena* sp.). The riparian scrub in this area consists of approximately 6 feet tall mule fat and seedling willows.

Other rare taxa seen at THIS site on THIS date: yellow-breasted chat
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: commercial, agricultural, James A. Musick facility, shooting range, Orange County Great Park, undeveloped

Visible disturbances:

Threats: Brown-headed cowbirds were consistently observed; one to five cowbirds were observed

Comments:

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): _____
- Compared with specimen housed at: _____
- Compared with photo / drawing in: _____
- By another person (name): _____
- Other: Familiarity with species, visually and aurally

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDDB@dfg.ca.gov

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/13/2014

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Icteria virens

Common Name: yellow-breasted chat

Species Found? Yes No _____ If not, why?

Total No. Individuals 1 Subsequent Visit? yes no

Is this an existing NDDDB occurrence? _____ no unk.
Yes, Occ. # _____

Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: Jonathan Aguayo, BonTerra Psomas

Address: 2 Executive Circle, Suite 175
Irvine, CA 92614

E-mail Address: Jonathan.Aguayo@psomas.com

Phone: (714) 444-9199

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
adults # juveniles # larvae # egg masses # unknown
 breeding wintering burrow site rookery nesting other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

The study area is located east of Irvine Boulevard, west of the former El Toro Marine Corps Air Station, and north of Alton Parkway; Magazine Road bisects the study area. The study area is located on the USGS El Toro 7.5-minute quadrangle at Sections 3 and 10 of Township 6 South, Range 8 West.

County: Orange County Landowner / Mgr.: County

Quad Name: El Toro Elevation: 450-500 ft

T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: H M S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: H M S GPS Make & Model Garmin eTrek Vista

DATUM: NAD27 NAD83 WGS84 Horizontal Accuracy ~ 15 ft meters/feet

Coordinate System: UTM Zone 10 UTM Zone 11 OR Geographic (Latitude & Longitude)

Coordinates: YBCH: E434875, N3725501

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Riparian scrub and transitional riparian scrub is dominated by mule fat (*Baccharis salicifolia* ssp. *salicifolia*), mugwort (*Artemisia douglasiana*), and deergrass (*Muhlenbergia rigens*). Other species include California sagebrush (*Artemisia californica*), deerweed (*Acmispon glaber* var. *glaber*), California buckwheat (*Eriogonum fasciculatum*), arroyo willow (*Salix lasiolepis*), needle grass (*Stipa* sp.), and verbena (*Verbena* sp.). The riparian scrub in this area consists of approximately 6 feet tall mule fat and seedling willows.

Other rare taxa seen at THIS site on THIS date: least Bell's vireo
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): Excellent Good Fair Poor

Immediate AND surrounding land use: commercial, agricultural, James A. Musick facility, shooting range, Orange County Great Park, undeveloped

Visible disturbances:

Threats: Brown-headed cowbirds were consistently observed; one to five cowbirds were observed

Comments:

Determination: (check one or more, and fill in blanks)

- Keyed (cite reference): _____
- Compared with specimen housed at: _____
- Compared with photo / drawing in: _____
- By another person (name): _____
- Other: Familiarity with species, visually and aurally

Photographs: (check one or more)

Slide	Print	Digital
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant / animal	<input type="checkbox"/>	<input type="checkbox"/>
Habitat	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Diagnostic feature	<input type="checkbox"/>	<input type="checkbox"/>

May we obtain duplicates at our expense? yes no

ATTACHMENT D

LEAST BELL'S VIREO SURVEY DATA SUMMARY FORM

Jurisdictional Delineation Report

For the West Alton Development Plan In Orange County, California

Prepared for | Lowe Enterprises Real Estate Group, Inc.
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Irvine, California 92618
Contact: Robert Reitenour

Prepared by | BonTerra Psomas
3 Hutton Centre Drive, Suite 200
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May 2016



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EXECUTIVE SUMMARY

The purpose of this report is to provide baseline data concerning the type and extent of jurisdictional resources for the West Alton Development Plan Project (hereinafter referred to as the "Project"). Jurisdictional resources considered for this report include wetlands and non-wetland "waters of the U.S." regulated by the U.S. Army Corps of Engineers (USACE); "waters of the State" regulated by the Santa Ana Regional Water Quality Control Board (RWQCB); and the bed, bank, and channel of all lakes, rivers, and/or streams (and associated riparian vegetation), as regulated by the California Department of Fish and Wildlife (CDFW).

The jurisdictional delineation work was performed by BonTerra Psomas Senior Biologists Allison Rudalevige and Jennifer Pareti on March 24, 2015. The study area for the Project is located in the City of Irvine on the U.S. Geological Survey's (USGS') El Toro 7.5-minute quadrangle map.

Wetland features were identified based on the USACE's three-parameter approach in which wetlands are defined by the presence of hydrophytic vegetation, hydric soils, and presence of wetland hydrology indicators. The limits of non-wetland "waters of the U.S." and "waters of the State" were identified by the presence of an ordinary high water mark (OHWM). The limits of CDFW jurisdictional waters were identified as the top of bank or the outer dripline of riparian vegetation.

Based on the results of the jurisdictional delineation field work, it was determined that the total jurisdictional resources in the study area are as follows:

- **USACE Jurisdiction.** 5.42 acres.
- **RWQCB Jurisdiction.** 5.42 acres.
- **CDFW Jurisdiction.** 7.83 acres.

1.0 INTRODUCTION

This Jurisdictional Delineation Report (report) was prepared for Lowe Enterprises Real Estate Group, Inc. to provide baseline data concerning the type and extent of resources under the jurisdiction of the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Wildlife (CDFW), and the Regional Water Quality Control Board (RWQCB) for the West Alton Development Plan Project (hereinafter referred to as the "Project"). This report is based on the jurisdictional delineation survey performed on March 24, 2015.

1.1 PROJECT LOCATION AND DESCRIPTION

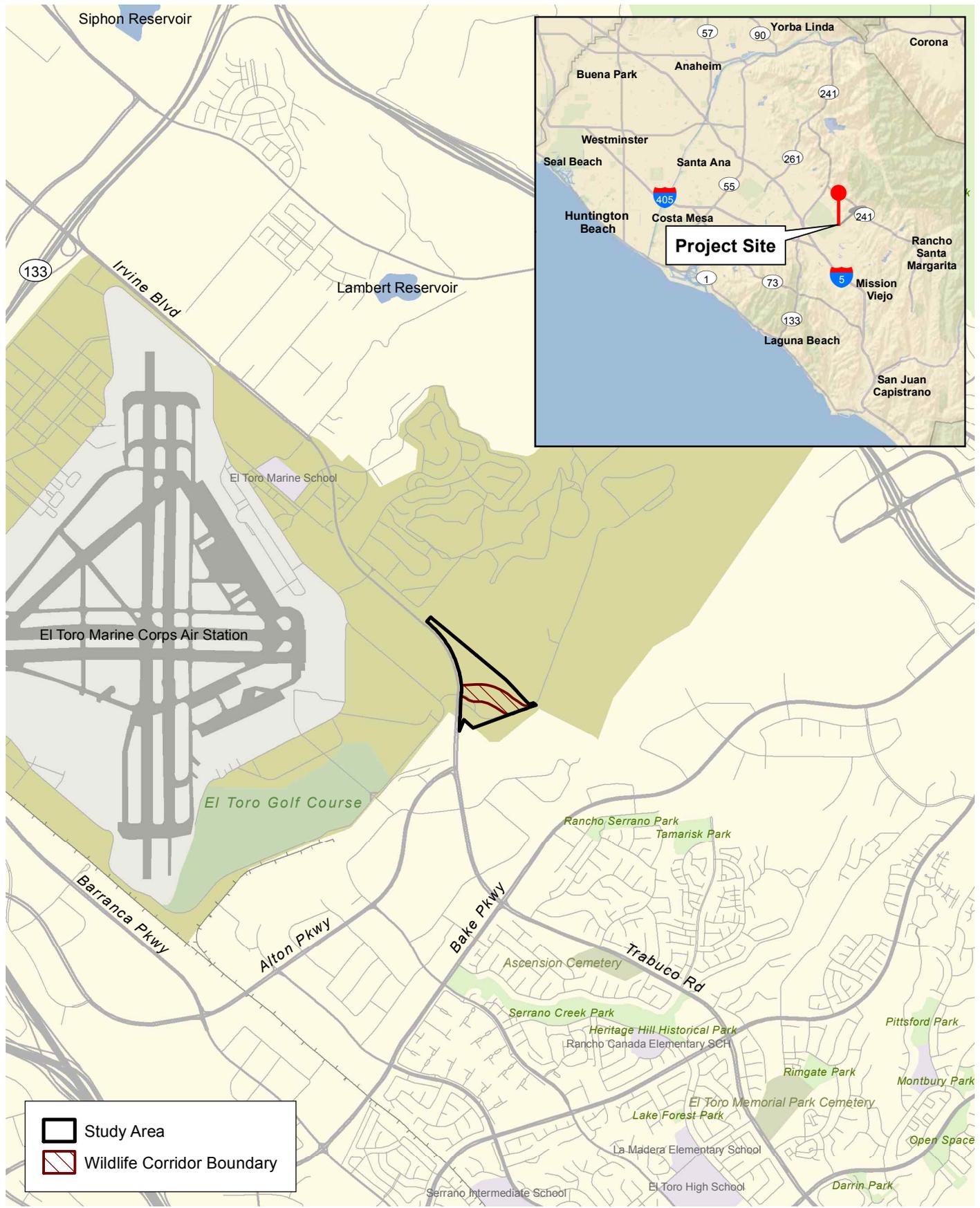
The study area for the Project is located on County of Orange property in the City of Irvine, California (Exhibit 1). It is northeast of the intersection of Irvine Boulevard and Alton Parkway; the former El Toro Marine Corps Air Station is located to the east. It is shown on the U.S. Geological Survey's (USGS') El Toro 7.5-minute quadrangle on Section 10 of Township 6 South, Range 8 West (Exhibit 2). It is within the 154-square-mile Newport Bay Watershed (Hydrologic Unit Code 18070204). The southern portion of the study area is graded, the middle consists of a wildlife movement corridor linking Borrego Canyon Wash with the planned Orange County Great Park Wildlife Movement Corridor, and the northern portion is currently leased for green waste operations by R&S Soils and a commercial nursery. The study area is generally surrounded by open space on Federal Bureau of Investigation property to the northeast, agricultural areas to the west and southeast, and commercial/industrial uses and Irvine Ranch Water District (IRWD) facilities to the south.

The County of Orange is proposing a development plan for the site, which would identify the proposed land uses and development intensities permitted for the site. The proposed West Alton development plan will be used to guide future development on the County-owned site. A total of 930 units multi-family units are proposed for the site.

1.1.1 Wildlife Movement Corridor

The Wildlife Movement Corridor was created in 2011. Ultimately, it is intended to be part of a regional wildlife movement corridor established between Orange County's Central and Coastal Habitat Reserves. It consists of a 1,650-foot-long by 300-foot-wide channel (as measured from top of bank) with 3:1 side slopes on each side and a 60-foot-wide wildlife movement bench located on the northern side of the channel. Low flows from Borrego Canyon Wash (capacity of 125 cubic feet per second [cfs]; configured to allow between 0 and 21.7 cfs) are directed into the Wildlife Movement Corridor by a flow splitter inlet located in Borrego Canyon Wash. Those flows discharge through an outfall structure located near the eastern end of the corridor. Other inlets consist of (1) a storm drain that discharges into the middle of the northern side of the Wildlife Movement Corridor and (2) a storm drain that discharges adjacent to Irvine Boulevard at the western end of the Wildlife Movement Corridor.

The County installed an interim storm drain system to address storm water runoff from the Wildlife Movement Corridor prior to the ultimate extension of the corridor south under Irvine Boulevard. This interim storm drain system currently consists of an outfall stand-pipe near the western end of the Wildlife Corridor that ties into the existing storm drain system to the south at Irvine Boulevard. The interim storm drain system discharges into Borrego Canyon Wash at Alton Parkway. A berm was created at the western terminus of the Wildlife Movement Corridor to contain all surface flows within the channel bed.



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	Study Area
	Wildlife Corridor Boundary

Local Vicinity

West Alton Parcel Development Plan

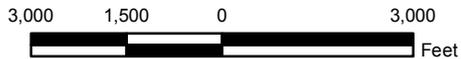
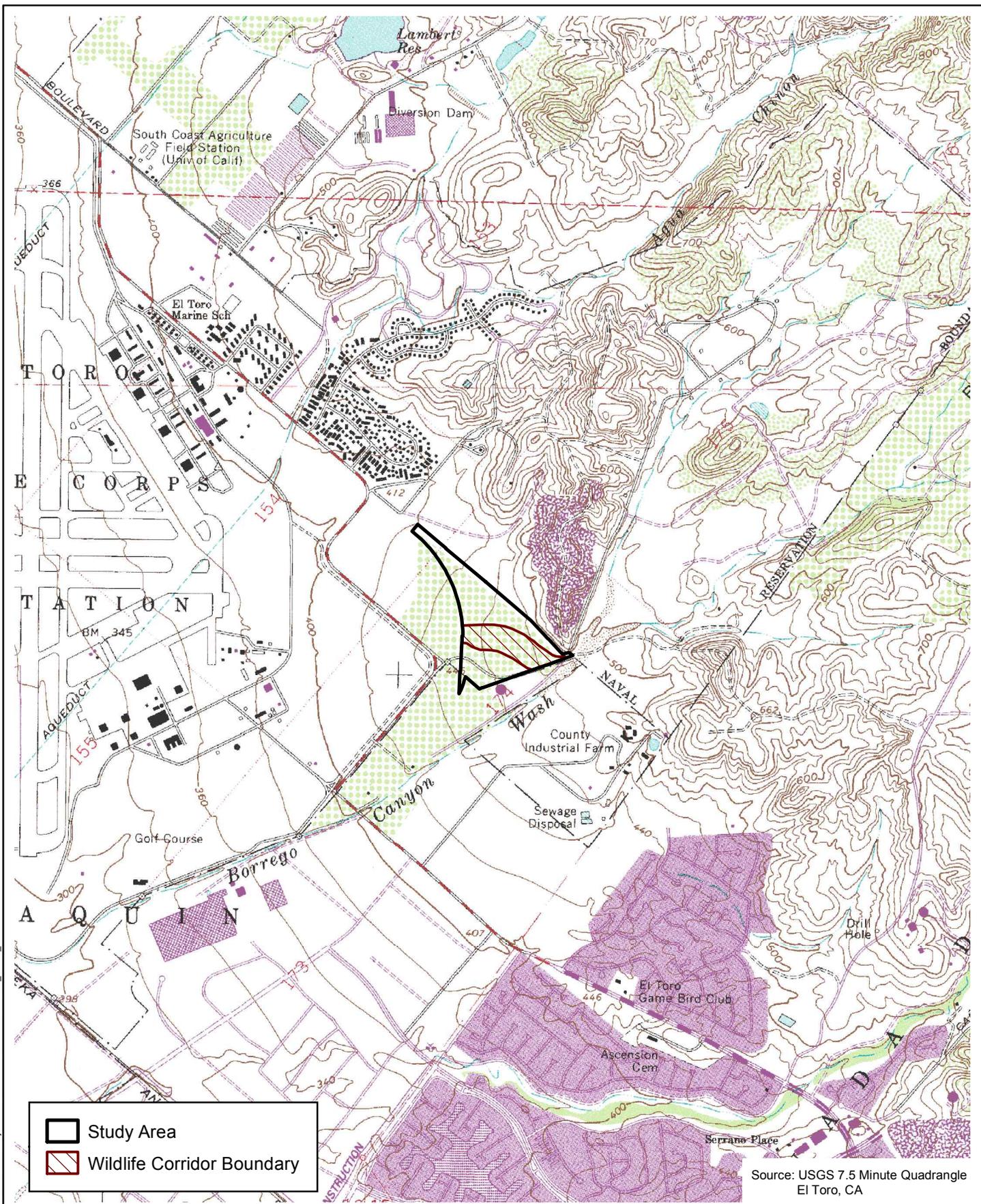


Exhibit 1

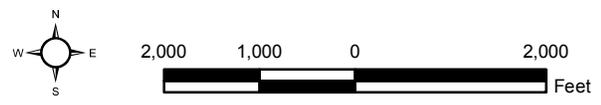




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U.S. Geological Survey 7.5-Minute Quadrangle
West Alton Parcel Development Plan

Exhibit 2



The interim storm drain system condition will remain in place until the Orange County Great Park's regional wildlife corridor is constructed and available to receive surface discharge through the Magazine Road undercrossing of Irvine Boulevard. In the ultimate design, the stand-pipe would be removed or capped/abandoned and the berm would be reconfigured to create a channel that extends to the undercrossing of Irvine Boulevard.

1.2 REGULATORY AUTHORITY

This section summarizes the federal and State agencies' regulatory jurisdiction over activities that have a potential to impact jurisdictional resources. A detailed explanation of each agency's regulatory authority is provided in Attachment A of this report.

1.2.1 U.S. Army Corps of Engineers

The USACE Regulatory Branch regulates activities that discharge dredged or fill materials into "waters of the U.S." under Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Their authority applies to all "waters of the U.S." where the material (1) replaces any portion of "waters of the U.S." with dry land or (2) changes the bottom elevation of any portion of any "waters of the U.S.". Activities that result in fill or dredge of "waters of the U.S." require a permit from the USACE.

1.2.2 Regional Water Quality Control Board

The State Water Resources Control Board (SWRCB), in conjunction with the nine RWQCBs, is the primary agency responsible for protecting water quality in California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act). The SWRCB's and RWQCB's jurisdictions extend to all "waters of the State", which includes all "waters of the U.S.", including wetlands and isolated waters.

1.2.3 California Department of Fish and Wildlife

The CDFW regulates activities that may affect rivers, streams, and lakes pursuant to the *California Fish and Game Code* (Sections 1600–1616). According to Section 1602 of the *California Fish and Game Code*, the CDFW has jurisdictional authority over any work that will (1) substantially divert or obstruct the natural flow of any river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

2.0 **METHODS**

Literature reviewed for the preparation of the delineation is outlined in Section 2.1; the field delineation is outlined in Section 2.2; and the three-parameter approach used to identify wetlands is summarized in Section 2.3.

2.1 **LITERATURE**

Prior to conducting the delineation and during the course of preparing this report, BonTerra Psomas reviewed the following documents to identify areas that may fall under agency jurisdiction: the USGS' El Toro and Tustin 7.5-minute quadrangle maps; color aerial photography provided by Google Earth; the Web Soil Survey; the National Hydric Soils List (USDA NRCS 2014); the National Wetlands Inventory's Wetland Mapper (USFWS 2015); and the Regional Water Quality Control Plan for Santa Ana (RWQCB 1995). A description of this literature is provided below.

USGS Topographic Quadrangle. USGS quadrangle maps show geological formations and their characteristics; they describe the physical settings of an area through topographic contour lines and other major surface features. These features include lakes, streams, rivers, buildings, roadways, landmarks, and other features that may fall under the jurisdiction of one or more regulatory agencies. In addition, the USGS maps provide topographic information that is useful in determining elevations, latitude and longitude, and Universal Transverse Mercator Grid coordinates for a Project site.

Topography in the study area is relatively flat with a channel created for the Wildlife Movement Corridor. Elevations range from approximately 420 to 500 feet above mean sea level (msl). Borrego Wash, a blueline stream, is shown on the USGS' El Toro 7.5-minute quadrangle just south of the study area.

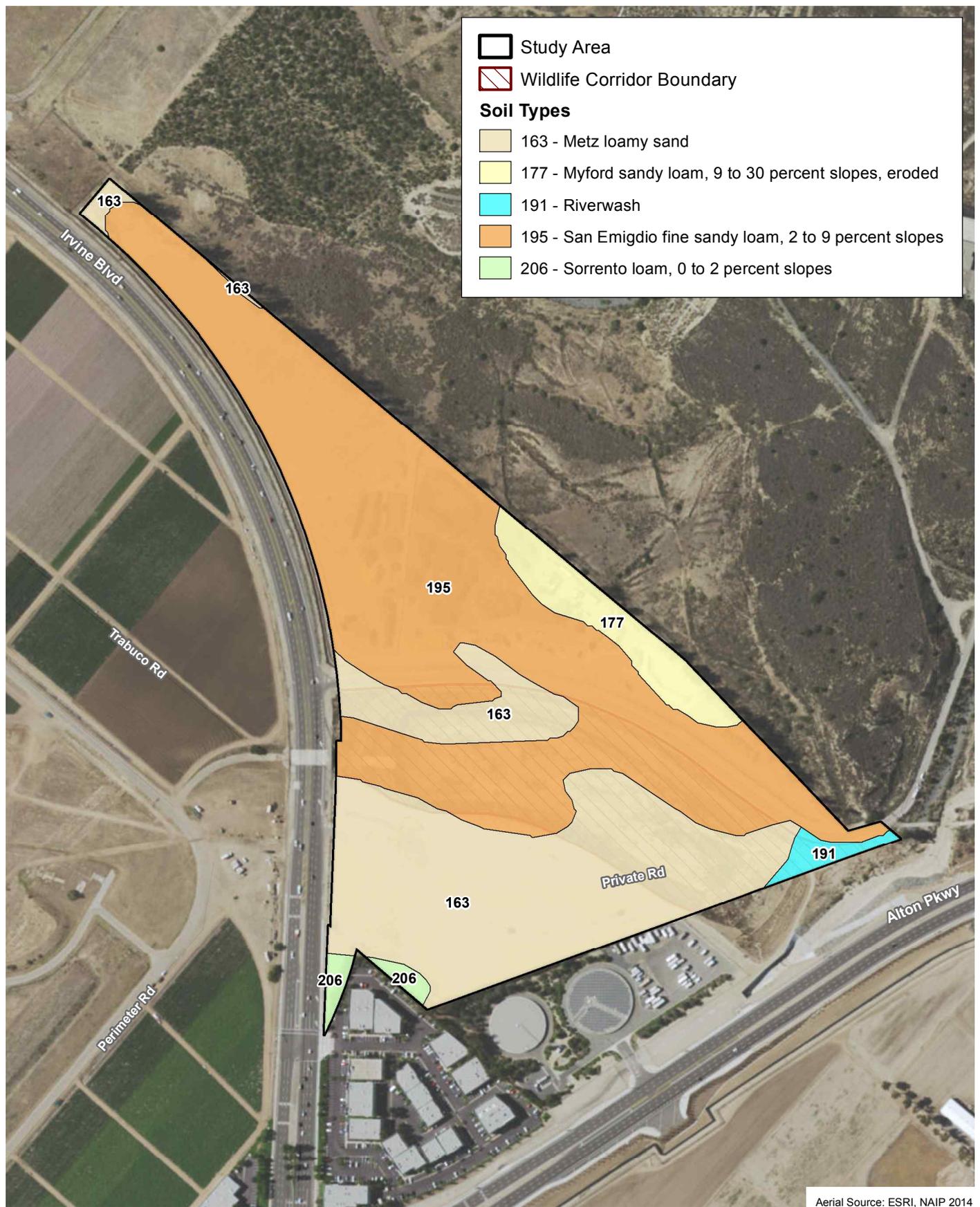
Color Aerial Photography. BonTerra Psomas reviewed an existing color aerial photograph prior to conducting the field delineation to identify the extent of any drainages and riparian vegetation occurring in the study area.

Borrego Wash is visible on existing aerial imagery (Google Earth; imagery from March 24, 2015) as a natural drainage east of the study area that is conveyed through a reinforced concrete box culvert south of the study area into a concrete channel. Vegetation is visible within the Wildlife Movement Corridor. Google Earth imagery prior to 2011 shows the area constructed as the Wildlife Movement Corridor as a flat field.

U.S. Department of Agriculture, Natural Resources Conservation Service. The presence of hydric soils is one of the chief indicators of jurisdictional wetlands. BonTerra Psomas reviewed U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil data for the study area.

The following soil types have been mapped in the study area: Metz loamy sand, Myford sandy loam (9 to 30 percent slopes, eroded), riverwash, San Emigdio fine sandy loam (2 to 9 percent slopes), and Sorrento loam (0 to 2 percent slopes) (Exhibit 3). Metz loamy sand and riverwash are listed as "hydric" on the National Hydric Soils List for the soil survey area in which they occur (USDA NRCS 2014). A brief description of the soil mapped in the study area is provided in Attachment B of this report.

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Soil Types

West Alton Parcel Development Plan EIR

Exhibit 3



U.S. Fish and Wildlife Service, National Wetlands Inventory. The Wetlands Mapper shows wetland resources available from the Wetlands Spatial Data Layer of the National Spatial Data Infrastructure. This resource provides the classification of known wetlands following the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). This classification system is arranged in a hierarchy of (1) Systems that share the influence of similar hydrologic, geomorphologic, chemical, or biological factors (i.e., Marine, Estuarine, Riverine, Lacustrine, and Palustrine); (2) Subsystems (i.e., Subtidal and Intertidal; Tidal, Lower Perennial, Upper Perennial, and Intermittent; or Littoral and Limnetic); (3) Classes, which are based on substrate material and flooding regime or on vegetative life forms; (4) Subclasses; and (5) Dominance Types, which are named for the dominant plant or wildlife forms. In addition, there are modifying terms applied to Classes or Subclasses.

No wetland resources have been mapped in the study area. Borrego Wash, which is south of the study area, is mapped as Riverine, Intermittent, Streambed, Seasonally Flooded (R4SBC) (Exhibit 4).

Regional Water Quality Control Plan. The study area is located in RWQCB Region 8, the Santa Ana Region. The SWRCB and the RWQCB have adopted a Water Quality Control Plan (or “Basin Plan”) for this region. The Basin Plan contains goals and policies, descriptions of conditions, and proposed solutions to surface and groundwater issues. The Basin Plan also establishes water quality standards for surface and groundwater resources and includes beneficial uses and levels of water quality that must be met and maintained to protect these uses. These water quality standards are implemented through various regulatory permits pursuant to the CWA, specifically Section 401 for Water Quality Certifications and Section 402 for Report of Waste Discharge permits.

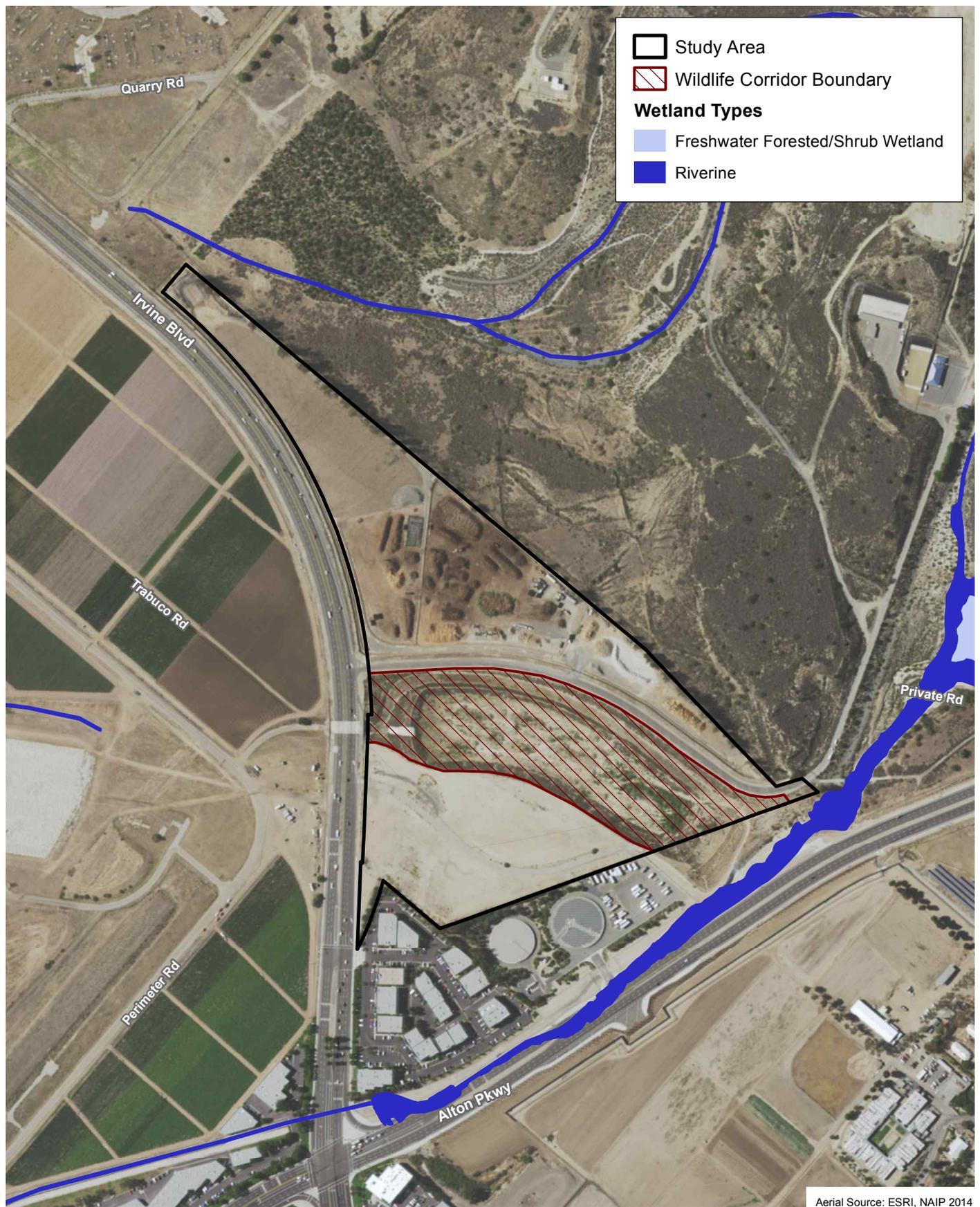
The Santa Ana Basin Plan indicates that the study area is located in the Santa Ana River Hydrologic Unit, the Lower Santa Ana River Hydrologic Area, and the East Coastal Plain Subarea (HSA). Table 4-1 of the Basin Plan indicates that numeric objectives have not been established for Borrego Wash and that only narrative objectives would apply (RWQCB 1995).

Beneficial uses are defined in the Porter-Cologne Act as those uses of water that are necessary for tangible and intangible economic, social, and environmental benefits. The Basin Plan identifies a number of intermittent beneficial uses for Borrego Wash, which may be applicable to the Wildlife Movement Corridor: Groundwater Recharge (GWR) waters; Water Contact Recreation (REC1) waters; Non-Contact Water Recreation (REC2) waters; Warm Fresh Water Habitat (WARM) waters; and Wildlife Habitat (WILD) waters. The REC1 and REC2 beneficial uses are not presently applicable to the Wildlife Movement Corridor; following Project development, REC2 uses (e.g., birdwatching by residents) may become available. The Wildlife Movement Corridor provides some groundwater recharge and does provide wildlife habitat. The Project is not expected to interfere with GWR, WARM, or WILD beneficial uses. Descriptions of the beneficial uses applicable to waters in the study area are provided in Attachment B of this report.

2.2 JURISDICTIONAL DELINEATION

Non-wetland “waters of the U.S.” are delineated based on the limits of the Ordinary High Water Mark (OHWM), which can be determined by a number of factors, including erosion, the deposition of vegetation or debris, and changes in vegetation. The OHWM limits (i.e., active floodplain) occurring in the study area were further verified using methods contained in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States, A Delineation Manual* (Lichvar and McColley 2008) and the *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) In the Arid West Region of the Western United States* (Curtis and Lichvar 2010).

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National Wetland Inventory
West Alton Parcel Development Plan EIR

Exhibit 4



In September 2008, the USACE issued the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*. This regional supplement is designed for use with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). Both the 1987 Wetlands Manual and the Arid West Supplement to the manual provide technical methods and guidelines for determining the presence of “waters of the U.S.” and wetland resources. A three-parameter approach is used to identify wetlands and requires evidence of wetland hydrology, hydrophytic vegetation, and hydric soils. Wetlands generally include swamps, marshes, bogs, and similar areas. In order to be considered a wetland, an area must exhibit at least minimal hydric characteristics within the three parameters. However, problem areas may periodically or permanently lack certain indicators due to seasonal or annual variability of the nature of the soils or plant species on site. Atypical wetlands lack certain indicators due to recent human activities or natural events. Guidance for determining the presence of wetlands in these situations is presented in the regional supplement.

It should be noted that the RWQCB shares USACE jurisdiction unless isolated conditions are present. If isolated waters conditions are present, the RWQCB takes jurisdiction using the USACE’s definition of the OHWM and/or the three-parameter wetlands method pursuant to the 1987 Wetlands Manual. The CDFW’s jurisdiction is defined as the top of the bank to the top of the bank of the stream, channel, or basin or to the outer limit of riparian vegetation located within or immediately adjacent to the river, stream, creek, pond, or lake or other impoundment.

The analysis contained in this report uses the results of a field survey conducted by BonTerra Psomas Senior Biologists Allison Rudalevige and Jennifer Pareti on March 24, 2015. Jurisdictional features were delineated using a 1 inch equals 225 feet (1” = 225’) scale aerial photograph. The field survey included the collection of vegetation, soils, and hydrologic data from one sampling point in the study area; this information was recorded on Wetland Determination Data Forms (Attachment C).

2.2.1 Vegetation

Hydrophytic vegetation (or hydrophytes) is defined as any macrophytic plant that “grows in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content; plants typically found in wet habitats” (Environmental Laboratory 1987). Specifically, these plant species have specialized morphological, physiological, or other adaptations for surviving in permanently saturated to periodically saturated soils where oxygen levels are very low or the soils are anaerobic. The USACE—as part of an interagency effort with the U.S. Environmental Protection Agency (USEPA), the U.S. Fish and Wildlife Service (USFWS), and the NRCS—has approved a new National Wetland Plant List (NWPL) (Lichvar and Kartesz 2009) to replace the *National List of Plant Species that Occur in Wetlands* (Reed 1988). The NWPL went into effect on June 1, 2012, and is to be used to determine whether the hydrophytic vegetation parameter is met when conducting wetland determinations under the CWA and the Wetland Conservation Provisions of the Food Security Act. The NWPL is also intended to be used for wetland restoration, establishment, and enhancement projects. This report utilized the indicator statuses for the Arid West Supplement portion of the NWPL.

The following revisions were made to Reed (1988) pursuant to the NWPL:

1. The USACE eliminated the “probability-of-occurrence” categories (e.g., <1 percent, 1–33 percent, 34–66 percent, 67–99 percent, and >99 percent) due to the lack of numerical data to support these ratings.
2. The USACE determined that, because the wetland plant indicator statuses have shifted from a series of numerical categories to qualitative definitions, the use of +/- suffixes is difficult to apply accurately. Adding finer-scale +/- ratings implies there are data to support

their assignments, which is generally not the case. Therefore, to improve the accuracy of the overall list, the USACE decided to drop the +/- suffixes.

Lichvar and Gillrich (2011) provide updated technical definitions of wetland plant indicator status categories as part of the procedures used in updating the NWPL:

- **Obligate Wetland (OBL).** These wetland-dependent plants (herbaceous or woody) require standing water or seasonally saturated soils (14 or more consecutive days) near the surface to assure adequate growth, development, and reproduction and to maintain healthy populations. These plants are of four types:
 - *Submerged.* Plants that conduct virtually all of their growth and reproductive activity under water.
 - *Floating.* Plants that grow with leaves and most often their vegetative and reproductive organs floating on the water surface.
 - *Floating-leaved.* Plants that are rooted in sediment but also have leaves that float on the water surface.
 - *Emergent.* Herbaceous and woody plants that grow with their bases submerged and rooted in inundated sediment or seasonally saturated soil and their upper portions, including most of the vegetative and reproductive organs, growing above the water level.
- **Facultative Wetlands (FACW).** These plants depend on and predominantly occur with hydric soils, standing water, or seasonally high water tables in wet habitats for assuring optimal growth, development, and reproduction and for maintaining healthy populations. These plants often grow in geomorphic locations where water saturates soils or floods the soil surface at least seasonally.
- **Facultative (FAC).** These plants can occur in wetlands or non-wetlands. They can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology (e.g., shade tolerance, soil hydrogen potential [pH], and elevation), and they have a wide tolerance of soil moisture conditions.
- **Facultative Upland (FACU).** These plants are not wetland dependent. They can grow on hydric and seasonally saturated soils, but they develop optimal growth and healthy populations on predominantly drier or more mesic sites. Unlike FAC plants, these plants are non-wetland plants by habitat preference.
- **Obligate Upland (UPL).** These plants occupy mesic to xeric non-wetland habitats. They almost never occur in standing water or saturated soils. Typical growth forms include herbaceous, shrubs, woody vines, and trees.

The following are three procedures for determining hydrophytic vegetation: Indicator 1, “Dominance Test”, using the “50/20 Rule”; Indicator 2, “Prevalence Index”; or Indicator 3, “Morphological Adaptation”, as identified in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008). Hydrophytic vegetation is present if any indicator is satisfied. If none of the indicators are satisfied, then hydrophytic vegetation is absent unless (1) indicators of hydric soil and wetland hydrology are present and (2) the site meets the requirements for a problematic wetland situation.

- **Dominance Test.** Vegetative cover is estimated and is ranked according to its dominance. Dominant species are the most abundant species for each stratum of the community (i.e., tree, sapling/shrub, herb, or woody vine) that individually or collectively amount to 50 percent of the total coverage of vegetation plus any other species that, by itself, accounts for 20 percent of the total vegetation cover (also known as the “50/20 Rule”). These species are recorded on the “Wetland Determination Data Form – Arid West Region”. The wetlands indicator status of each species is also recorded on the data forms based on the NWPL (Lichvar and Kartesz 2009). If greater than 50 percent of the dominant species across all strata are OBL, FACW, or FAC species, the criterion for wetland vegetation is considered to be met.
- **Prevalence Index.** The prevalence index considers all plant species in a community, not just the dominant ones. The prevalence index is the average of the wetland indicator status of all plant species in a sampling plot. Each indicator status category is given a numeric code (OBL=1, FACW=2, FAC=3, FACU=4, and UPL=5) and is weighted by the species’ abundance (percent cover). Hydrophytic vegetation is present if the prevalence index is 3.0 or less.
- **Morphological Adaptation.** Morphological adaptations, such as adventitious roots (i.e., roots that take advantage of the wet conditions) and shallow root systems, must be observed on more than 50 percent of the individuals of an FACU species for the hydrophytic vegetation wetland criterion to be met.

2.2.2 Soils

The National Technical Committee for Hydric Soils (NTCHS) defines a hydric soil as a soil that is formed under conditions of saturation, flooding, or ponding that occur long enough during the growing season to develop anaerobic conditions (or conditions of limited oxygen) at or near the soil surface and that favor the establishment of hydrophytic vegetation (USDA NRCS 2008). It should be noted that hydric soils created under artificial conditions of flooding and inundation sufficient for the establishment of hydrophytic vegetation would also meet this hydric soils indicator.

The soil conditions are verified by digging test pits along each transect to a depth of at least 20 inches (except where a restrictive layer occurs in areas containing hard pan, cobble, or solid rock). It should be noted that, at some sites, it may be necessary to make exploratory soil test pits up to 40 inches deep to more accurately document and understand the variability in soil properties and hydrologic relationships on the site. Soil test pit locations are usually dug in the drainage invert or at the edge of a drainage course in vegetated areas. Soil extracted from each soil test pit is then examined for texture and color using the standard plates within the Munsell Soil Color Chart (1994) and recorded on the Data Form. The Munsell Soil Color Chart aids in designating soils by color labels based on gradations of three simple variables: hue, value, and chroma. Any indicators of hydric soils such as the following are also recorded on the Data Form: redoximorphic features (i.e., areas where iron is reduced under anaerobic conditions and oxidized following a return to aerobic conditions); buried organic matter; organic streaking; reduced soil conditions; gleyed (i.e., soils having a characteristic bluish-gray or greenish-gray in color) or low-chroma soils; or sulfuric odor. If hydric soils are found, progressive pits are dug along the transect moving laterally away from the active channel area until hydric soil features are no longer present within the top 20 inches of the soil.

2.2.3 Hydrology

Wetlands hydrology is represented by either (1) all of the hydrological elements or characteristics of areas permanently or periodically inundated or (2) areas containing soils that are saturated for a sufficient duration of time to create hydric soils suitable for the establishment of plant species that are typically adapted to anaerobic soil conditions. The presence of wetland hydrology is evaluated at each intersect by recording the extent of observed surface flows, the depth of inundation, the depth to saturated soils, and the depth to free water in soil test pits. In instances where stream flow is divided into multiple channels with intervening sandbars, the entire area between the channels is considered within the “Active Floodplain” and within the OHWM. Therefore, an area containing these features would meet the indicator requirements for wetland hydrology.

3.0 RESULTS

3.1 U.S. ARMY CORPS OF ENGINEERS DETERMINATION

3.1.1 “Waters of the U.S.” Determination (Non-Wetland)

One drainage feature, located in the Wildlife Movement Corridor, occurs in the study area. At the present time, surface flow from the channel is conveyed through an outfall stand-pipe that ties into the existing storm drain to the south. This storm drain discharges into Borrego Canyon Wash. Borrego Canyon Wash consists of a natural channel north of the study area. Just east of the study area, flow is conveyed through a reinforced concrete box culvert into a concrete-lined channel, and ultimately into San Diego Creek, a Traditional Navigable Water (TNW). Since the storm drain system discharges into Borrego Canyon Wash, there is a connection to a TNW and areas within the OHWM would be under the jurisdiction of the USACE.

Evidence of OHWM in the channel consists of the presence of a bed and bank, a change in average sediment texture, and a change in vegetation cover and composition. Arid West Ephemeral and Intermittent Streams OHWM Datasheets were completed for areas showing evidence of an OHWM (see Attachment D).

3.1.2 Wetlands Determination

As previously described in Section 2.0 of this report, an area must exhibit all three wetland parameters, as described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008) and the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) to be considered a jurisdictional wetland. One representative sampling point was assessed for the presence of hydrophytic vegetation, hydric soils, and wetland hydrology (Attachment C).

Vegetation

Vegetation within the channel bottom was planted with riparian scrub species including arroyo willow (*Salix lasiolepis*), Goodding’s black willow (*Salix gooddingii*), sandbar willow (*Salix exigua*), and mule fat (*Baccharis salicifolia*). This vegetation was observed to be immature and small in stature over much of the channel; denser, more mature trees were observed in the immediate vicinity of the splitter outfall location.

The sampling point was selected in an area containing surface water and mature vegetation, as the most likely place to contain wetlands. The vegetation around the sampling point was dominated by FACW species. Indicators of hydrophytic vegetation (i.e., dominance test greater than 50 percent and prevalence index less than 3.0); therefore, the hydrophytic vegetation criterion was met.

Soils

There was limited soil development at the sampling point; the substrate was sand with pebbles and cobbles. No indicators of hydric soil were present; therefore, the hydric soil criterion was not met.

Hydrology

The following indicators of wetland hydrology were observed: surface water, high water table, saturation, water marks, drift deposits, and drainage patterns. Therefore, the wetland hydrology criterion was met.

Results

At the present time, the study area did not meet all three criteria for wetlands. However, the channel was created in 2011. Recently developed wetlands, such as mitigation sites, are considered to have problematic hydric soils. Therefore, the area may be considered a wetland based on the presence of hydrology and hydrophytic vegetation.

A total of approximately 5.42 acres of “waters of the U.S.” under the jurisdiction of the USACE occur in the study area (Table 1; Exhibit 5).

**TABLE 1
SUMMARY OF JURISDICTIONAL RESOURCES IN THE STUDY AREA**

Jurisdictional Resources	Existing (acres)
USACE Jurisdictional “waters of the U.S.”	5.42
RWQCB Jurisdictional “waters of the State”	5.42
CDFW Jurisdictional Waters	7.83
USACE: U.S. Army Corps of Engineers; RWQCB: Regional Water Quality Control Board; CDFW: California Department of Fish and Wildlife.	

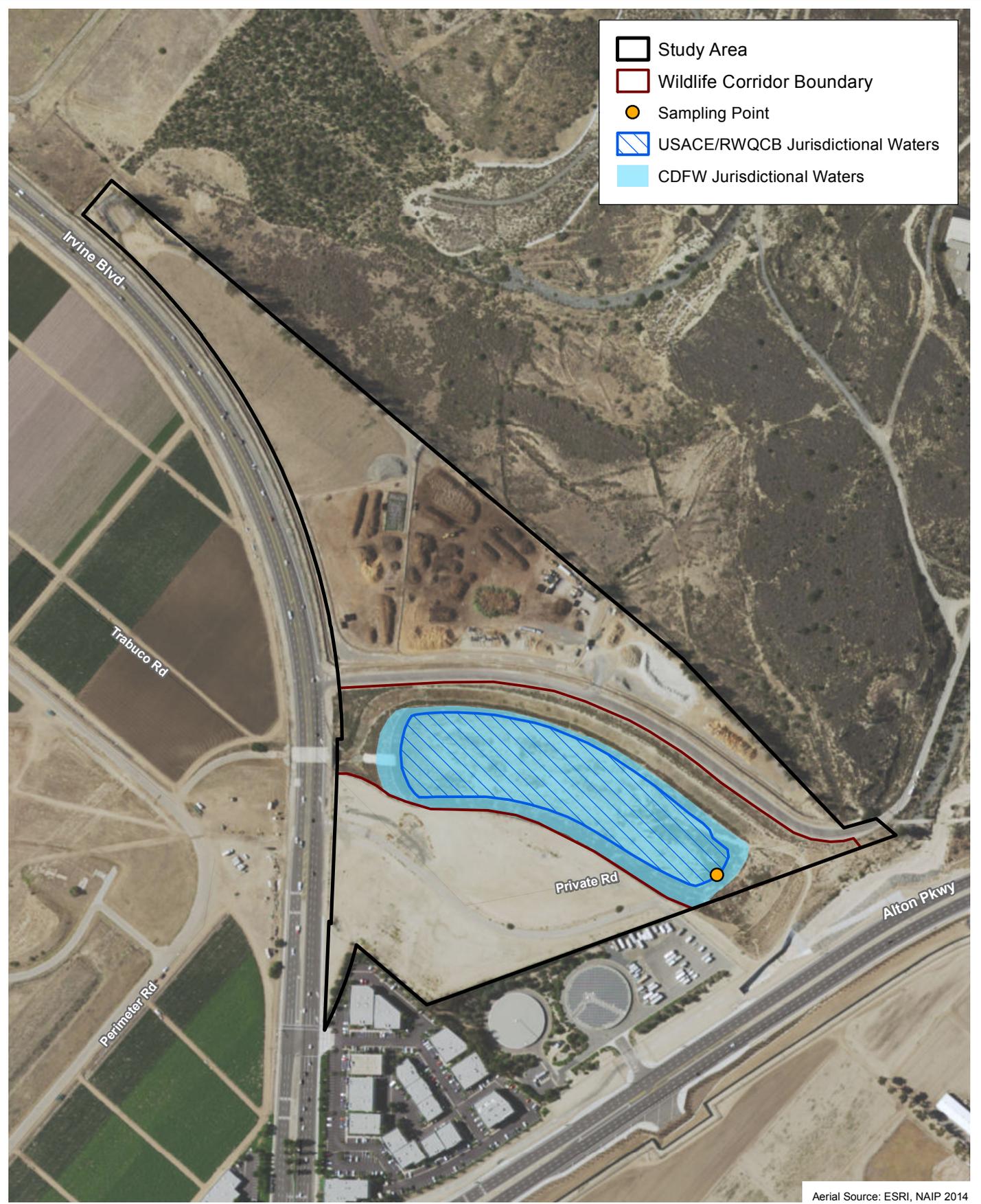
3.2 CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD DETERMINATION

The RWQCB jurisdictional boundaries are defined as those determined for the USACE under “waters of the U.S.”. The limits of “waters of the State” were defined by the presence of the OHWM. Approximately 5.42 acres of “waters of the State” under the jurisdiction of the RWQCB occur in the study area (Table 1; Exhibit 5).

3.3 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE DETERMINATION

The limits of CDFW jurisdiction extend to the top of the channel bank. Approximately 7.83 acres of waters under the jurisdiction of the CDFW occur in the study area (Table 1; Exhibit 5).

-  Study Area
-  Wildlife Corridor Boundary
-  Sampling Point
-  USACE/RWQCB Jurisdictional Waters
-  CDFW Jurisdictional Waters



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Aerial Source: ESRI, NAIP 2014

Jurisdictional Resources

West Alton Parcel Development Plan EIR

Exhibit 5



4.0 **CONCLUSION**

At this time, the proposed Project avoids impacts the drainage in the Wildlife Movement Corridor. Additional storm drains, channels/swales, and basins proposed for the Project would not be located within the boundaries of current USACE, CDFW, or RWQCB jurisdiction. A proposed storm drain would tie into the existing storm drain in the middle of the northern boundary of the Wildlife Movement Corridor, but modifications are not proposed for the existing structure. The storm drain at the western end of the Wildlife Movement Corridor adjacent to Irvine Boulevard is located west of the berm and outside an area currently under the jurisdiction of the USACE, the CDFW, or the RWQCB. There are also no proposed modifications to the existing stand-pipe as part of this Project. Therefore, regulatory permits/agreements/certifications would not be necessary. If Project design changes result in impacts to the on-site drainage (e.g., modifications to the existing storm drains or installation of new storm drains) and this drainage would be impacted, regulatory permits may be necessary.

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ATTACHMENT A
SUMMARY OF REGULATORY AUTHORITY

REGULATORY AUTHORITY

This attachment summarizes the regulatory authority of the U.S. Army Corps of Engineers (USACE), the Regional Water Quality Control Board (RWQCB), and the California Department of Fish and Wildlife (CDFW) over activities that have a potential to impact jurisdictional resources.

U.S. Army Corps of Engineers

The USACE Regulatory Branch regulates activities that discharge dredged or fill materials into “waters of the U.S.” under Section 404 of the Federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. This permitting authority applies to all “waters of the U.S.” where the material (1) replaces any portion of “waters of the U.S.” with dry land or (2) changes the bottom elevation of any portion of any “waters of the U.S.”. These fill materials would include sand, rock, clay, construction debris, wood chips, and materials used to create any structure or infrastructure in these waters.

Waters of the United States

“Waters of the U.S.” can be divided into three categories: territorial seas, tidal waters, or non-tidal waters. The term “waters of the U.S.” is defined by the *Code of Federal Regulations*¹ (CFR) and includes:

1. All waters that have, are, or may be used in interstate or foreign commerce (including sightseeing or hunting), including all waters subject to the ebb and flow of the tide (i.e., Traditional Navigable Waters [TNWs]).
2. All interstate waters including interstate wetlands.
3. All other waters such as intrastate lakes, rivers, or streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds where the use, degradation, or destruction of which could affect interstate or foreign commerce.
4. All impoundments of waters otherwise defined as “waters of the U.S.” under the definition.
5. All tributaries of waters identified above.
6. The territorial seas.
7. All wetlands adjacent to waters (other than waters that are themselves wetlands) identified above.

The U.S. Supreme Court has issued three decisions that provide context and guidance in determining the appropriate scope of “waters of the U.S.”. In *United States v. Riverside Bayview Homes*, the Court upheld the inclusion of adjacent wetlands in the regulatory definition of “waters of the U.S.”. In *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (SWANCC), the Court held that the use of “isolated” non-navigable intrastate ponds by migratory birds was not, by itself, sufficient basis for the exercise of federal regulatory authority under the CWA. In *Rapanos v. United States* (Rapanos)², a majority of the U.S. Supreme Court overturned two Sixth Circuit Court of Appeals decisions, finding that certain wetlands constituted “waters of the U.S.” under the CWA. In his plurality opinion, Justice Scalia argued that “waters of the U.S.” should not include channels through which water flows intermittently or ephemerally or channels

¹ Specifically, Title 33, Navigation and Navigable Waters; Part 328, Definition of waters of the United States; §328.3, Definitions.

² Consolidated cases: *Rapanos v. United States* and *Carabell v. United States* refer to the U.S. Supreme Court’s decision concerning USACE jurisdiction over “waters of the U.S.” under the CWA.

that periodically provide drainage for rainfall. He also stated that a wetland may not be considered “adjacent to” remote “waters of the U.S.” based on a mere hydrologic connection. Justice Kennedy authored a separate concurring opinion concluding that wetlands are “waters of the U.S.” if they, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as “navigable”. Lacking a majority opinion, regulatory jurisdiction under the CWA exists over a water body if either the plurality’s or Justice Kennedy’s “significant nexus” standard is satisfied.

In 2015, the USACE and the U.S. Environmental Protection Agency (USEPA) published a final rule clarifying the scope of “waters of the U.S.” protected under the CWA in light of the statute, the science, Supreme Court decisions, and the agencies’ experience and technical expertise.³ They define “waters of the U.S.” to include eight categories of jurisdictional waters. The first four types of waters are considered jurisdictional by rule in all cases: (1) TNWs, (2) interstate waters, (3) territorial seas, and (4) impoundments of jurisdictional waters. The next two types of waters are jurisdictional by rule, as defined, because the science confirms that they have a significant nexus to TNWs, interstate waters, or territorial seas: (5) tributaries and (6) adjacent waters. The final two types of jurisdictional waters require a case-specific analysis to determine if they have a significant nexus to TNWs, interstate waters, or territorial seas: (7) five subcategories of waters considered to be “similarly situated”—Prairie potholes, Carolina and Delmarva bays, pocosins, western vernal pools in California, and Texas coastal prairie wetlands—that must be analyzed “in combination” when making a significant nexus analysis and (8) waters within the 100-year floodplain of a TNW, interstate water, or territorial sea and waters within 4,000 feet from the high tide line or the OHWM or a TNW, interstate water, territorial sea, impoundment, or covered tributary.

The USACE and the USEPA will apply the significant nexus standard defined as follows:

1. Waters are “waters of the U.S.” if they, either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of TNWs, interstate waters, or the territorial seas.
 - Waters are considered “similarly situated” where they function alike and are sufficiently close to function together in affecting the nearest TNW, interstate water, or territorial sea.
 - The “region” is considered to be the single point of entry watershed (i.e., the drainage basin within whose boundaries all precipitation ultimately flows to the nearest single TNW, interstate water, or territorial sea).
 - The functions of a water that affect the chemical, physical, or biological integrity of a TNW, interstate water, or territorial seas must be “significant” and more than “speculative or insubstantial”. To determine whether there is a significant nexus, the following functions should be considered: sediment trapping; nutrient recycling; pollutant trapping, transformation, filtering, and transport; retention and attenuation of floodwaters; runoff storage; contribution of flow; export of organic matter; export of food resources; and provision of life-cycle dependent aquatic habitat for species.

³ U.S. Army Corps of Engineers and Environmental Protection Agency (USACE and USEPA). 2015 (June 29). Clean Water Rule: Definition of “Waters of the United States”. *Federal Register* 80(124): 37054–37127. Washington, D.C.: USACE, Department of Defense and USEPA.

The USACE and the USEPA have determined that the following waters are not jurisdictional:

1. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA.
2. Prior converted cropland.
3. Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary; ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands; and ditches that do not flow, either directly or through another water, into a TNW, interstate water (including interstate wetland), or territorial sea.
4. Artificially irrigated areas that would revert to dry land should water application cease; artificial, constructed lakes and ponds created on dry land; artificial reflecting pools or swimming pools created on dry land; small ornamental waters created on dry land; water-filled depressions created on dry land incidental to mining or construction activity; erosional features, non-wetland swales, and lawfully constructed grassed waterways; and puddles.
5. Groundwater, including groundwater drained through subsurface drainage systems.
6. Storm water control features constructed to convey, treat, or store storm water that are created on dry land.
7. Wastewater recycling structures constructed on dry land, detention and retention basins built for wastewater recycling, groundwater recharge basins, percolation ponds built for wastewater recycling, and water distributary structures built for wastewater recycling.

Ordinary High Water Mark

The landward limit of tidal “waters of the U.S.” is the high-tide line. In non-tidal waters where adjacent wetlands are absent, the lateral limits of USACE jurisdiction extend to the ordinary high water mark (OHWM).⁴ The OHWM is defined as “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas”.⁵ When wetlands are present, the lateral limits of USACE jurisdiction extend beyond the OHWM to the limits of the adjacent wetlands.⁶

Wetlands

A wetland is a subset of jurisdictional waters and is defined by the USACE and the USEPA as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions”.⁷ Wetlands generally include swamps, marshes, bogs, and areas containing similar features.

The definition and methods for identifying wetland resources can be found in the USACE’s *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*,⁸

⁴ U.S. Army Corps of Engineers (USACE). 2005 (December 7). Regulatory Guidance Letter. Ordinary High Water Mark Identification. Washington, D.C.: USACE.

⁵ *Code of Federal Regulations* (CFR), Title 33, §328.3(e)

⁶ USACE 2005

⁷ 33 CFR §328.3(b)

⁸ USACE. 2008a. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*. (J.S. Wakeley, R.W. Lichvar, and C.V. Noble, Eds.). Vicksburg, MS: U.S. Army Engineer Research and Development Center.

a supplement to the 1987 *Corps of Engineers Wetlands Delineation Manual*.⁹ Both the 1987 Wetlands Manual and the 2008 Arid West Supplement to the manual provide technical methods and guidelines for determining the presence of wetland “waters of the U.S.”. Pursuant to these manuals, a three-parameter approach is used to identify wetlands and requires evidence of wetland hydrology, hydrophytic vegetation, and hydric soils. In order to be considered a wetland, an area must exhibit one or more indicators of all three of these parameters. However, problem areas may periodically or permanently lack certain indicators for reasons such as seasonal or annual variability of rainfall, vegetation, and other factors. Atypical wetlands lack certain indicators due to recent human activities or natural events. Guidance for determining the presence of wetlands in these situations is presented in the regional supplement.

Section 404 Permit

Regulatory authorization in the form of a Nationwide Permit (NWP) is provided for certain categories of activities (e.g., repair, rehabilitation, or replacement of a structure or fill which was previously authorized; utility line placement; bank stabilization). The current set of NWPs became effective on March 19, 2012, and will expire on March 18, 2017. NWPs authorize only those activities with minimal adverse effects on the aquatic environment and are valid only if the conditions applicable to the permits are met or waivers to these conditions are provided in writing from the USACE. Please note that waivers may require consultation with affected federal and State agencies, which can be a lengthy process with no mandated processing time frames. If the NWP conditions cannot be met, an Individual Permit (IP) will be required. “Waters of the U.S.” temporarily filled, flooded, excavated, or drained but restored to pre-construction contours and elevations after construction are not included in the measurement of loss of “waters of the U.S.”. The appropriate permit authorization will be based on the amount of impacts to “waters of the U.S.”, as determined by the USACE.

Jurisdictional Determinations

Pursuant to USACE Regulatory Guidance Letter (RGL) 08-02 (dated June 26, 2008), the USACE can issue two types of jurisdictional determinations to implement Section 404 of the CWA: Approved Jurisdictional Determinations and Preliminary Jurisdictional Determinations.¹⁰ An Approved Jurisdictional Determination is an official USACE determination that jurisdictional “waters of the U.S.”, “Navigable Waters of the U.S.”, or both are either present or absent on a site. An Approved Jurisdictional Determination also identifies the precise limits of jurisdictional waters on a project site.

The USACE will provide an Approved Jurisdictional Determination when (1) an Applicant requests an official jurisdictional determination; (2) an Applicant contests jurisdiction over a particular water body or wetland; or (3) when the USACE determines that jurisdiction does not exist over a particular water body or wetland. The Approved Jurisdictional Determination then becomes the USACE’s official determination that can then be relied upon over a five-year period to request regulatory authorization as part of the permit application.

In addition, an Applicant may decline to request an Approved Jurisdictional Determination and instead obtain a USACE IP or General Permit Authorization based on a Preliminary Jurisdictional Determination or, in certain circumstances (e.g., authorizations by non-reporting nationwide general permits), with no Jurisdictional Determination.

⁹ Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1)*. Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station.

¹⁰ USACE. 2008b (June 26). Regulatory Guidance Letter. Jurisdictional Determinations. Washington, D.C.: USACE.

Preliminary Jurisdictional Determinations are non-binding, advisory in nature, and may not be appealed. They indicate that there may be “waters of the U.S.” on a project site. An Applicant may elect to use a Preliminary Jurisdictional Determination to voluntarily waive or set aside questions regarding CWA jurisdiction over a site, usually in the interest of allowing the Applicant to move ahead expeditiously with the permitting process. The USACE will determine what form of Jurisdictional Determination is appropriate for a particular project site.

On January 31, 2007, the USACE published a memorandum clarifying the Interim Guidance for amendments to the National Historic Preservation Act and the Advisory Council on Historic Preservation (ACHP) implementing regulations.¹¹ The Interim Guidance applies to all Department of the Army requests for authorization/verification, including Individual Permits (standard permits and letters of permission) and all Regional General Permits (RGPs) and NWRPs. The State or Tribal Historic Preservation Officer (SHPO/THPO) has 30 days to respond to a determination that a proposed activity, that otherwise qualifies for an NWP or RGP, has no effect or no adverse effect on a historic property. If the SHPO/THPO does not respond within 30 days of notification, the Los Angeles District may proceed with verification. If the SHPO/THPO disagrees with the District’s determination, the District may work with the SHPO/THPO to resolve the disagreement or request an opinion from the ACHP. The USACE will submit the Draft Jurisdictional Delineation Report to the SHPO/THPO for review prior to initiating the actual regulatory process.

The USACE Regulatory Branch Offices will coordinate with the USEPA Regional Office and USACE Headquarters (HQ), as outlined in its January 28, 2008, memorandum entitled the “Process for Coordinating Jurisdictional Delineations Conducted Pursuant to Section 404 of the Clean Water Act in Light of the *Rapanos* and *SWANCC* Supreme Court Decisions”.¹² The guidance provided in this memorandum is quoted as follows:

1. Effective immediately, unless and until paragraph 5(b) of the June 5, 2007, *Rapanos* guidance coordination memorandum is modified by a joint memorandum from Army and EPA, we will follow these procedures:
 - a. For jurisdictional determinations involving significant nexus determinations, USACE districts will send copies of draft jurisdictional delineations via e-mail to appropriate EPA regional offices. The EPA regional office will have 15 calendar days to decide whether to take the draft jurisdictional delineation as a special case under the January 19, 1989, “Memorandum of Agreement Between the Department of the Army and the USEPA Concerning the Determination of the Section 404 Program and the Application of the Exceptions under Section 404(f) of the Clean Water Act.” If the EPA regional office does not respond to the district within 15 days, the district will finalize the jurisdictional determination.
 - b. For jurisdictional determinations involving isolated waters determinations, the agencies will continue to follow the procedure in paragraph 5(b) of June 5, 2007, coordination memorandum, until a new coordination memorandum is signed by USACE and EPA. (In accordance with paragraph 6 of the June 5, 2007, coordination memorandum, this is a 21-day timeline that can only be changed through a joint memorandum between agencies).

¹¹ USACE. 2007(January 31). Memorandum: Interim Guidance for Amendments to the National Historic Preservation Act and the Advisory Council on Historic Preservation (ACHP) Implementing Regulations. Washington, D.C.: USACE.

¹² USACE. 2008c (January 28). *Memorandum for Commander, Major Subordinate Commands and District Commands. Process for Coordinating Jurisdictional Delineations Conducted Pursuant to Section 404 of the Clean Water Act in Light of the Rapanos and SWANCC Supreme Court Decisions*. Washington, D.C.: USACE.

2. Approved JDs are not required for non-reporting NWP, unless the project proponent specifically requests an approved JD. For proposed activities that may qualify for authorization under a State Programmatic General Permit (SPGP) or RGP, an approved JD is not required unless requested by the project proponent.
3. The USACE will continue to work with EPA to resolve the JDs involving significant nexus and isolated waters determinations that are currently in the elevation process.
4. USACE districts will continue posting completed Approved JD Forms on their web pages.

Please note that, if the USACE determines that the drainages are jurisdictional and would be impacted by project implementation, the Applicant will be required to obtain a CWA Section 401 Water Quality Certification from the RWQCB before the USACE will issue the Section 404 permit. That is, the USACE may issue a “Denial Without Prejudice” as part of the issuance of the Section 404 permit that makes the permit valid once the Section 401 Water Quality Certification is issued. If the USACE determines that the impacted drainage is not jurisdictional, the Applicant will be required to obtain RWQCB authorization under the provisions of a Report of Waste Discharge (ROWD).

Regional Water Quality Control Board

The RWQCB is the primary agency responsible for protecting water quality in California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act). The RWQCB’s jurisdiction extends to all “waters of the State” and to all “waters of the U.S.”, including wetlands (isolated and non-isolated).

Section 401 of the CWA provides the RWQCB with the authority to regulate, through a Water Quality Certification, any proposed, federally permitted activity that may affect water quality. Among such activities are discharges of dredged or fill material permitted by the USACE pursuant to Section 404 of the CWA. Section 401 requires the RWQCB to provide certification that there is reasonable assurance that an activity which may result in the discharge to navigable waters will not violate water quality standards. Water Quality Certification must be based on a finding that the proposed discharge will comply with water quality standards, which contain numeric and narrative objectives that can be found in each of the nine RWQCBs’ Basin Plans.

The Porter-Cologne Act provides the State with very broad authority to regulate “waters of the State” (which are defined as any surface water or groundwater, including saline waters). The Porter-Cologne Act has become an important tool in the post-SWANCC (*Solid Waste Agency of Northern Cook Counties v. United States Corps of Engineers*) and Rapanos era with respect to the State’s authority over isolated waters. Generally, any person proposing to discharge waste into a water body that could affect its water quality must file an ROWD when there is no federal nexus, such as under Section 404(b)(1) of the CWA. Although “waste” is partially defined as any waste substance associated with human habitation, the RWQCB interprets this to include fill discharge into water bodies.

Section 401 Water Quality Certification

Issuance of the USACE Section 404 permit would be contingent upon the approval of a Section 401 Water Quality Certification from the RWQCB. Also, the RWQCB requires certification of the project’s California Environmental Quality Act (CEQA) documentation before it will approve the Section 401 Water Quality Certification or ROWD. The RWQCB, as a responsible agency, will use the project’s CEQA document to satisfy its own CEQA-compliance requirements.

Upon acceptance of a complete permit application, the RWQCB has between 60 days and 1 year to make a decision regarding the permit request. That is, USACE regulations indicate that the RWQCB has 60 days from the date of receipt of a completed application that requests water quality certification to make a decision.¹³ The USACE District Engineer may specify a longer time (up to one year) or shorter time based on his/her determination of a reasonable processing time.¹⁴ If the RWQCB determines that more than 60 days are needed to process the request, it has the option of requesting additional time from the USACE. Also, the RWQCB has the option of issuing a “Denial Without Prejudice”, which does not mean that the request is denied, but that it requires more information in order to make a decision. This effectively stops the processing clock until this information is provided.

The RWQCB is required under *California Code of Regulations (CCR)* to have a “minimum 21 day public comment period” before any action can be taken on the Section 401 application.¹⁵ This period closes when the RWQCB acts on the application. Since projects often change or are revised during the Section 401 permit process, the comment period can remain open. The public comment period starts as soon as an application has been received. Generally, the RWQCB Section 401, USACE Section 404, and CDFW Section 1602 permit applications are submitted at the same time. However, the RWQCB Section 401 Water Quality Certification may take longer to process than the other two applications.

The RWQCB requires the Applicant to address urban storm water runoff during and after construction in the form of Best Management Practices (BMPs). These BMPs are intended to address the treatment of pollutants carried by storm water runoff and are required in all complete applications. The notification/application for a CWA Section 401 Water Quality Certification must also address compliance with the Basin Plan. Please note that the application would also require the payment of an application fee which would be based on project impacts. The fee schedule calculator is available at http://www.waterboards.ca.gov/santaana/water_issues/programs/401_certification/index.shtml.

California Department of Fish and Wildlife

The CDFW has jurisdictional authority over wetland resources associated with rivers, streams, and lakes pursuant to the *California Fish and Game Code*.¹⁶ Activities of State and local agencies as well as public utilities that are project proponents are regulated by the CDFW under Section 1602 of the *California Fish and Game Code*. This section regulates any work that will (1) substantially divert or obstruct the natural flow of any river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

Because the CDFW includes streamside habitats under its jurisdiction that, under the federal definition, may not qualify as wetlands on a particular project site, its jurisdiction may be broader than that of the USACE. Riparian forests in California often lie outside the plain of ordinary high water regulated under Section 404 of the CWA and often do not have all three parameters (wetland hydrology, hydrophytic vegetation, and hydric soils) sufficiently present to be regulated as a wetland. However, riparian forests are frequently within CDFW regulatory jurisdiction under Section 1602 of the *California Fish and Game Code*.

¹³ 33 CFR §325.2(b)(1)(ii)

¹⁴ Ibid.

¹⁵ 23 CCR §3858(a)

¹⁶ See §§1600–1616.

The CDFW jurisdictional limits are not as clearly defined by regulation as those of the USACE. While they closely resemble the limits described by USACE regulations, they include riparian habitat supported by a river, stream, or lake regardless of the presence or absence of hydric and saturated soils conditions. In general, the CDFW takes jurisdiction from the top of a stream bank or to the outer limits of the adjacent riparian vegetation (outer dripline), whichever is greater. Notification is generally required for any project that will take place within or in the vicinity of a river, stream, lake, or their tributaries. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish and other aquatic plant and/or wildlife species. It also includes watercourses that have a surface or subsurface flow that support or have supported riparian vegetation.

Section 1602 Notification of Lake or Streambed Alteration

The CDFW enters into a Lake or Streambed Alteration Agreement (LSAA) with a project proponent in order to ensure no net loss of wetland values and acreages. The notification process involves the completion of the applications that will serve as the basis for the CDFW's issuance of a Section 1602 LSAA. Section 1602 of the *California Fish and Game Code* applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State. The LSAA must address the initial construction and long-term operation and maintenance of any structures (such as a culvert or a desilting basin) within any river, stream, or lake that may require periodic maintenance if these are included in the project design.

Prior to construction, a notification (i.e., LSAA application) must be submitted to the CDFW that describes any proposed streambed alteration contemplated by the Project. In addition to the formal application materials, a copy of the appropriate environmental document (e.g., Mitigated Negative Declaration) should be included in the submittal, consistent with CEQA requirements. Please note that the application would also require the payment of an application fee; the fee schedule is available at <https://www.wildlife.ca.gov/Conservation/LSA/Forms>.

The CDFW will prepare a draft LSAA, which will include standard measures to protect sensitive plant and wildlife resources during project construction and during ongoing operation and maintenance of any project element that occurs within a CDFW jurisdictional area.

If an LSAA is required, the CDFW may want to conduct an on-site inspection. The CDFW then prepares a draft Agreement, which will include measures to protect fish and wildlife resources that will be directly or indirectly impacted by project construction. The draft agreement will be transmitted to the Applicant within 60 calendar days of the CDFW's determination that the notification is complete. It should be noted that the 60-day time frame may not apply to long-range agreements.

The Applicant has 30 calendar days to notify the CDFW concerning the acceptability of the proposed terms, conditions, and measures. If the Applicant agrees with these terms, conditions, and measures, the agreement must be signed and returned to the CDFW. The agreement becomes final once the CDFW executes it and an LSAA is issued. Please note that all application fees must be paid and the final certified CEQA documentation must be provided prior to the CDFW's execution of the agreement.

If the CDFW does not respond in writing concerning the completeness of the Notification within 30 days of its submittal, the Notification automatically becomes complete. If the CDFW does not submit a draft LSAA to the Applicant within 60 days of the determination of a completed Notification package, the CDFW will issue a letter that either (1) identifies the final date to transmit a draft LSAA or (2) indicates that an LSAA was not required. The CDFW will also indicate that it was unable to meet this mandated compliance date and that, by law, the Applicant is authorized to complete the project without an LSAA as long as the applicant constructs the project as

proposed and complies with all avoidance, minimization, and mitigation measures described in the submitted Notification package. Please note that if the project requires revisions to the design or project construction, the CDFW may require submittal of a new notification/application with an additional 90-day permit process.

ATTACHMENT B
LITERATURE REVIEW DETAILS

This attachment provides detailed results of the literature review.

SOIL SERIES

The description identified below was obtained from the U.S. Department of Agriculture, Natural Resources Conservation Service.¹⁷

Metz

The Metz series is a sandy, mixed, thermic Typic Xerofluvent. It consists of very deep, somewhat excessively drained soils that formed in alluvial material from mixed, but dominantly sedimentary, rocks. Metz soils are on floodplains and alluvial fans and have slopes of 0 to 15 percent. The mean annual precipitation is about 15 inches and the mean annual air temperature is about 59 degrees Fahrenheit (°F).

Range in Characteristics

The mean annual soil temperature is 59 to 64°F. The soil between the depths of 10 and 30 inches is usually dry all of the time from late April or May until November or early December and is usually moist in some or all parts the rest of the year. The textural control section (10 to 40 inches) averages loamy sand. Individual strata are sand, coarse sand, loamy sand, loamy fine sand, sandy loam, fine sandy loam, very fine sandy loam, and loam plus minor thin silty lenses. Organic matter decreases irregularly with depth and on average is less than 1 percent. The soil is neutral or slightly or moderately alkaline, although most pedons are moderately alkaline in most parts. Individual strata are noncalcareous or weakly to strongly calcareous. Gravel content ranges from 0 to 15 percent, although individual strata may reach 35 percent. A few mottles are present in some pedons but they seem to be relic from initial deposition and are associated with the finer textures.

The A and C horizons are 10YR 7/3, 6/1, 6/4, 5/2, 5/3; 2.5Y 6/2, 6/4, 5/2, and 5/4.

Drainage and Permeability

Metz soils are somewhat excessively drained, have negligible to low runoff, and have moderately rapid permeability. Some areas subject to flooding are protected by dikes and dams.

Myford

The Myford series is a fine-loamy, mixed, superactive, thermic Typic Palexeralf. It consists of deep, moderately well-drained soils formed on terraces. The mean annual precipitation is about 16 inches and the mean annual air temperature is about 62°F.

Range in Characteristics

The solum ranges from 45 to 75 inches thick. Mean annual soil temperature at a depth of 20 inches is 60 to 63°F. The soil between depths of about 5 and 15 inches is usually moist in some part from about November 15 until late May and is continuously dry the rest of the year.

The A horizon is pinkish gray or light brown, light brownish gray, pale brown, grayish brown, or brown in 7.5YR or 10YR hue. It is sandy loam or fine sandy loam. This horizon has weak structure

¹⁷ U.S. Department of Agriculture, Natural Resources Conservation Service (USDA NRCS). 2015 (Accessed June 8). Official Soil Series Descriptions [Information for Soils Mapped in the Study Area]. Lincoln, NE: USDA NRCS. <http://www.nrcs.usda.gov/wps/portal/nrcs/site/soils/home/>.

or is massive and ranges from strongly acid to slightly acid. The A3 horizon is one unit higher in value than the A1 horizon.

The Bt horizon is brown, dark brown, or yellowish brown in 7.5YR or 10YR hue. It is sandy clay or heavy clay loam in the upper part and sandy clay loam or clay loam in the lower part and averages 28 to 30 percent clay in the entire horizon. The upper boundary of the Bt horizon is abrupt and the clay increase from the A horizon to the Bt horizon is 18 to 28 percent. This horizon has prismatic or angular blocky structure. It ranges from medium acidic to moderately alkaline in the upper part and is moderately alkaline in the lower part. Exchangeable sodium is 15 to 35 percent below depth of one meter.

Drainage and Permeability

Myford soils are moderately well-drained, have medium to rapid runoff, and have very slow permeability.

San Emigdio

The San Emigdio series is a coarse-loamy, mixed, superactive, calcareous, thermic Typic Xerofluvent. It consists of very deep, well-drained soils that formed in dominantly sedimentary alluvium. San Emigdio soils are on fans and floodplains and have slopes of 0 to 15 percent. The mean annual precipitation is about 15 inches and the mean annual air temperature is about 62°F.

Range in Characteristics

The mean annual soil temperature at a depth of 20 inches is 60 to 65°F and the soil temperature typically does not fall below 47°F at any time. Soil between the depths of about 8 and 15 inches is dry all the time from April or May until late October to early December and is moist in some or all parts the rest of the year. The soil is coarse sandy loam, sandy loam, fine sandy loam, silt loam, or loam to a depth of 40 inches or more. Rock fragments, mostly fine pebbles, range to 15 percent; the amount tends to be greater in the lower part of the profile. The 10- to 40-inch control section averages less than 18 percent clay. There is weak to strong stratification and the organic matter decreases irregularly with depth.

The A horizon has dry color of 10YR 5/3, 5/4, 6/2, 6/3 or 6/4; 2.5Y 6/2 or 7/2. Moist colors are 10YR 3/3, 3/4, 4/3, 4/4; 2.5Y 4/2, 3/2. The organic matter is 0.5 to 1.5 percent. It is mildly to moderately alkaline.

The C horizon has dry color of 10YR 6/3, 6/4, 6/6 or 7/6; 2.5Y 6/2, 7/2, 7/3, 7/4; moist colors are 10YR 4/3, 4/4, 4/6, 5/3, 5/4 or 5/6. When moist values are 3, dry values are 6 or more. Lime is disseminated throughout and many pedons have small amounts of fine segregated lime.

Drainage and Permeability

San Emigdio soils are well-drained, have negligible to low runoff, and have moderately rapid permeability.

Sorrento Series

The Sorrento series is a fine-loamy, mixed, superactive, thermic Calcic Haploxeroll. It consists of very deep, well-drained soils that formed in alluvium mostly from sedimentary rocks. Sorrento soils are on alluvial fans and stabilized floodplains and have slopes of 0 to 15 percent. The mean annual precipitation is about 16 inches and the mean annual temperature is about 61°F.

Range in Characteristics

The mean annual soil temperature is 59 to 63°F and the soil temperature is rarely if ever below 47°F. The soil between depths of about 5 and 15 inches is usually dry all the time from late April or May until November or early December and is usually moist in some or all parts the rest of the year. The 10- to 40-inch control section is loam, fine sandy loam, clay loam, sandy clay loam, or silty clay loam with 18 to 35 percent clay and more than 15 percent fine sand or coarser. Few pedons have as much as 15 percent rock fragments. The upper part of the profile is slightly acidic to moderately alkaline and is noncalcareous to a depth of 20 to 40 inches. Effervescence is weak to violent in disseminated lime and secondary powder or mycelial lime is present.

The A horizon has 10YR or 2.5Y hue. It has weak to strong granular or subangular blocky structure. This horizon has 2 to 4 percent organic matter in the upper part which decreases regularly to less than 1 percent at depths of 12 to 20 inches.

The B and C horizons are 10YR 5/2, 5/3, 6/2, 6/4, 7/2, 7/4; 2.5Y 5/2, 5/3, 6/2, 6/4, 7/2; and 5Y 6/3. It is somewhat stratified, particularly in the lower part of some pedons but contrasting texture is not present above a depth of 40 inches.

Drainage and Permeability

Sorrento soils are well-drained, have negligible to medium runoff, and have moderate to moderately slow permeability depending upon dominant texture and amount of stratification in the lower part of the profile.

BASIN PLAN BENEFICIAL USES

The *Water Quality Control Plan: Santa Ana River Basin (8)* (Basin Plan) identifies a number of beneficial uses, some or all of which may apply to a specific hydrologic subarea (HSA), including Municipal and Domestic Water Supply (MUN) waters; Agricultural Supply (AGR) waters; Industrial Service Supply waters (IND); Industrial Process Supply (PROC) waters; Groundwater Recharge (GWR) waters; Navigation (NAV) waters; Hydropower Generation (POW) waters; Water Contact Recreation (REC1) waters; Non-Contact Water Recreation (REC2) waters; Commercial and Sport Fishing (COMM) waters; Warm Fresh Water Habitat (WARM) waters; Limited Warm Water Habitat (LWARM) waters; Cold Fresh Water Habitat (COLD) waters; Preservation of Biological Habitats of Special Significance (BIOL) waters; Wildlife Habitat (WILD) waters; Rare, Threatened or Endangered Species (RARE) waters; Spawning, Reproduction and Development (SPWN) waters; and Estuarine Habitat (EST) waters. Beneficial uses associated with Borrego Wash are described in detail below; beneficial uses not described below do not apply.

- GWR waters are used for natural or artificial recharge of groundwater for purposes that may include, but are not limited to, future extraction, maintaining water quality, or halting saltwater intrusion into freshwater aquifers.
- REC1 waters are used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and SCUBA diving, surfing, whitewater activities, fishing and use of natural hot springs. Please note that while this beneficial use designation is assigned to surface waterbodies in this region, it should not be construed as encouraging recreational activities.
- REC2 waters are used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include, but are not limited to, picnicking; sunbathing; hiking;

beachcombing; camping; boating; tidepool and marine life study; hunting; sightseeing; and aesthetic enjoyment in conjunction with the above activities. Please note that while this beneficial use designation is assigned to surface water bodies in this region, it should not be construed as encouraging recreational activities.

- WARM waters support warm water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife (including invertebrates).
- WILD waters support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.

ATTACHMENT C
WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: West Alton City/County: Irvine, Orange Co Sampling Date: 3/24/15
 Applicant/Owner: _____ State: CA Sampling Point: 1
 Investigator(s): ARudalenig, JPareti Section, Township, Range: S10, T6S, R8W
 Landform (hillslope, terrace, etc.): channel Local relief (concave, convex, none): concave Slope (%): 0-1
 Subregion (LRR): CA Lat: 33.667199 Long: -117.702267 Datum: NAD83
 Soil Map Unit Name: Metz loamy sand NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil , or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: <p style="font-size: 1.2em; color: blue;">Site is a created channel with restoration plantings. Flow from Borrego Wash via. splitter</p>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u>Salix gooddingii</u>	<u>25</u>	<u>yes</u>	<u>FACW</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. <u>Salix lasiolepis</u>	<u>5</u>	<u>no</u>	<u>FACW</u>	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. <u>Salix laevigata</u>	<u>20</u>	<u>yes</u>	<u>FACW</u>	
4. _____	<u>50</u>			Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
			= Total Cover	
Sapling/Shrub Stratum (Plot size: <u>5'</u>)				Prevalence Index worksheet:
1. <u>Baccharis salicifolia</u>	<u>10</u>	<u>yes</u>	<u>FAC</u>	
2. _____				
3. _____				
4. _____				
5. _____				
Herb Stratum (Plot size: <u>5'</u>)				Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>50</u> x 2 = <u>100</u> FAC species <u>10</u> x 3 = <u>30</u> FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>60</u> (A) <u>130</u> (B) Prevalence Index = B/A = <u>2.17</u>
1. <u>Cyperus sp.</u>	<u><1</u>	<u>no</u>	<u>varies</u>	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
Woody Vine Stratum (Plot size: <u>30'</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain)
1. _____	<u><1</u>			
2. _____				
				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
% Bare Ground in Herb Stratum <u>99%</u> % Cover of Biotic Crust <u>0</u>				
_____ = Total Cover				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
Remarks:				

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10YR6/2	100%					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	Indicators for Problematic Hydric Soils³:
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

1 cm Muck (A9) (LRR C)
 2 cm Muck (A10) (LRR B)
 Reduced Vertic (F18)
 Red Parent Material (TF2)
 Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Cobble

Depth (inches): 10"

Hydric Soil Present? Yes No

Remarks: No soil development. Problematic soil situation: as a mitigation site, this area may be considered recently developed wetlands.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)		Secondary Indicators (2 or more required)
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input checked="" type="checkbox"/> Water Marks (B1) (Riverine)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input checked="" type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes No Depth (inches): 0"

Water Table Present? Yes No Depth (inches): 1"

Saturation Present? (includes capillary fringe) Yes No Depth (inches): 1"

Wetland Hydrology Present? Yes No

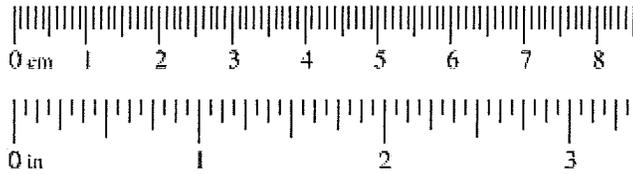
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

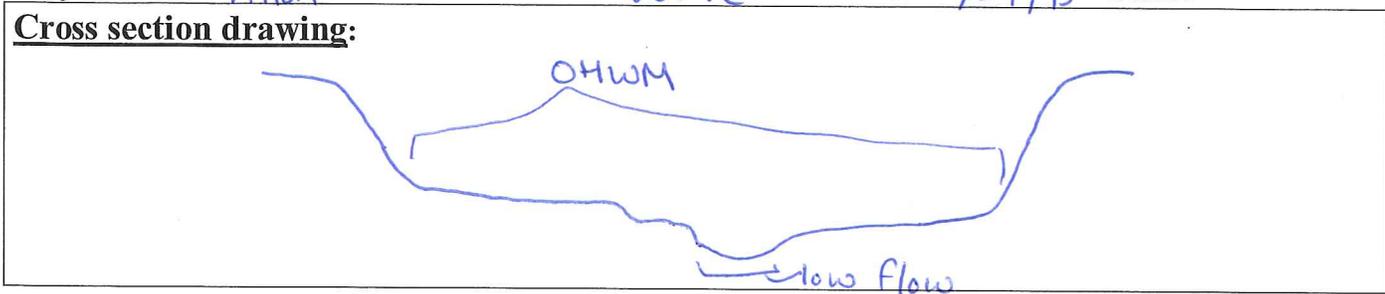
ATTACHMENT D
ORDINARY HIGH WATER MARK DATASHEETS

Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class
10.08	256	Boulder
2.56	64	Cobble
0.157	4	Pebble
0.079	2.00	Granule
0.039	1.00	Very coarse sand
0.020	0.50	Coarse sand
1/2 0.0098	0.25	Medium sand
1/4 0.005	0.125	Fine sand
1/8 0.0025	0.0625	Very fine sand
1/16 0.0012	0.031	Coarse silt
1/32 0.00061	0.0156	Medium silt
1/64 0.00031	0.0078	Fine silt
1/128 0.00015	0.0039	Very fine silt
		Clay



Project ID: West Alton Cross section ID: WMC Date: 3/24/15 Time:



OHWM

GPS point: _____

Indicators:

<input checked="" type="checkbox"/> Change in average sediment texture	<input type="checkbox"/> Break in bank slope
<input checked="" type="checkbox"/> Change in vegetation species	<input checked="" type="checkbox"/> Other: <u>Surface water</u>
<input checked="" type="checkbox"/> Change in vegetation cover	<input type="checkbox"/> Other: _____

Comments:

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebble and cobble

Total veg cover: 1 % Tree: 0 % Shrub: 0 % Herb: 1 %

Community successional stage:

<input type="checkbox"/> NA	<input type="checkbox"/> Mid (herbaceous, shrubs, saplings)
<input checked="" type="checkbox"/> Early (herbaceous & seedlings)	<input type="checkbox"/> Late (herbaceous, shrubs, mature trees)

Indicators:

<input type="checkbox"/> Mudcracks	<input type="checkbox"/> Soil development
<input type="checkbox"/> Ripples	<input checked="" type="checkbox"/> Surface relief
<input type="checkbox"/> Drift and/or debris	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Presence of bed and bank	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Benches	<input type="checkbox"/> Other: _____

Comments:

Project ID: West Alton Cross section ID: WMC Date: 3/24/15 Time:

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: pebbles and cobbles w/sand

Total veg cover: 80 % Tree: 5 % Shrub: 80 % Herb: 5 %

Community successional stage:

- NA Mid (herbaceous, shrubs, saplings)
 Early (herbaceous & seedlings) Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks Soil development
 Ripples Surface relief
 Drift and/or debris Other: _____
 Presence of bed and bank Other: _____
 Benches Other: _____

Comments:

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- NA Mid (herbaceous, shrubs, saplings)
 Early (herbaceous & seedlings) Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks Soil development
 Ripples Surface relief
 Drift and/or debris Other: _____
 Presence of bed and bank Other: _____
 Benches Other: _____

Comments:

No low terrace present



Overview of Planning Area 2, facing north.



The eastern end of the Wildlife Movement Corridor, facing east.



Overview of the Wildlife Movement Corridor, facing north.

Site Photographs

West Alton Parcel Development Plan EIR

Appendix D-6



PLANTS OBSERVED IN THE STUDY AREA

Scientific Name	Common Name	Project Development Area	Wildlife Movement Corridor
MAGNOLIIDS			
SAURURACEAE - LIZARD'S-TAIL FAMILY			
<i>Anemopsis californica</i>	yerba mansa		X
EUDICOTS			
ADOXACEAE - MUSKROOT FAMILY			
<i>Sambucus nigra ssp. caerulea</i>	blue elderberry		X
ANACARDIACEAE - SUMAC FAMILY			
<i>Malosma laurina</i>	laurel sumac		X
<i>Rhus aromatica</i>	skunk bush		X
<i>Rhus integrifolia</i>	lemonade berry		X
<i>Rhus ovata</i>	sugar bush		X
APIACEAE - CARROT FAMILY			
<i>Daucus pusillus</i>	rattlesnake weed	X	X
APOCYNACEAE - DOGBANE FAMILY			
<i>Asclepias eriocarpa</i>	kotolo		X
<i>Asclepias fascicularis</i>	narrow-leaf milkweed		X
ASTERACEAE - SUNFLOWER FAMILY			
<i>Ambrosia acanthicarpa</i>	annual bur-sage	X	
<i>Ambrosia psilostachya</i>	western ragweed		X
<i>Artemisia californica</i>	California sagebrush	X	X
<i>Artemisia douglasiana</i>	Douglas' sagebrush		X
<i>Artemisia dracunculus</i>	tarragon sagebrush		X
<i>Baccharis pilularis ssp. consanguinea</i>	coyote brush	X	X
<i>Baccharis salicifolia ssp. salicifolia</i>	mulefat	X	X
<i>Brickellia californica</i>	California brickellbush		X
<i>Centaurea melitensis*</i>	tochalote	X	
<i>Chaenactis glabriuscula var. glabriuscula</i>	yellow pincushion		X
<i>Corethrogyne filaginifolia</i>	common sand aster		X
<i>Deinandra fasciculata</i>	fascicled tarplant		X
<i>Encelia californica</i>	California brittlebush		X
<i>Encelia farinosa</i>	hairy brittlebush		X
<i>Erigeron canadensis</i>	horseweed	X	X
<i>Eriophyllum confertiflorum var. confertiflorum</i>	golden woolly sunflower		X
<i>Glebionis coronaria*</i>	garland daisy	X	
<i>Grindelia camporum</i>	field gumplant		X
<i>Hazardia squarrosa</i>	saw toothed goldenbush		X
<i>Heterotheca grandiflora</i>	telegraph weed	X	X
<i>Isocoma menziesii</i>	coastal goldenbush		X
<i>Iva hayesiana</i>	San Diego marsh-elder		X
<i>Lepidospartum squamatum</i>	California scale-broom		X
<i>Oncosiphon piluliferum*</i>	stinknet	X	

Appendix D-7 Plant Compendium

PLANTS OBSERVED IN THE STUDY AREA

Scientific Name	Common Name	Project Development Area	Wildlife Movement Corridor
<i>Pluchea odorata</i> var. <i>odorata</i>	saltmarsh-fleabane		X
<i>Pseudognaphalium biolettii</i>	bi-color everlasting		X
<i>Pseudognaphalium californicum</i>	California everlasting		X
BORAGINACEAE - BORAGE FAMILY			
<i>Amsinckia</i> sp.	fiddleneck		X
<i>Cryptantha</i> sp.	cryptantha		X
<i>Emmenanthe penduliflora</i>	whispering bells		X
<i>Heliotropium curassavicum</i> var. <i>oculatum</i>	alkali heliotrope	X	X
<i>Phacelia cicutaria</i>	caterpillar phacelia		X
<i>Phacelia distans</i>	wild heliotrope phacelia		X
<i>Phacelia minor</i>	wild canterbury bells		X
<i>Phacelia parryi</i>	Parry's phacelia		X
<i>Phacelia ramosissima</i>	branching phacelia		X
BRASSICACEAE - MUSTARD FAMILY			
<i>Hirschfeldia incana</i> *	shortpod mustard	X	
<i>Nasturtium officinale</i>	medicinal water cress		X
CACTACEAE - CACTUS FAMILY			
<i>Cylindropuntia prolifera</i>	coast cholla		X
<i>Opuntia littoralis</i>	coastal prickly pear		X
CAPRIFOLIACEAE - HONEYSUCKLE FAMILY			
<i>Lonicera subspicata</i> var. <i>denudata</i>	Johnston's honeysuckle		X
<i>Symphoricarpos mollis</i>	creeping snowberry		X
CHENOPODIACEAE - GOOSEFOOT FAMILY			
<i>Chenopodium album</i> *	lamb's quarters	X	
<i>Salsola tragus</i> *	Russian thistle	X	
CISTACEAE - ROCK-ROSE FAMILY			
<i>Crocanthemum scoparium</i>	peak rush-rose		X
CONVOLVULACEAE - MORNING-GLORY FAMILY			
<i>Convolvulus arvensis</i> *	bindweed	X	
CRASSULACEAE - STONECROP FAMILY			
<i>Dudleya lanceolata</i>	lance-leaved dudleya		X
EUPHORBIACEAE - SPURGE FAMILY			
<i>Croton californicus</i>	California croton		X
<i>Ricinus communis</i> *	castor bean	X	
FABACEAE - LEGUME FAMILY			
<i>Acmispon americanus</i> var. <i>americanus</i>	Spanish-clover		X
<i>Acmispon glaber</i> var. <i>glaber</i>	deerweed		X
<i>Acmispon heermannii</i>	Heermann's lotus		X
<i>Acmispon micranthus</i>	grab lotus		X
<i>Acmispon strigosus</i>	strigose lotus		X
<i>Lupinus hirsutissimus</i>	stinging lupine		X
<i>Lupinus succulentus</i>	arroyo lupine		X

PLANTS OBSERVED IN THE STUDY AREA

Scientific Name	Common Name	Project Development Area	Wildlife Movement Corridor
<i>Medicago polymorpha</i> *	California burclover	X	
<i>Melilotus albus</i> *	white sweetclover	X	
FAGACEAE - OAK FAMILY			
<i>Quercus agrifolia</i> var. <i>agrifolia</i>	coast live oak		X
GERANIACEAE - GERANIUM FAMILY			
<i>Erodium botrys</i> *	long-beaked filaree	X	
<i>Erodium cicutarium</i> *	red-stemmed filaree	X	
GROSSULARIACEAE - GOOSEBERRY FAMILY			
<i>Ribes indecorum</i>	white flowering currant		X
<i>Ribes speciosum</i>	fuchsia-flowered gooseberry		X
LAMIACEAE - MINT FAMILY			
<i>Salvia apiana</i>	white sage		X
<i>Salvia columbariae</i>	chia		X
<i>Salvia mellifera</i>	black sage		X
<i>Trichostema lanatum</i>	woolly blue curls		X
LYTHRACEAE - LOOSESTRIFE FAMILY			
<i>Lythrum californicum</i>	California loosestrife		X
MALVACEAE - MALLOW FAMILY			
<i>Malacothamnus fasciculatus</i>	chaparral bush-mallow		X
<i>Malva parviflora</i> *	cheeseweed	X	
MONTIACEAE - MINER'S-LETTUCE FAMILY			
<i>Calandrinia menziesii</i>	red maids		X
MYRTACEAE - MYRTLE FAMILY			
<i>Eucalyptus</i> sp.*	gum	X	
NYCTAGINACEAE - FOUR O'CLOCK FAMILY			
<i>Mirabilis laevis</i> var. <i>crassifolia</i>	coastal wishbone plant		X
OLEACEAE - OLIVE FAMILY			
<i>Fraxinus dipetala</i>	California ash		X
ONAGRACEAE - EVENING PRIMROSE FAMILY			
<i>Camissoniopsis bistorta</i>	California sun cup		X
<i>Camissoniopsis robusta</i>	robust suncup		X
<i>Clarkia purpurea</i>	purple clarkia		X
<i>Epilobium canum</i>	California fuchsia		X
<i>Epilobium ciliatum</i>	fringed willowherb		X
<i>Oenothera elata</i> ssp. <i>hirsutissima</i>	great marsh evening primrose		X
PHRYMACEAE - LOPSEED FAMILY			
<i>Mimulus aurantiacus</i> var. <i>puniceus</i>	coast bush monkeyflower		X
<i>Mimulus cardinalis</i>	scarlet monkeyflower		X
PLANTAGINACEAE - PLANTAIN FAMILY			
<i>Antirrhinum nuttallianum</i> ssp. <i>nuttallianum</i>	Nuttall's snapdragon		X

Appendix D-7 Plant Compendium

PLANTS OBSERVED IN THE STUDY AREA

Scientific Name	Common Name	Project Development Area	Wildlife Movement Corridor
<i>Keckiella cordifolia</i>	heartleaf bush penstemon		X
<i>Penstemon spectabilis</i> var. <i>spectabilis</i>	showy beardtongue		X
<i>Plantago erecta</i>	dot seed plantain		X
PLATANACEAE - SYCAMORE FAMILY			
<i>Platanus racemosa</i>	western sycamore		X
POLYGONACEAE - BUCKWHEAT FAMILY			
<i>Chorizanthe staticoides</i>	statice spineflower		X
<i>Eriogonum elongatum</i> var. <i>elongatum</i>	longstem buckwheat		X
<i>Eriogonum fasciculatum</i> var. <i>foliolosum</i>	leafy California buckwheat		X
<i>Eriogonum gracile</i> var. <i>incultum</i>	palomar mountain buckwheat		X
RANUNCULACEAE - BUTTERCUP FAMILY			
<i>Clematis ligusticifolia</i>	western virgin's bower		X
RHAMNACEAE - BUCKTHORN FAMILY			
<i>Frangula californica</i>	California coffeeberry		X
<i>Rhamnus ilicifolia</i>	hollyleaf redberry		X
ROSACEAE - ROSE FAMILY			
<i>Cercocarpus betuloides</i> var. <i>betuloides</i>	birch-leaf mountain mahogany		X
<i>Heteromeles arbutifolia</i>	toyon		X
<i>Prunus ilicifolia</i>	holly leaf cherry		X
<i>Rosa californica</i>	California rose		X
<i>Rubus ursinus</i>	California blackberry		X
RUBIACEAE - COFFEE FAMILY			
<i>Galium angustifolium</i> ssp. <i>angustifolium</i>	narrow leaved bedstraw		X
SALICACEAE - WILLOW FAMILY			
<i>Salix exigua</i> var. <i>hindsiana</i>	Hinds' willow		X
<i>Salix gooddingii</i>	goodding's black willow		X
<i>Salix laevigata</i>	red willow		X
<i>Salix lasiolepis</i>	arroyo willow		X
SCROPHULARIACEAE - FIGWORT FAMILY			
<i>Scrophularia californica</i>	California figwort		X
SOLANACEAE - NIGHTSHADE FAMILY			
<i>Datura wrightii</i>	Wright's jimsonweed		X
<i>Nicotiana glauca</i> *	tree tobacco	X	
<i>Solanum douglasii</i>	Douglas' nightshade		X
<i>Solanum xanti</i>	chaparral nightshade		X
URTICACEAE - NETTLE FAMILY			
<i>Urtica dioica</i> ssp. <i>holosericea</i>	hoary stinging nettle		X
<i>Urtica urens</i> *	dwarf nettle	X	
VERBENACEAE - VERVAIN FAMILY			
<i>Verbena lasiostachys</i>	western vervain		X

PLANTS OBSERVED IN THE STUDY AREA

Scientific Name	Common Name	Project Development Area	Wildlife Movement Corridor
MONOCOTS			
AGAVACEAE - AGAVE FAMILY			
<i>Hesperoyucca whipplei</i>	chaparral yucca		X
ARACEAE - ARUM FAMILY			
<i>Lemna sp.</i>	duckweed		X
ARECACEAE - PALM FAMILY			
<i>Washingtonia robusta*</i>	Mexican fan palm	X	
CYPERACEAE - SEDGE FAMILY			
<i>Cyperus eragrostis</i>	tall flatsedge		X
<i>Eleocharis macrostachya</i>	pale spikerush		X
<i>Schoenoplectus americanus</i>	American bulrush		X
IRIDACEAE - IRIS FAMILY			
<i>Sisyrinchium bellum</i>	lovely blue-eyed-grass		X
JUNCACEAE - RUSH FAMILY			
<i>Juncus xiphioides</i>	iris leaved rush		X
POACEAE - GRASS FAMILY			
<i>Bromus madritensis ssp. rubens*</i>	red brome	X	
<i>Bromus carinatus</i>	California brome		X
<i>Cynodon dactylon*</i>	Bermuda grass	X	
<i>Distichlis spicata</i>	salt grass		X
<i>Elymus condensatus</i>	giant wildrye		X
<i>Elymus triticoides</i>	beardless wildrye		X
<i>Festuca microstachys</i>	Pacific fescue		X
<i>Melica imperfecta</i>	coast range onion grass		X
<i>Muhlenbergia microsperma</i>	littleseed muhly		X
<i>Muhlenbergia rigens</i>	deer grass		X
<i>Stipa lepida</i>	foothill needle grass		X
<i>Stipa pulchra</i>	purple needle grass		X
* non-native species			

WILDLIFE OBSERVED IN THE STUDY AREA

Scientific Name	Common Name
AMPHIBIANS	
BUFONIDAE - TRUE TOAD FAMILY	
<i>Anaxyrus boreas halophilus</i>	California toad
RANIDAE - TRUE FROG FAMILY	
<i>Lithobates catesbeianus*</i>	bullfrog
HYLIDAE - TREEFROG FAMILY	
<i>Pseudacris hypochondriaca</i>	Baja California treefrog
LIZARDS	
PHRYNOSOMATIDAE - SPINY LIZARD FAMILY	
<i>Sceloporus occidentalis</i>	western fence lizard
<i>Uta stansburiana elegans</i>	western side-blotched lizard
TEIIDAE - WHIPTAIL LIZARD FAMILY	
<i>Aspidoscelis hyperythra beldingi</i>	Belding's orange-throated whiptail
SNAKES	
COLUBRIDAE - COLUBRID SNAKE FAMILY	
<i>Coluber flagellum piceus</i>	red racer
<i>Lampropeltis californiae</i>	California kingsnake
BIRDS	
ANATIDAE - SWAN, GOOSE, AND DUCK FAMILY	
<i>Anas platyrhynchos</i>	mallard
ODONTOPHORIDAE - NEW WORLD QUAIL FAMILY	
<i>Callipepla californica</i>	California quail
ARDEIDAE - HERON FAMILY	
<i>Ardea alba</i>	great egret
CATHARTIDAE - NEW WORLD VULTURE FAMILY	
<i>Cathartes aura</i>	turkey vulture
ACCIPITRIDAE - HAWK FAMILY	
<i>Accipiter cooperii</i>	Cooper's hawk
<i>Buteo lineatus</i>	red-shouldered hawk
<i>Buteo swainsoni</i>	Swainson's hawk
<i>Buteo jamaicensis</i>	red-tailed hawk
CHARADRIIDAE - PLOVER FAMILY	
<i>Charadrius vociferus</i>	killdeer
COLUMBIDAE - PIGEON AND DOVE FAMILY	
<i>Columba livia*</i>	rock pigeon
<i>Streptopelia decaocto*</i>	Eurasian collared-dove
<i>Zenaida macroura</i>	mourning dove
<i>Columbina passerina</i>	common ground-dove
CUCULIDAE - CUCKOO AND ROADRUNNER FAMILY	
<i>Geococcyx californianus</i>	greater roadrunner
APODIDAE - SWIFT FAMILY	
<i>Aeronautes saxatalis</i>	white-throated swift

WILDLIFE OBSERVED IN THE STUDY AREA

Scientific Name	Common Name
TROCHILIDAE - HUMMINGBIRD FAMILY	
<i>Calypte anna</i>	Anna's hummingbird
PICIDAE - WOODPECKER FAMILY	
<i>Picoides nuttallii</i>	Nuttall's woodpecker
FALCONIDAE - FALCON FAMILY	
<i>Falco sparverius</i>	American kestrel
TYRANNIDAE - TYRANT FLYCATCHER FAMILY	
<i>Empidonax difficilis</i>	Pacific-slope flycatcher
<i>Sayornis nigricans</i>	black phoebe
<i>Sayornis saya</i>	Say's phoebe
<i>Myiarchus cinerascens</i>	ash-throated flycatcher
<i>Tyrannus vociferans</i>	Cassin's kingbird
VIREONIDAE - VIREO FAMILY	
<i>Vireo bellii pusillus</i>	least Bell's vireo
CORVIDAE - JAY AND CROW FAMILY	
<i>Aphelocoma californica</i>	western scrub-jay
<i>Corvus brachyrhynchos</i>	American crow
<i>Corvus corax</i>	common raven
ALAUDIDAE - LARK FAMILY	
<i>Eremophila alpestris</i>	horned lark
HIRUNDINIDAE - SWALLOW FAMILY	
<i>Stelgidopteryx serripennis</i>	northern rough-winged swallow
<i>Petrochelidon pyrrhonota</i>	cliff swallow
<i>Hirundo rustica</i>	barn swallow
AEGITHALIDAE - BUSHTIT FAMILY	
<i>Psaltriparus minimus</i>	bushtit
TROGLODYTIDAE - WREN FAMILY	
<i>Salpinctes obsoletus</i>	rock wren
<i>Troglodytes aedon</i>	house wren
<i>Thryomanes bewickii</i>	Bewick's wren
POLIOPTILIDAE - GNATCATCHER FAMILY	
<i>Polioptila caerulea</i>	blue-gray gnatcatcher
<i>Polioptila californica californica</i>	coastal California gnatcatcher
SYLVIIDAE - SILVIID WARBLERS FAMILY	
<i>Chamaea fasciata</i>	wrentit
MIMIDAE - MOCKINGBIRD AND THRASHER FAMILY	
<i>Toxostoma redivivum</i>	California thrasher
<i>Mimus polyglottos</i>	northern mockingbird
MOTACILLIDAE - PIPIT AND WAGTAIL FAMILY	
<i>Anthus rufescens</i>	American pipit
BOMBYCILLIDAE - WAXWING FAMILY	
<i>Bombycilla cedrorum</i>	cedar waxwing

WILDLIFE OBSERVED IN THE STUDY AREA

Scientific Name	Common Name
PARULIDAE - WOOD-WARBLER FAMILY	
<i>Geothlypis trichas</i>	common yellowthroat
<i>Setophaga coronata</i>	yellow-rumped warbler
<i>Setophaga townsendi</i>	Townsend's warbler
<i>Cardellina pusilla</i>	Wilson's warbler
<i>Icteria virens</i>	yellow-breasted chat
EMBERIZIDAE - SPARROW FAMILY	
<i>Pipilo maculatus</i>	spotted towhee
<i>Aimophila ruficeps canescens</i>	Southern California rufous-crowned sparrow
<i>Melospiza crissalis</i>	California towhee
<i>Chondestes grammacus</i>	lark sparrow
<i>Passerculus sandwichensis</i>	savannah sparrow
<i>Melospiza melodia</i>	song sparrow
<i>Zonotrichia leucophrys</i>	white-crowned sparrow
CARDINALIDAE - CARDINALS, GROSBEAKS AND ALLIES FAMILY	
<i>Piranga ludoviciana</i>	western tanager
<i>Pheucticus melanocephalus</i>	black-headed grosbeak
<i>Passerina caerulea</i>	blue grosbeak
ICTERIDAE - BLACKBIRD, COWBIRD AND ORIOLE FAMILY	
<i>Agelaius phoeniceus</i>	red-winged blackbird
<i>Sturnella neglecta</i>	western meadowlark
<i>Euphagus cyanocephalus</i>	Brewer's blackbird
<i>Molothrus ater*</i>	brown-headed cowbird
<i>Icterus cucullatus</i>	hooded oriole
<i>Icterus bullockii</i>	Bullock's oriole
FRINGILLIDAE - FINCH FAMILY	
<i>Haemorhous mexicanus</i>	house finch
<i>Carduelis psaltria</i>	lesser goldfinch
<i>Carduelis tristis</i>	American goldfinch
ESTRILIDAE - WAXBILL AND MANNIKIN FAMILY	
<i>Lonchura punctulata*</i>	nutmeg mannikin
MAMMALS	
LEPORIDAE - HARE AND RABBIT FAMILY	
<i>Sylvilagus audubonii</i>	desert cottontail
<i>Sylvilagus bachmani</i>	brush rabbit
SCIURIDAE - SQUIRREL FAMILY	
<i>Otospermophilus beecheyi</i>	California ground squirrel
CANIDAE - CANID FAMILY	
<i>Canis latrans</i>	coyote
PROCYONIDAE - PROCYONID FAMILY	
<i>Procyon lotor</i>	northern raccoon
*non-native species	