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July 9, 2024 08054.00004.001

Optimus Building Corporation
c/o Mike Naggar and Associates, Inc.
445 S. D Street
Perris, CA 92750

Subject: Crotch's Bumble Bee (*Bombus crotchii*) Habitat Assessment for the Perris Gateway Project

Dear Mr. Naggar:

This letter presents the results of a habitat assessment for the California Endangered Species Act (CESA) candidate species Crotch's bumble bee (*Bombus crotchii*) conducted by HELIX Environmental Planning, Inc. (HELIX) for the Perris Gateway Project (project). This report describes the methods used to perform the survey and the results.

PROJECT LOCATION

The approximately 20-acre project site is located in the northwestern portion of the City of Perris, Riverside County, California (Figure 1, *Regional Location*). It is depicted within Section 1 of Township 4 South, Range 4 West on the Perris and Steele Peak U.S. Geological Survey (USGS) 7.5-minute quadrangle map (Figure 2, *USGS Topography*). The project site occurs north of Ramona Expressway, west of Webster Avenue, and east of Interstate (I) 215 (Figure 3, *Aerial Photograph*).

METHODS

HELIX consulted CDFW's California Natural Diversity Database (CNDDB), Bumble Bee Watch, and iNaturalist to determine the nearest Crotch's bumble bee occurrence(s). HELIX biologist Cache Tucker conducted the habitat assessment on June 20, 2024. In accordance with the California Department of Fish and Wildlife's (CDFW) Survey Considerations for CESA Candidate Bumble Bee Species, the biologist mapped habitat alliances within the project site.[1] The habitat alliances were classified following the

[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.

Manual of California Vegetation.[2] The biologist recorded the estimated absolute percent cover for individual species for each habitat alliance. In addition to foraging resources, potential nesting habitat (e.g., small mammal burrows, bunch grasses, thatch, brush piles, old bird nests, and dead trees) were noted during the assessment.

LITERATURE REVIEW

No Crotch's bumble bee records were found to occur within or adjacent to the project site during the literature review. The nearest Crotch's bumble bee record in CNDDB was observed in 2020 within undeveloped hillsides, approximately 3.0 miles south of the project site.[3] The nearest record in the Bumble Bee Watch was observed in 2023 at the University of California Riverside Botanic Garden, approximately 9.0 miles northwest of the project site.[4] The nearest record in iNaturalist was observed in 2024 within undeveloped land west of I-215, approximately 1.5 miles northwest of the project site.[5] Based on the observation timing (March), this observation likely represents a wandering queen searching for a suitable nest site, given that the queen flight season is February through March.[6]

RESULTS

The project site consists of disturbed vacant land that was previously used for agriculture (dry farming). The plant species diversity on the project site is limited and consists mostly of non-native annual species as a result of dry farming, regular discing, and surrounding development. Based on the habitat mapping, disturbed habitat dominated by bare ground, stinknet (*Oncosiphon pilulifer*), and wild oats (*Avena* sp.) is the only habitat type on the property (Table 1, *Species Composition by Mapped Alliance*). The disturbed habitat did not translate to a habitat alliance and was left as disturbed habitat on the vegetation map. Ten ground squirrel (*Otospermophilus beecheyi*) burrows were noted on the project site, which could potentially be used as nesting habitat if sufficient foraging resources occurred on-site or nearby to support a colony.

[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.

[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 2, 2024.

[4] Bumble Bee Watch. 2024. Citizen Science Database. Available from: https://www.bumblebeewatch.org/maps/. Accessed July 2, 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 2, 2024.

[6] 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.

Table 1
SPECIES COMPOSITION BY MAPPED ALLIANCE[1]

Scientific Name[2]	Common Name	Percentage	Flowering Status
Disturbed			
Avena sp.	wild oats	15	Dead
Oncosiphon pilulifer	stinknet	15	Flower
Centaurea solstitialis	yellow-star thistle	5	Flower
Lactuca serriola	wild lettuce	5	Dead
Bromus rubens	red brome	5	Dead
Hirschfeldia incana	short-pod mustard	5	Flower
Schismus barbatus	Mediterranean grass	5	Dead
Acacia sp.	acacia	5	Seed
Cinnamomum camphora	camphor tree	5	Seed
Salsola tragus	Russian thistle	2	Flower
Sonchus oleraceus	common sow thistle	2	Seed
Amaranthus albus	tumbleweed amaranth	2	Dead
Platanus × hispanica	London plane	2	Seed
Stephanomeria sp.	wire lettuce	2	Dead
Tribulus terrestris	puncture vine	2	Flower
Bare Ground		20	-

[1] Additional species observed at less than 2 percent cover are not included in table. Species previously documented on the project site but not observed during assessment are also not included in table.

[2] 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).

The majority of species noted in Table 1 were either dead or in seed during the habitat assessment, with the exception of puncture vine (*Tribulus terrestris*), Russian thistle (*Salsola tragus*), short-pod mustard (*Hirschfeldia incana*), stinknet (this species is not used by larger pollinators),[7] and yellow-star thistle (*Centaurea solstitialis*). Nectar species commonly used by Crotch's bumble bee (e.g., genera *Acmispon, Antirrhinum, Asclepias, Cirsium, Clarkia, Cordylanthus, Dendromecon, Ehrendorferia, Eriogonum, Eschscholzia, Euthamia, Hypericum, Keckiella, Lantana, Lupinus, Monardella, Phacelia, Salvia, Trichostema, and/or Vicia)*) were not noted on the site, with the exception of a few scattered California buckwheat (*Eriogonum fasciculatum*) shrubs (less than one percent cover on the site).

The project site is surrounded by commercial, industrial, and residential development to the north, east, and west, and regularly disced fields to the south. These surrounding areas do not appear to support suitable Crotch's bumble bee habitat. Based on aerial review, the nearest potential suitable habitat is located 2.5 miles east of the project site (Perris Reservoir) and 1.1 miles southwest of the project site (Mead Valley).[8]

[7] California Invasive Plant Council. 2024. Plant Assessment Form, *Oncosiphon pilulifer*. Available from: https://www.cal-ipc.org/plants/paf/oncosiphon-pilulifer/. Accessed July 2, 2024.

[8] Google Earth. 2024. Aerial Imagery of the Perris Gateway Commercial Development Project, 33.845144°, -117.249241°. Aerial Imagery from February 2024. Available from: http://www.google.com/earth/index.html. Accessed July 2, 2024.

Bumble bees have an annual life cycle. Queens establish nests in the spring and produce female workers, males, and female gynes (i.e., new queens) through summer. The queen, female workers, and males die in the fall. Gynes hibernate through winter and reemerge the following spring to establish new colonies.[9] Colonies require a persistent nectar source through summer to survive. Without a succession of flowers available from spring through summer, a colony will starve and fail to reproduce new gynes.[10] Most of the species noted on the project site were either dead or in seed. Nectar species commonly used by Crotch's bumble bee were not noted on the project site, with the exception of a few California buckwheat shrubs scattered throughout the site. The surrounding areas do not include suitable habitat for Crotch's bumble bee, with the nearest potentially suitable patch of habitat located west of I-215 and over one mile southwest of the project site. Based on the limited quantity and diversity of nectar resources on the project site, lack of commonly used nectaring species, and absence of suitable adjacent habitat, the project site does not support sufficient resources to sustain a colony.

CONCLUSION

Based on the limited quantity and diversity of nectar resources on the project site and surrounding areas and a lack of known occurrences within adjacent areas, the project site does not contain habitat suitable to support Crotch's bumble bee, and focused surveys are not required.

Please contact Lauren Singleton at LaurenS@helixepi.com or Cache Tucker at CacheT@helixepi.com should you have any questions about this report.

Sincerely,

Lauren Singleton
Senior Biology Project Manager

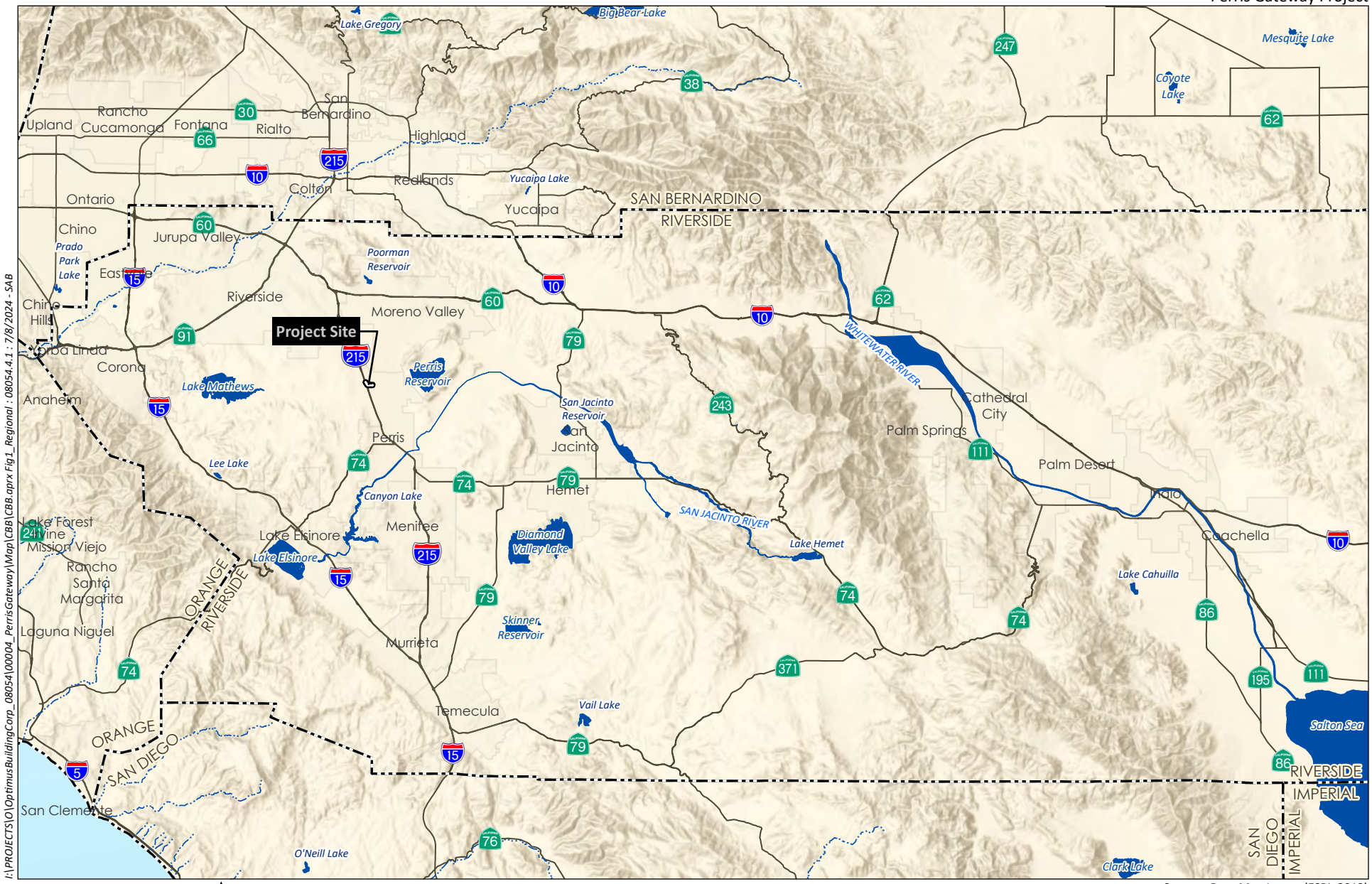
Cache Tucker
Biologist

Attachments:

Figure 1: Regional Location
Figure 2: USGS Topography
Figure 3: Aerial Photograph
Figure 4: Vegetation
Attachment A: Plant Species Observed
Attachment B: Representative Site Photos

[9] California Department of Fish and Wildlife. 2019. Evaluation of the Petition from the Xerces Society, Defenders of Wildlife, and the Center for Food Safety to List Four Species of Bumble Bees as Endangered Under the California Endangered Species Act. April 4. Available from: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=166804&inline. Accessed July 2, 2024.

[10] Goulson, D., G.C. Lye, and B. Darvill. 2008. Decline and conservation of bumble bees. Annual Review of Entomology. 53: 191–208.



Source: Base Map Layers (ESRI, 2013)

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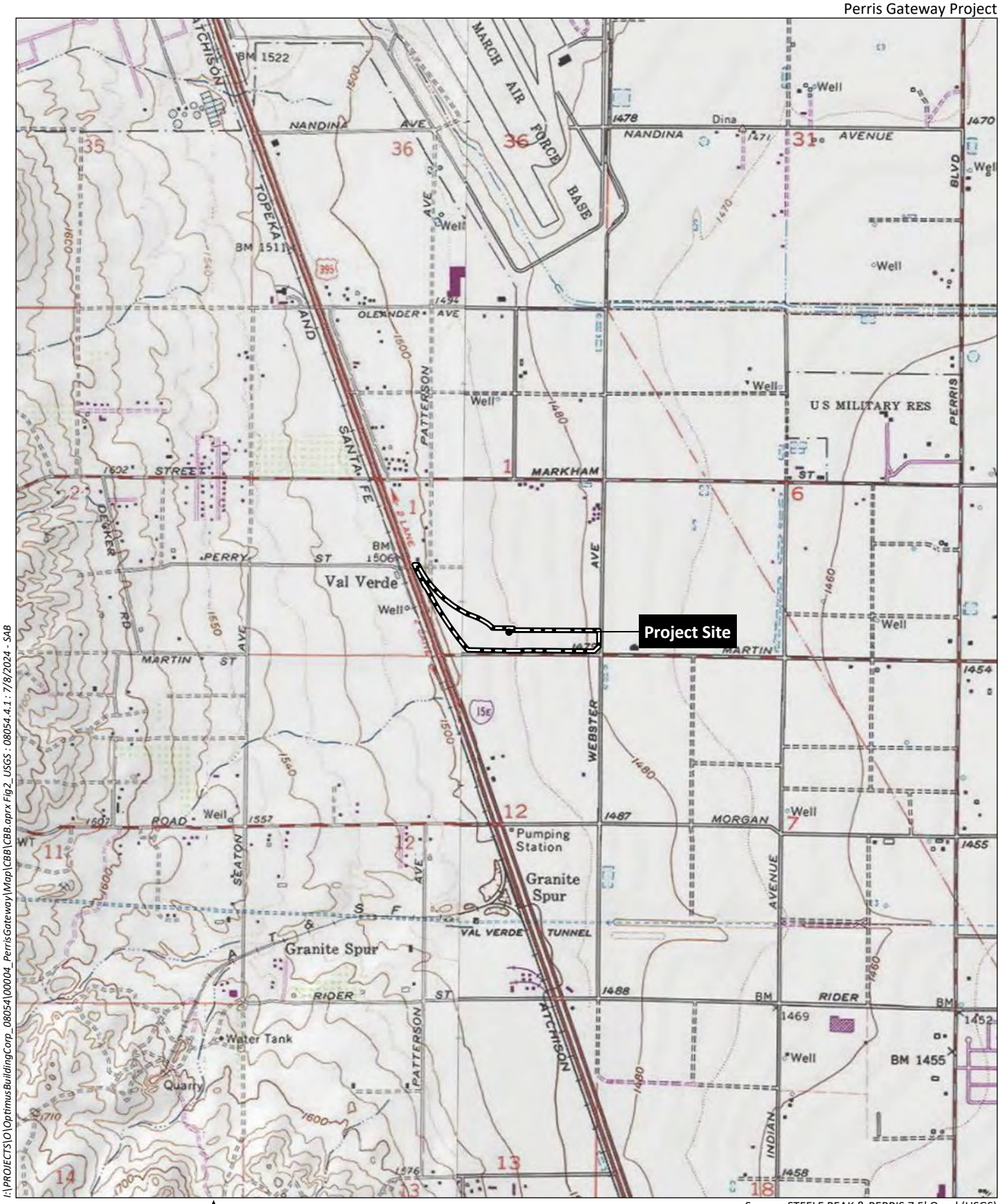
Regional Location

Figure 1



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0 2,000 Feet

Source: STEELE PEAK & PERRIS 7.5' Quad (USGS)

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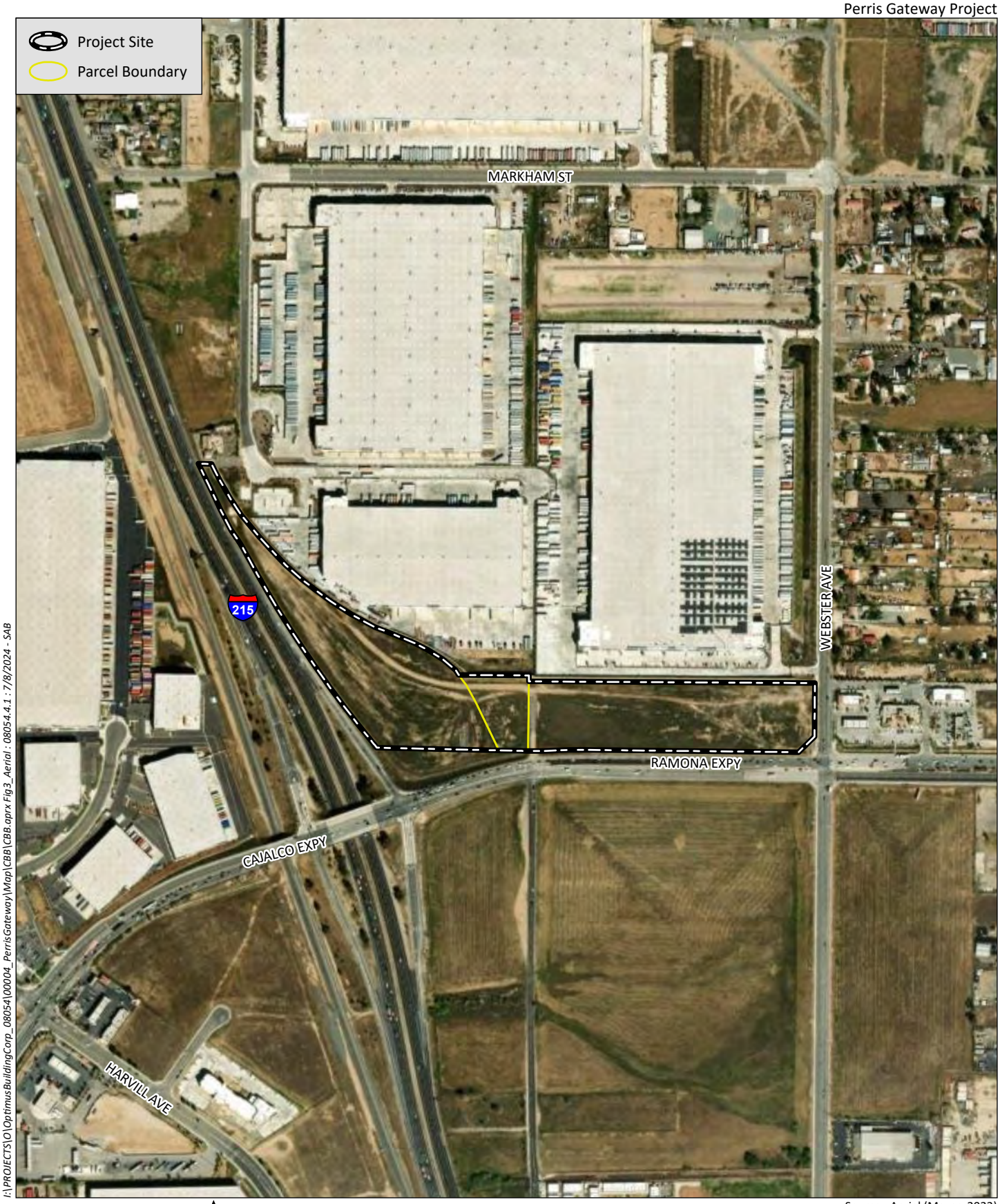
USGS Topography

Figure 2



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0 600 Feet

Source: Aerial (Maxar, 2022)

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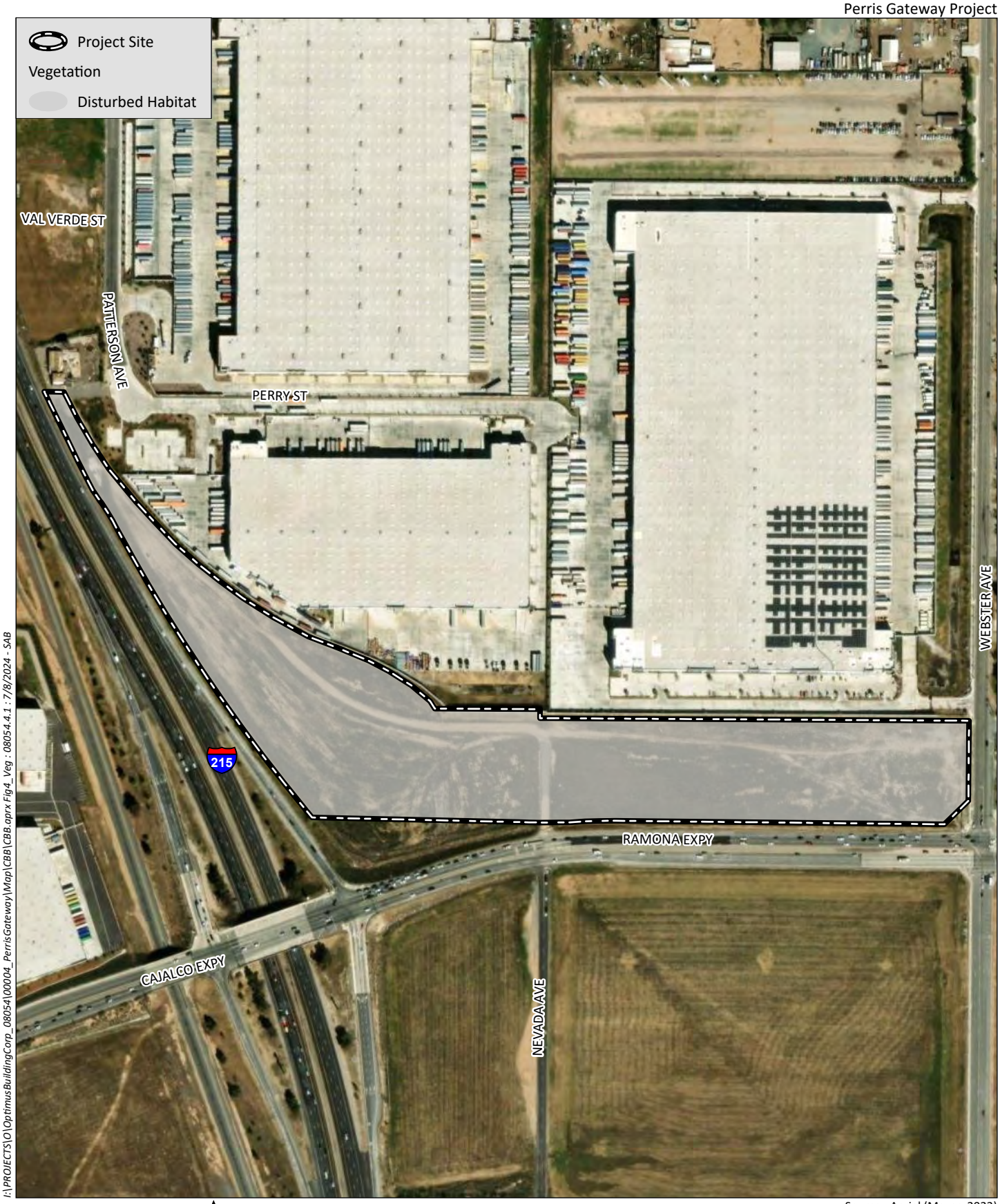
Aerial Photograph

Figure 3



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0 400 Feet

Source: Aerial (Maxar, 2022)

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Vegetation

Figure 4

Family	Scientific Name	Common Name
ANGIOSPERMS – EUDICOTS		
Amaranthaceae	*Amaranthus albus**	tumbleweed amaranth
Asteraceae	*Baccharis salicifolia*	mule fat
	Baccharis sarothroides	broom baccharis
	*Centaurea solstitialis**	yellow-star thistle
	Eriogonum fasciculatum	California buckwheat
	Helianthus californicus	California sunflower
	Heterotheca grandiflora	telegraph weed
	Isocoma menziesii	white flowered goldenbush
	*Lactuca serriola**	wild lettuce
	*Oncosiphon piluliferum**	stinknet
	*Sonchus oleraceus**	common sow thistle
	Stephanomeria sp.	wire lettuce
Brassicaceae	*Hirschfeldia incana**	short-pod mustard
Chenopodiaceae	*Salsola tragus**	Russian thistle
Equisetaceae	*Equisetum* sp.	horsetail
Fabaceae	*Acacia sp.**	acacia
	*Melilotus albus**	white sweetclover
Fagaceae	*Quercus agrifolia*	coast live oak
Geraniaceae	*Erodium* sp.*	filaree
Lauraceae	*Cinnamomum camphora**	camphor tree
Malvaceae	*Malva parviflora*	cheeseweed
Myrtaceae	*Melaleuca* sp.*	bottle brush tree
Platanaceae	*Platanus x hispanica**	London plane
Rosaceae	*Adenostoma fasciculatum*	chamise
Solanaceae	*Nicotiana glauca**	tree tobacco
Tamaricaceae	*Tamarix ramosissima**	tamarisk
Zygophyllaceae	*Tribulus terrestris**	puncture vine
ANGIOSPERMS – MONOCOTS		
Agavaceae	*Agave americana**	American century plant
Poaceae	*Avena* sp.*	wild oat
	*Bromus rubens**	red brome
	*Schismus barbatus**	Mediterranean grass

* Non-native species

Photo 1: Disturbed habitat with scattered non-native annuals and ornamental shrubs and trees in the northeastern portion of the project site, facing northwest.

Photo 2: Disturbed habitat with scattered non-native annual species in the southwestern portion of the project site, facing northwest.

Photo 3: Disturbed habitat with scattered non-native annual species in the southeastern portion of the project site, facing west.

Photo 4: Disturbed habitat with scattered non-native annuals in the southeastern portion of the project site, facing east.