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July 12, 2024 00678.00068.001/04193.00003.001

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Subject: **2024 Crotch's Bumble Bee (*Bombus crotchii*) Survey Report for the Riverside Borrow Site Export**

Dear Mr. Ybarra and Mr. Paradise:

This letter presents the results of a California Department of Fish and Wildlife (CDFW) presence/absence survey for the Crotch's bumble bee (*Bombus crotchii;* CBB), a candidate species under the California Endangered Species Act (CESA), conducted by HELIX Environmental Planning, Inc. (HELIX) for the Riverside Borrow Site Export (project). Candidate species receive the same protections as listed species under CESA. This report describes the methods used to perform the survey and the results. The survey considerations for CESA Candidate Bumble Bee Species[1] guideline document recommends reporting all CBB survey results to CDFW.

PROJECT LOCATION

The approximately 28.57-acre project site is located in the Winchester area in the southwestern portion of Riverside County, California (Figure 1, *Regional Location*). It is depicted within Section 31 of Township 5 South, Range 2 West on the U.S. Geological Survey (USGS) 7.5-minute Romoland quadrangle map (Figure 2, *USGS Topography*). The project site is surrounded by a mixture of agricultural and residential

uses to the west, an egg ranch to the south, and open space to the north and east. The site occurs south of Domenigoni Parkway and east of Briggs Road (Figure 3, *Aerial Photograph*).

METHODS

Habitat Assessment

A desktop analysis of historical and current species occurrences was performed before the habitat assessment. HELIX biologists Lindsay Willrick and Kenui Moliterno conducted the habitat assessment on June 10, 2024. In accordance with the California Department of Fish and Wildlife's (CDFW) Survey Considerations for CESA Candidate Bumble Bee Species,[1] the biologists mapped habitat alliances within the project site. The habitat alliances were classified following the Manual of California Vegetation.[2] The biologists recorded the estimated absolute percent cover of individual plant species for each habitat alliance and which species were in flower at the time of the habitat assessment. In addition to foraging resources, potential nesting habitat (e.g., small mammal burrows, bunch grasses, thatch, brush piles, old bird nests, and dead trees) and overwintering habitat (e.g., leaf litter and woody forest edge) were noted during the assessment. A list of plant species observed during the habitat assessment and their absolute percent cover are included in Attachment A, *Species Composition by Mapped Alliance*. Site photographs of potential CBB habitat and nesting strata are included as Attachment B, *Representative Site Photographs*.

Focused Surveys

Potential CBB habitat was identified within the project site during the habitat assessment, initiating the necessity for CBB surveys. The survey area encompassed approximately 28.57 acres of potential CBB habitat within the proposed project site (Figure 4, *2024 Crotch's Bumble Bee Survey Results*). Ms. Willrick and Mr. Moliterno performed three site visits spaced at least two weeks apart, in accordance with the current CDFW survey guidelines (Table 1, *Survey Information*). The initial habitat assessment and first survey were conducted on the same day, with all three surveys conducted within the CBB colony active period (April to August). CBB surveys were conducted by walking line transects throughout and at the perimeter of the project site, accounting for suitable CBB nesting locations, pollen and nectar sources, and foraging bumble bee activity. The survey route was arranged to ensure complete survey coverage of the project site with potential for occupancy by CBB. Surveys covered approximately three acres per biologist per hour. Surveys were conducted with binoculars and a camera to aid in insect detection and later identification. A list of plant species observed during the focused surveys is included in Attachment A. Details of the habitat assessment and subsequent survey dates, times, and conditions are noted in Table 1, *Survey Information*. Plant species in flower at the time of the habitat assessment are noted in Table 2, *Species Composition by Mapped Alliance*. If detected, photographs were taken of *Bombus* species encountered during the surveys.

[1] California Department of Fish and Wildlife. 2023. Survey Considerations for CESA Candidate Bumble Bee Species. June 6. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=213150&inline. Accessed July 2, 2024.

[2] Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. A manual of California Vegetation, 2nd ed. California Native Plant Society Press, Sacramento, California. Available at: http://vegetation.cnps.org/. Accessed July 2, 2024.

Table 1 details the survey dates, times, and conditions.

Table 1
SURVEY INFORMATION

Site Visit	Survey Date	Biologist(s)	Time (Start/Stop)	Approx. Acres Surveyed/ Acres per Hour	Weather Conditions (Start/Stop)
HA[1]	06/10/2024	Lindsay Willrick[2] Kenui Moliterno[2]	0800/1130	N/A	64°F, wind 0-1 mph, 0% cloud cover 69°F, wind 2-5 mph, 0% cloud cover
1	06/10/2024	Lindsay Willrick Kenui Moliterno	1130/1600	28.57 ac/ 3.2 ac/hr*	69°F, wind 2-5 mph, 0% cloud cover 82°F, wind 2-5 mph, 0% cloud cover
2	06/24/2024	Lindsay Willrick Kenui Moliterno	0800/1330	28.57 ac/ 2.6 ac/hr	77°F, wind 2-4mph, 0% cloud cover 86°F, wind 2-4 mph, 0% cloud cover
3	07/09/2024	Kenui Moliterno	0800/1600	28.57 ac/ 3.6 ac/hr	79°F, wind 2-5mph, 0% cloud cover 103°F, wind 8-10 mph, 0% cloud cover

[1] Habitat assessment
[2] Biologists attended (1) *Bombus* Workshop - 2024 The Natural History Museum San Diego and (2) Bumble Bee Atlas Training 2023-2024
* ac – acre; hr – hour

LITERATURE REVIEW

Searches of the California Natural Diversity Database (CNDDB) and Bumble Bee Watch returned no results of CBB within five miles of the project site.[3][4] The three closest occurrence points from the citizen science database, iNaturalist, were located 4.43 miles to the north, 7.60 miles to the east, and 9.50 miles to the southeast.[5]

RESULTS

Habitat Assessment

The project site encompassed approximately 28.57 acres of potential CBB habitat, which included Brittle Bush Scrub (*Encelia farinosa* Shrubland Alliance), Brittle Bush Scrub – Disturbed, Disturbed Land, Eucalyptus Grove (*Eucalyptus* spp. Grove), and Mediterranean Grass Grasslands (*Bromus rubens* Herbaceous Semi-Natural Alliance). The disturbed lands mapped across the project site included earthen service roads. The service roads were included as potential CBB habitat, although it overstates the survey acreage for focused surveys, as numerous small mammal burrows, soil cracks, and cavities, were present and these substrates could support bumble bee nesting (Figure 4). The adjacent area to the north, northwest, and east of the site also supports potential CBB habitat. Suitable nesting substrate for CBB was noted within the project site, which included thatched grasses, rubble and debris piles, rodent

[3] California Department of Fish and Wildlife. 2024. California Natural Diversity Database and Rarefind. California Department of Fish and Wildlife: Sacramento, California. Available from: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Accessed July 9, 2024.
[4] Bumble Bee Watch. 2024. Citizen Science Database. Available from: https://www.bumblebeewatch.org/maps/. Accessed July 11, 2024.
[5] iNaturalist. 2024. Explore Observation, Crotch's Bumble Bee. Available from: https://www.inaturalist.org/observations?place_id=158630&subview=map&taxon_id=271451. Accessed July 11, 2024.

burrows, large fallen limbs, tree stumps, abandoned furniture, leaf litter, cavities, and brush piles. Plants observed during the habitat assessment and percent cover within each habitat alliance are noted in Appendix A, *Species Composition by Mapped Alliance*. Cover of flowering plants and preferred nectar sources was low throughout the project site overall. Flowering plant species were recorded during each survey, and the results are presented in Table 2, *Flowering Plant Species Observed During Survey Effort.*

Table 2
FLOWERING PLANT SPECIES OBSERVED DURING SURVEY EFFORT

Family	Scientific Name*,†	Common Name	Survey Effort[1]
ANGIOSPERMS – EUDICOTS			
Adoxaceae	*Sambucus nigra* ssp. *caerulea*	blue elderberry	HA, 1, and 2
Asteraceae	*Deinandra kelloggii*	Kellogg's tarweed	HA, 1, 2, and 3
	Encelia farinosa	brittlebush	HA, 1, 2, and 3
	*Oncosiphon piluliferum**	stinknet	HA, 1, 2, and 3
Boraginaceae	*Phacelia cicutaria* var. *hispida*	caterpillar phacelia	HA, 1, and 2
Brassicaceae	*Hirschfeldia incana**	short-pod mustard	HA, 1, 2, and 3
Cactaceae	*Cylindropuntia californica*	California cholla	HA, 1
Malvaceae	*Malva parviflora**	cheeseweed	HA, 1
Myrtaceae	*Eucalyptus camaldulensis**	river red gum	HA, 1, and 2
Polemoniaceae	*Navarretia atractyloides*	Holly leaf navarretia	HA, 1, 2, and 3
Polygonaceae	*Eriogonum fasciculatum*	buckwheat	HA, 1, 2, and 3
Solanaceae	*Datura wrightii*	jimson weed	HA, 1, 2, and 3
	Nicotiana quadrivalvis	tobacco	HA, 1, 2, and 3
ANGIOSPERMS – MONOCOTS			
Poaceae	*Avena barbata**	slender oat	HA
	*Avena fatua**	wild oats	HA
	*Bromus diandrus**	common ripgut grass	HA
	Bromus madritensis ssp. *rubens**	red brome	HA
	*Hordeum murinum**	hare barley	HA

* Non-native species
[1] Species observed flowering during a given survey. HA=habitat assessment. 1 through 3=Survey 1 through Survey 3.

Focused Surveys

Bee species observed during the survey effort were honey bee (*Apis mellifera*), cuckoo bee (*Nomada* sp.), carpenter bee (*Xylocopa* sp.), and bees in the family Halictidae. No *Bombus* species were observed. CBB or CBB nests were not detected during the survey effort and are presumed to be absent from the project site (Figure 4).

The CBB survey is valid until the start of the next CBB flight season and expires on April 1, 2025. This survey report presents a negative finding for CBB individuals and CBB nest sites within the project site, and no further pre-construction survey efforts are necessary before April 1, 2025. If groundbreaking activities do not start within the project site until after April 1, 2025, protocol CBB surveys may need to be repeated based on the current guidance for CBB at that time.

Please contact Lindsay Willrick or Kenui Moliterno at (619) 462-1515 if you have any questions.

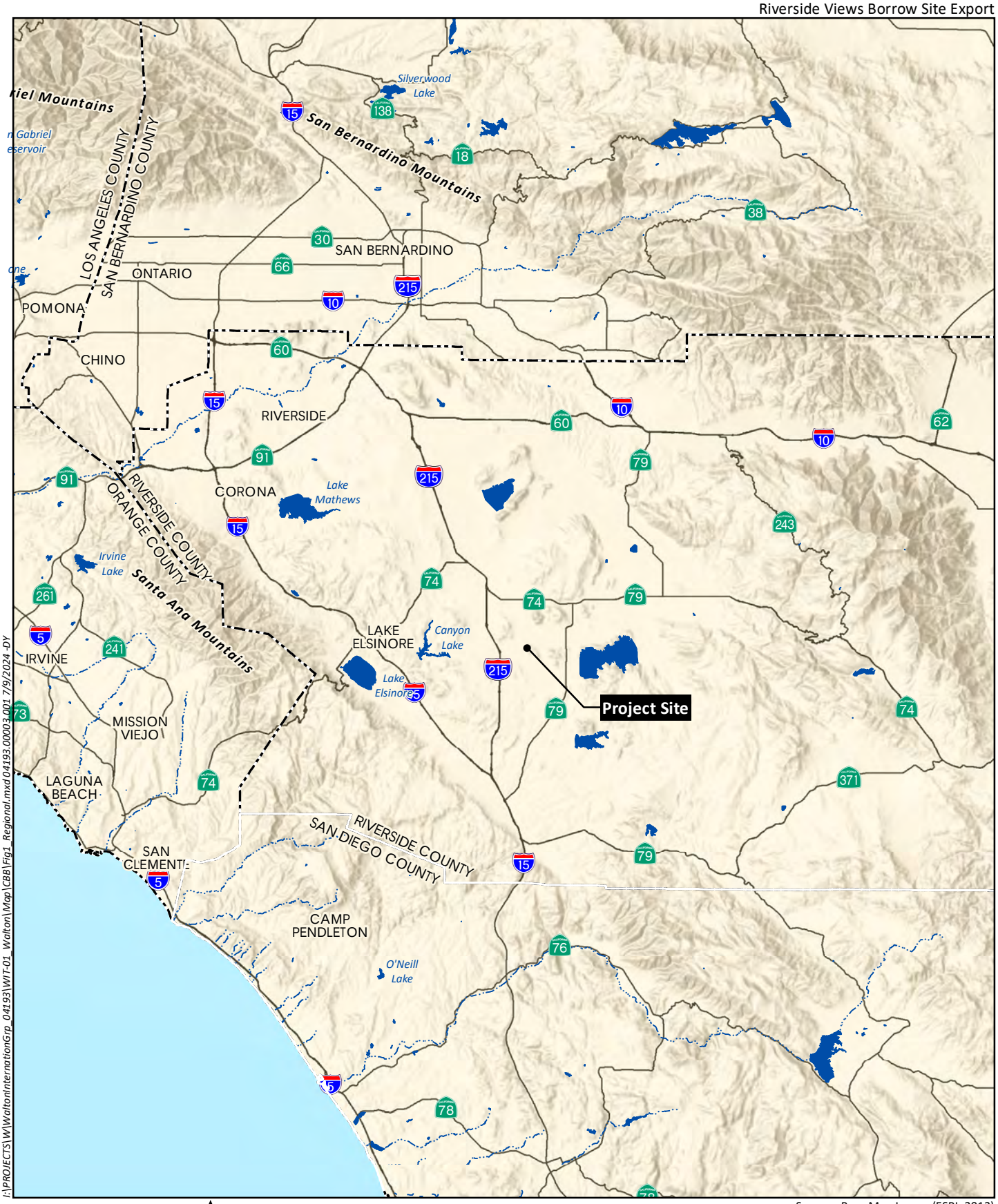
Sincerely,

Lindsay Willrick
Senior Biology Project Manager

Kenui Moliterno
Biologist II

Attachments:

Figure 1: Regional Location
Figure 2: USGS Topography
Figure 3: Aerial Photograph
Figure 4: 2024 Crotch's Bumble Bee Survey Results
Attachment A: Species Composition by Mapped Alliance
Attachment B: Representative Site Photographs



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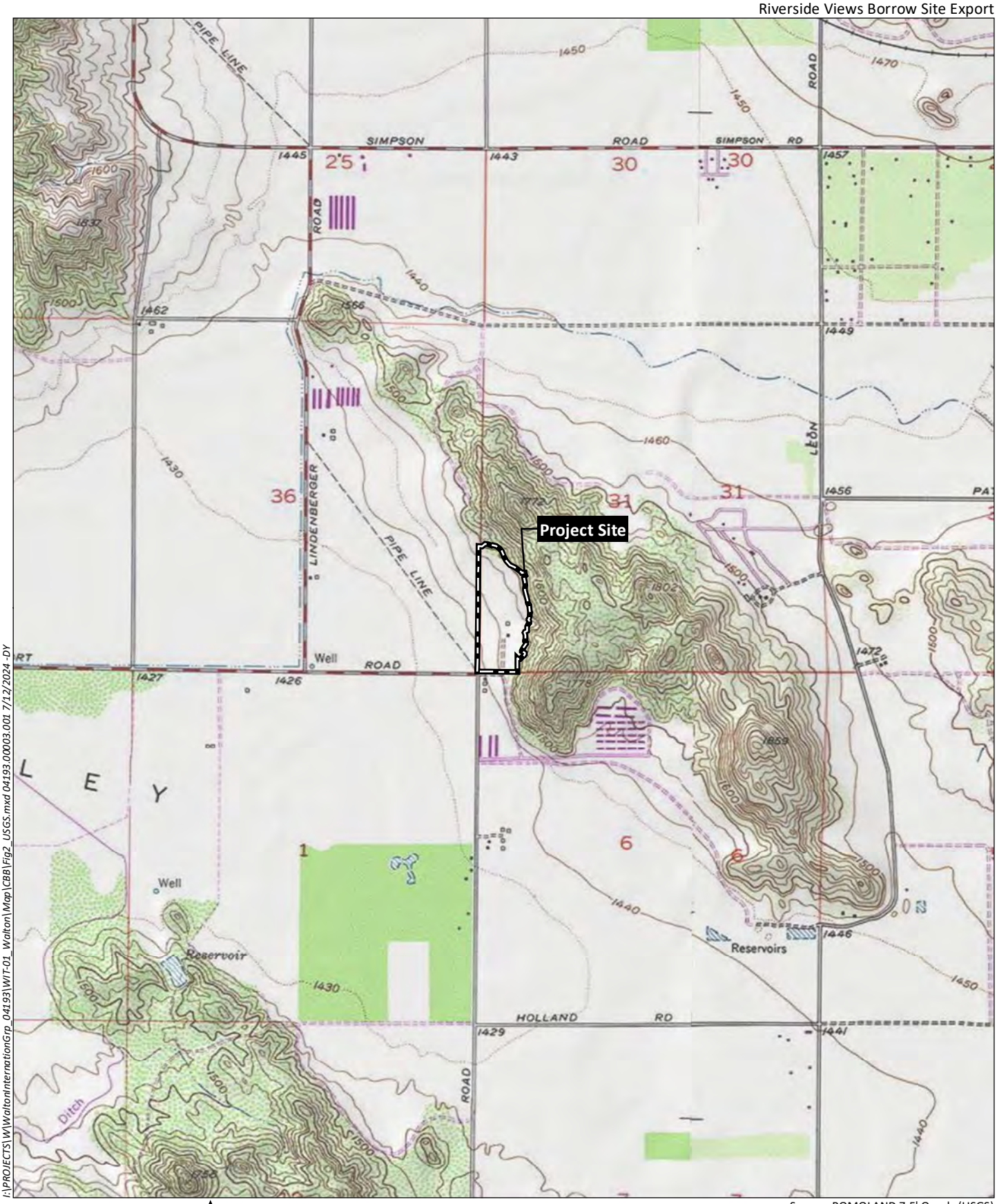
Regional Location

Figure 1



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0 2,000 Feet

Source: ROMOLAND 7.5' Quads (USGS)

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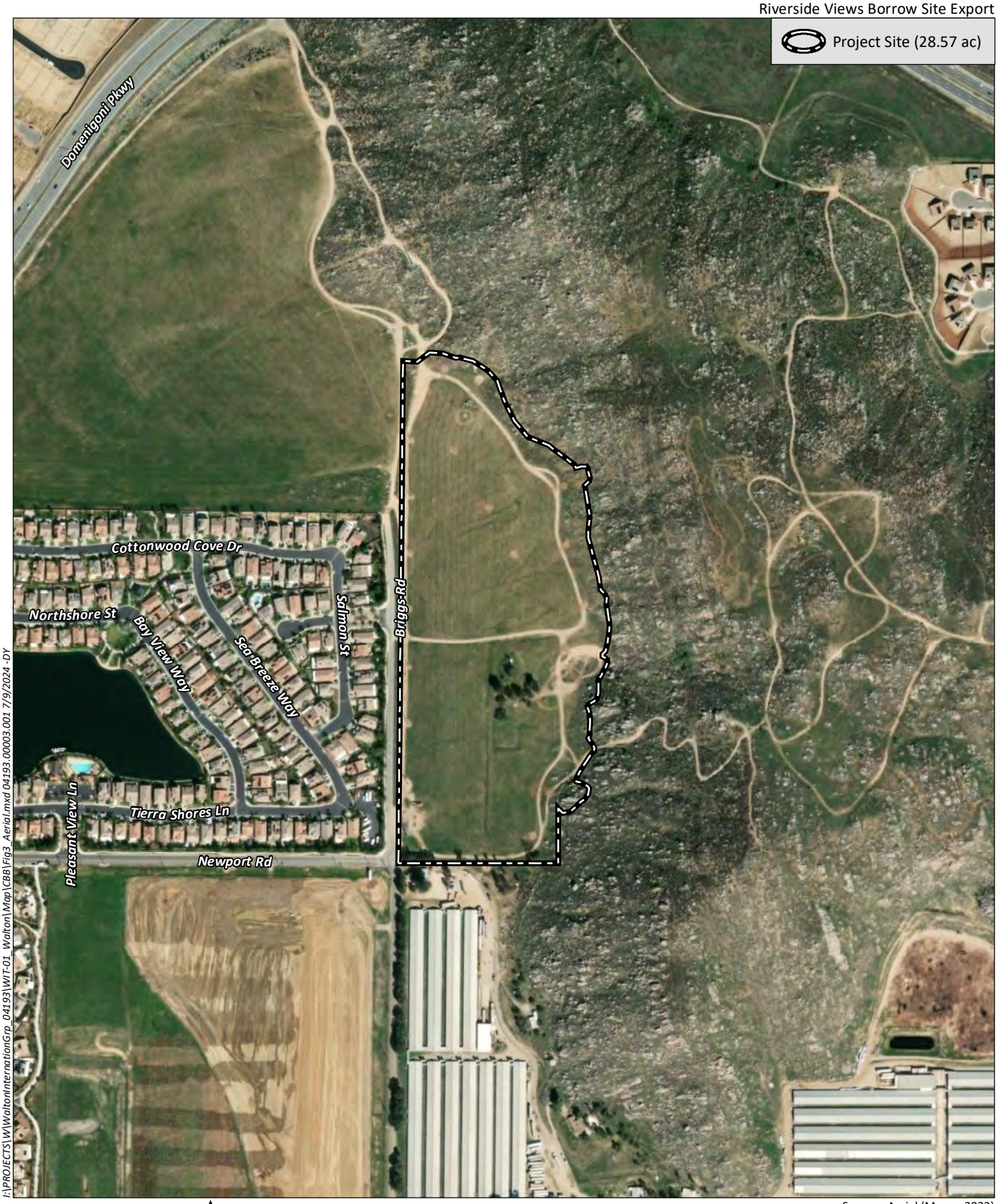
USGS Topography

Figure 2



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0 500 Feet

Source: Aerial (Maxar, 2022)

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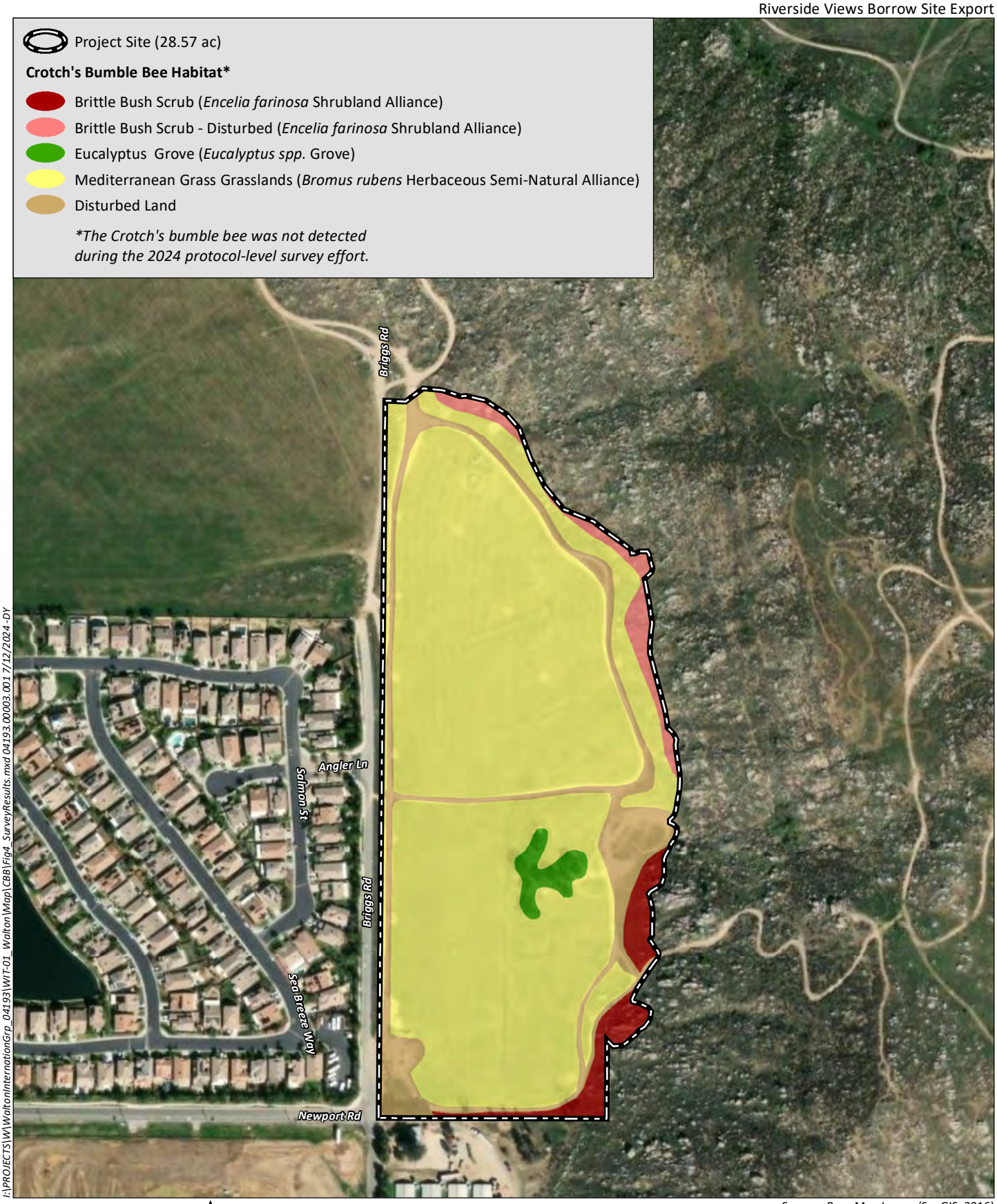
Aerial Photograph

Figure 3



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2024 Crotch's Bumble Bee Survey Results

Figure 4

Family	Scientific Name	Common Name	Vegetation Community[1]	Percent Cover
ANGIOSPERMS – EUDICOTS				
Adoxaceae	*Sambucus nigra* ssp. *caerulea*	blue elderberry	Riversidean Sage Scrub	1
Anacardiaceae	*Schinus molle**	Peruvian pepper tree	Eucalyptus Woodland	30
Asteraceae	*Artemisia californica*	California sagebrush	Riversidean Sage Scrub	15
	*Centaurea melitensis**	tocalote	Non-native Grassland	>1
	Deinandra kelloggii	Kellogg's tarweed	Riversidean Sage Scrub	1
	Encelia farinosa	brittlebush	Non-native Grassland and Riversidean Sage Scrub	1 and 30
	*Lactuca serriola**	wild lettuce	Non-native Grassland and Riversidean Sage Scrub	>1 and >1
	*Oncosiphon piluliferum**	stinknet	Non-native Grassland and Riversidean Sage Scrub	15 and 5
Boraginaceae	*Amsinckia intermedia*	rancher's fiddleneck	Non-native Grassland and Riversidean Sage Scrub	5 and >1
	Amsinckia menziesii	Menzies' fiddleneck	Non-native Grassland and Riversidean Sage Scrub	5 and >1
	Phacelia cicutaria* var. *hispida	**caterpillar phacelia**	**Riversidean Sage Scrub**	**10**
Brassicaceae	*Hirschfeldia incana**	short-pod mustard	Non-native Grassland, Riversidean Sage Scrub, and Eucalyptus Woodland	45, 5, and 2
Cactaceae	*Cylindropuntia californica*	California cholla	Riversidean Sage Scrub	2
Chenopodiaceae	*Salsola tragus**	Russian thistle	Non-native Grassland	2
Euphorbiaceae	*Croton setigerus*	dove weed	Non-native Grassland and Riversidean Sage Scrub	>1 and >1
Lamiaceae	***Salvia apiana***	**white sage**	**Riversidean Sage Scrub**	**2**
Malvaceae	*Malva parviflora**	cheeseweed	Non-native Grassland	>1
Myrtaceae	*Eucalyptus camaldulensis**	river red gum	Eucalyptus Woodland	>1
Oleaceae	*Olea europaea**	olive	Eucalyptus Woodland	1
Polemoniaceae	*Gilia angelensis*	chaparral gilia	Riversidean Sage Scrub	>1
	Navarretia atractyloides	Holly leaf navarretia	Riversidean Sage Scrub	>1
Polygonaceae	***Eriogonum fasciculatum***	**California buckwheat**	**Riversidean Sage Scrub**	**20**
Solanaceae	*Datura wrightii*	jimson weed	Non-native Grassland and Riversidean Sage Scrub	1 and 2
	Nicotiana quadrivalvis	tobacco	Riversidean Sage Scrub	>1
ANGIOSPERMS – MONOCOTS				
Poaceae	*Avena barbata**	slender oat	Non-native Grassland and Riversidean Sage Scrub	2 and 2
	*Avena fatua**	wild oats	Non-native Grassland and Riversidean Sage Scrub	2 and 2
	*Bromus diandrus**	common ripgut grass	Non-native Grassland and Riversidean Sage Scrub	1 and 1
	Bromus madritensis ssp. *rubens**	red brome	Non-native Grassland and Riversidean Sage Scrub	90 and 20
	*Hordeum murinum**	hare barley	Non-native Grassland and Riversidean Sage Scrub	1

* Non-native species

[1] Nectar species commonly used by Crotch's bumble bee (genera Acmispon, Antirrhinum, Asclepias, Cirsium, Clarkia, Cordylanthus, Dendromecon, Ehrendorferia, Eriogonum, Eschscholzia, Euthamia, Hypericum, Keckiella, Lantana, Lupinus, Monardella, Phacelia, Salvia, Trichostema, and Vicia) shown in **bold** (if detected).

Photo 1: Project site overview.

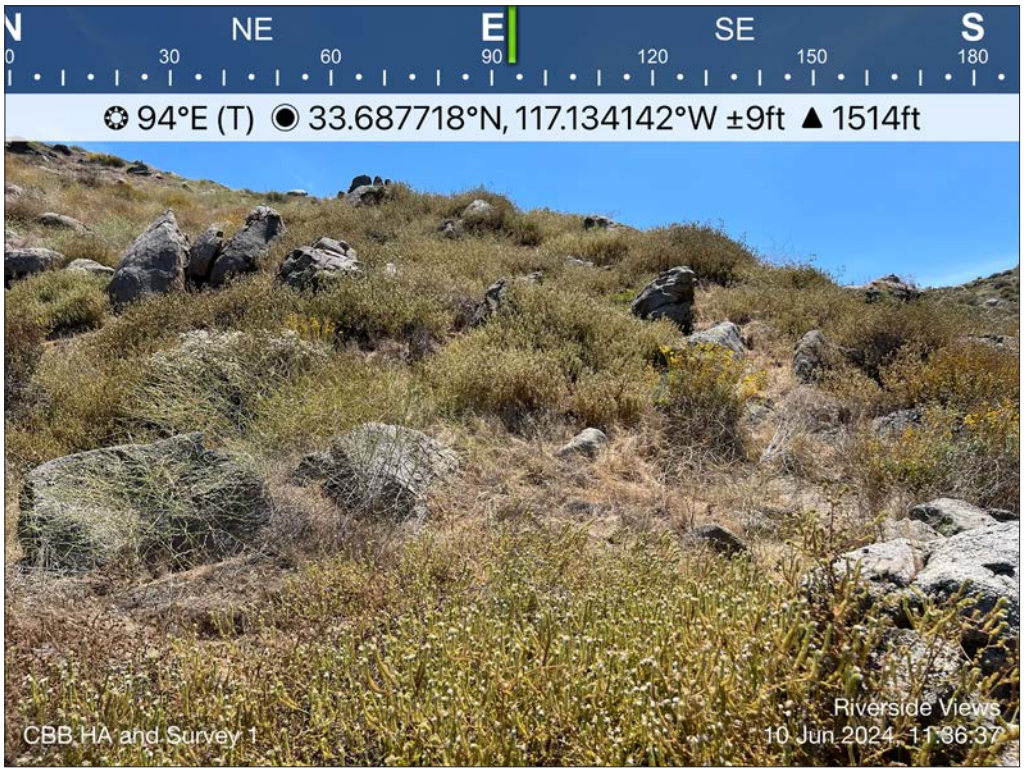

Photo 2: Riversidean sage scrub at southeast boundary of project site.

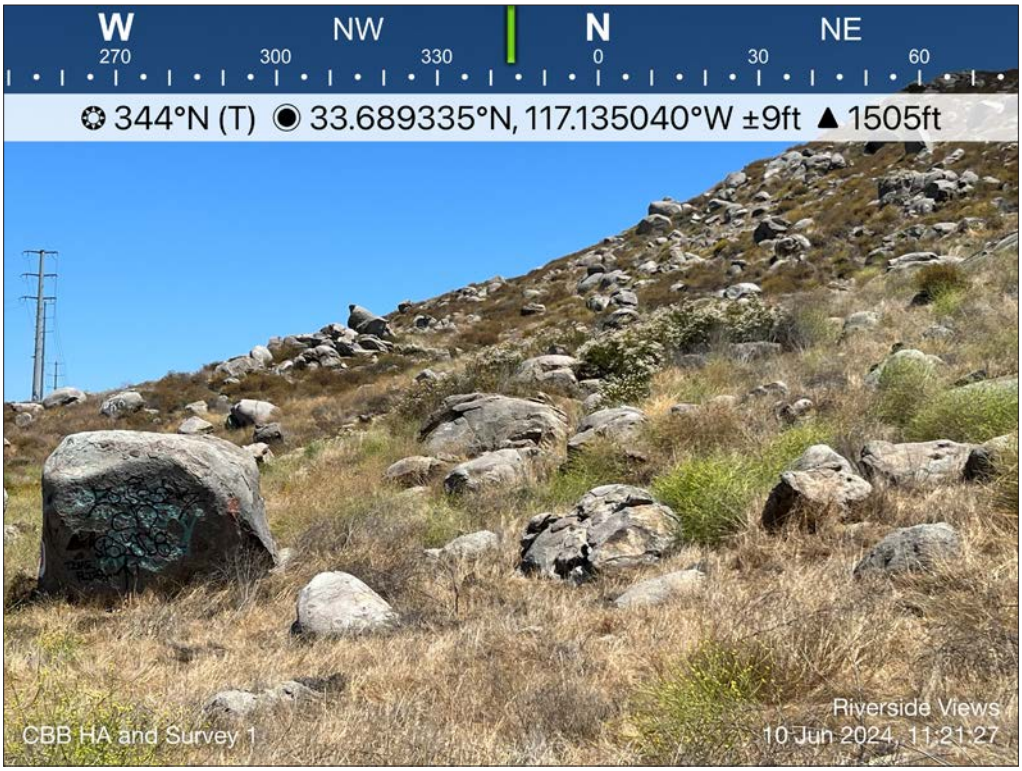

Photo 3: Disturbed Riversidean sage scrub at northeast boundary of proejct site.

Photo 4: Non-native grassland found throughout the project site.

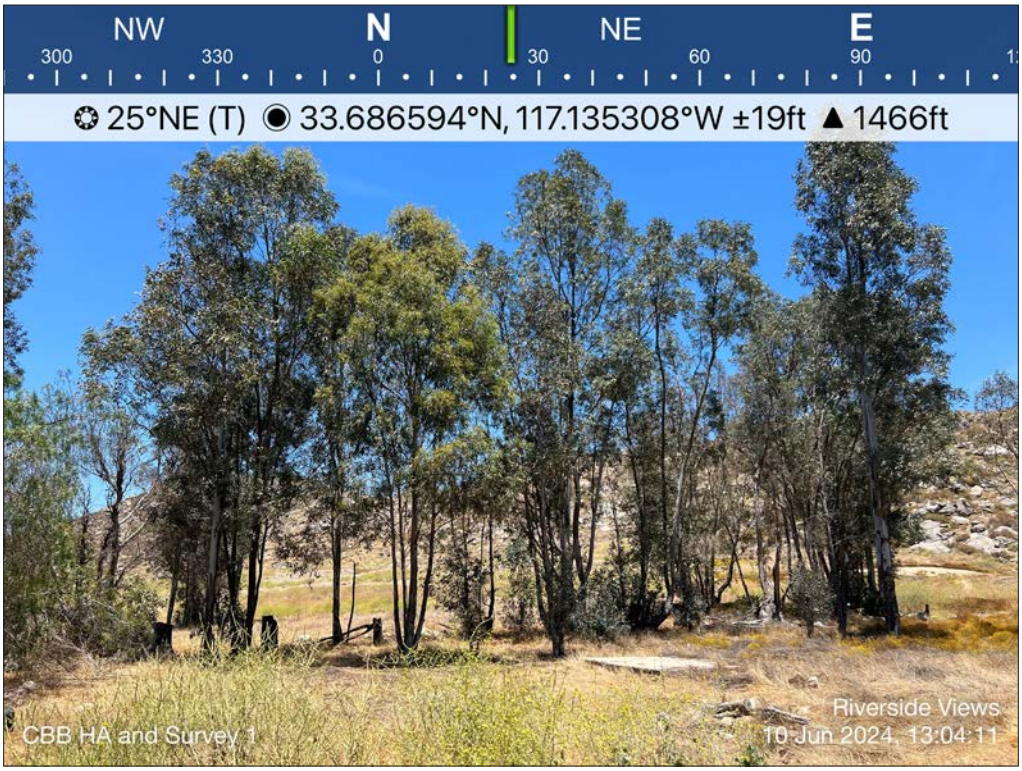

Photo 5: Euclyptus woodland within the project site.

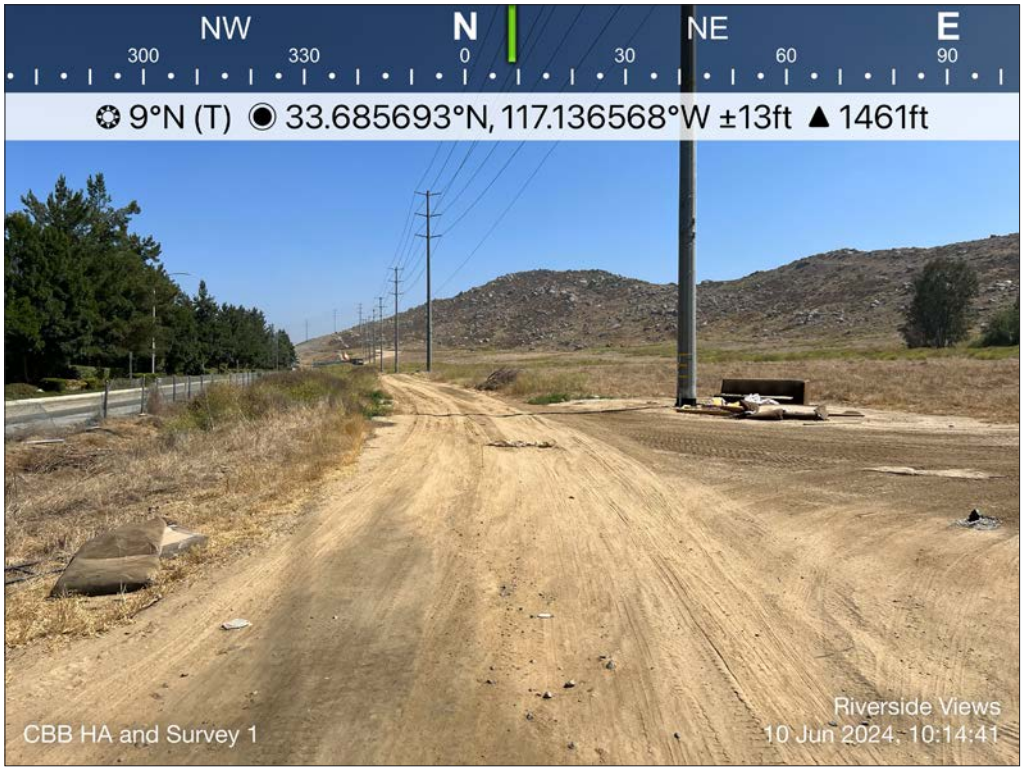

Photo 6: Disturbed land at southwest corner of project site.

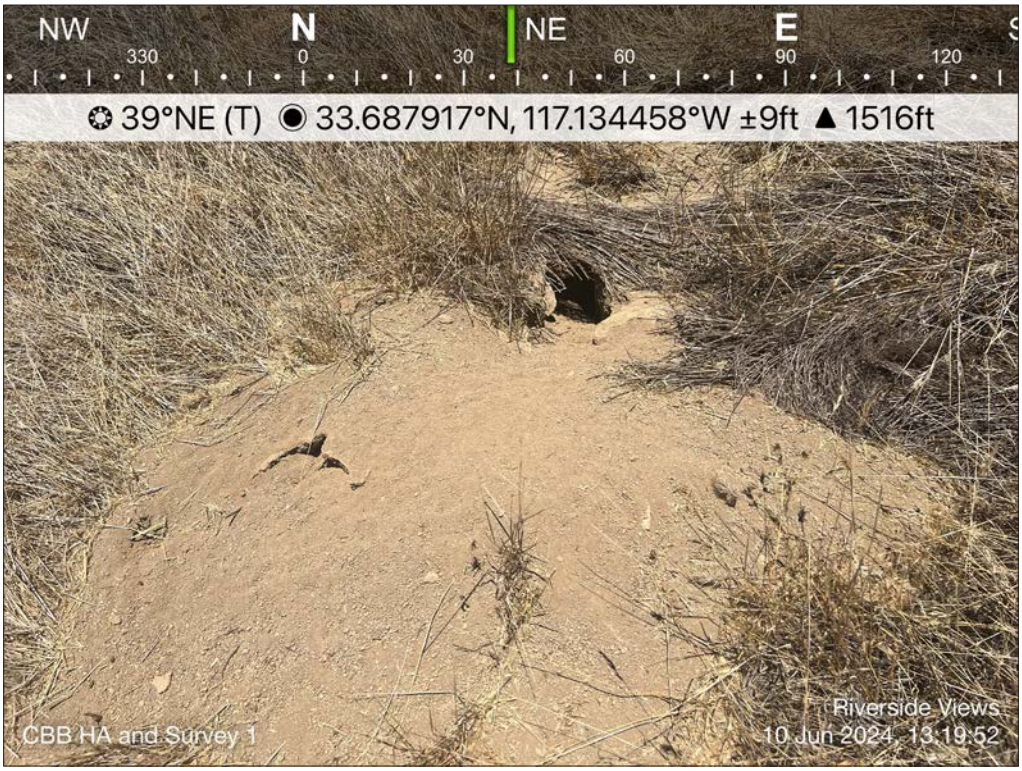

Photo 7: Small mammal burrouws found throughout the project site.

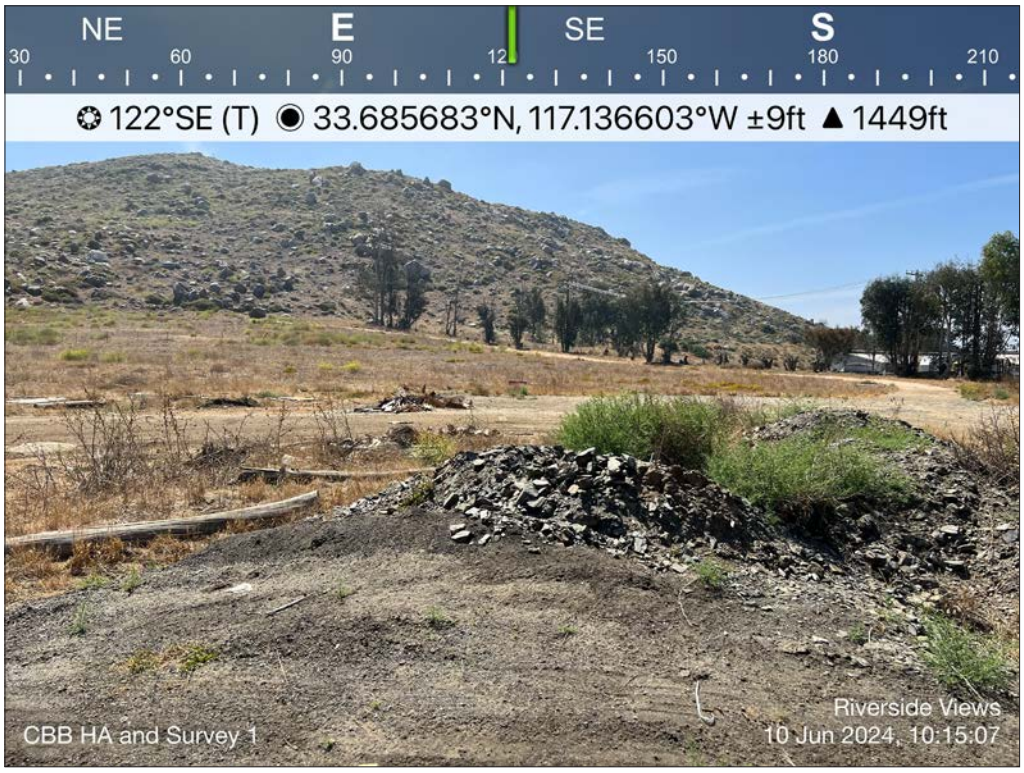

Photo 8: Rubble pile at southwest corner of project site.