4.4 BIOLOGICAL RESOURCES

4.4.1 INTRODUCTION

The Biological Resources chapter of the EIR evaluates the potential for the proposed project to result in impacts to biological resources known to occur or potentially occur within the proposed project site or within off-site improvement areas. Information for the Biological Resources chapter is primarily drawn from the Biological Resources Assessment (BRA) prepared for the proposed project by ECORP Consulting, Inc. (see Appendix D)[1] and a peer review of the BRA by Live Oak Associates, Inc. (see Appendix E),[2] as well as the *City of Antioch General Plan*[3] and associated EIR.[4]

4.4.2 EXISTING ENVIRONMENTAL SETTING

The following sections describe the regional and project setting of the site, as well as the existing biological resources occurring in the proposed project area.

Regional Setting

The City of Antioch is located in Contra Costa County, in the East Bay region of the San Francisco Bay. The City is located along the San Joaquin-Sacramento River Delta and is a suburb of San Francisco and Oakland. The City of Antioch is bordered by the San Joaquin River (northern region), the City of Pittsburg (western region), and the Cities of Oakley and Brentwood (eastern region). The southern border of the City is adjacent to agricultural and open space areas on the flanks (lateral sides) of Mt. Diablo. The City encompasses approximately 50 square miles, including the area of the City's jurisdictional boundaries and sphere of influence.

In the vicinity of the proposed project site, surrounding land uses include a single-family, medium density residential subdivision to the north, undeveloped land to the south (planned for future residential), Deer Valley Road and Kaiser Permanente Antioch Medical Center to the east, and Empire Mine Road and undeveloped land (planned for future residential) to the west.

Project Setting

Currently, the project site has a cattle-grazing operation, a rural single-family residence, and various barns and outbuildings located on the eastern portion of the site. Sand Creek, a tributary

1 ECORP Consulting, Inc. *Biological Resources Assessment, The Ranch in Antioch, Contra Costa County, California.* November 2017.
2 Live Oak Associates, Inc. *Peer review for the proposed The Ranch project in Antioch (Cowan Ranch), Antioch, Contra Costa County, California (PN 2160-01).* November 13, 2017.
3 City of Antioch. *City of Antioch General Plan*. Updated November 24, 2003.
4 City of Antioch. *Draft General Plan Update Environmental Impact Report*. July 2003.

of Marsh Creek, flows west to east through the proposed project site. The topography of the site is varied, ranging from relatively level areas in the eastern and central portions of the site, gently-sloping hills immediately north and south of Sand Creek, and moderate to steep slopes in the western portion of the site. Elevations throughout the site range from approximately 200 feet to 500 feet above mean sea level (msl).

The majority of the project site consists of undeveloped grassland used primarily for livestock grazing. Based on a tree survey conducted as part of the BRA, 16 tree species and 255 individual trees were mapped within the project site. The trees occur primarily within the southwestern portion of the project site and along Sand Creek. On-site native tree species include California buckeye, blue oak, valley oak, and interior live oak.

It should be noted that the BRA prepared for the proposed project includes analysis of off-site infrastructure improvement areas associated with proposed project (see Figure 4.4-1). The off-site improvement areas comprise approximately 81.8 acres located to the west and east of the site. Currently, a water tank and a paved road are located within the northwestern off-site improvement area. The eastern off-site improvement area consists primarily of portions of Deer Valley Road and Sand Creek Road.

Vegetation Communities and Land Cover Types

The BRA documented three vegetation communities and land cover types within the project area, including annual grassland, ruderal community vegetation, and developed land, which are described below.

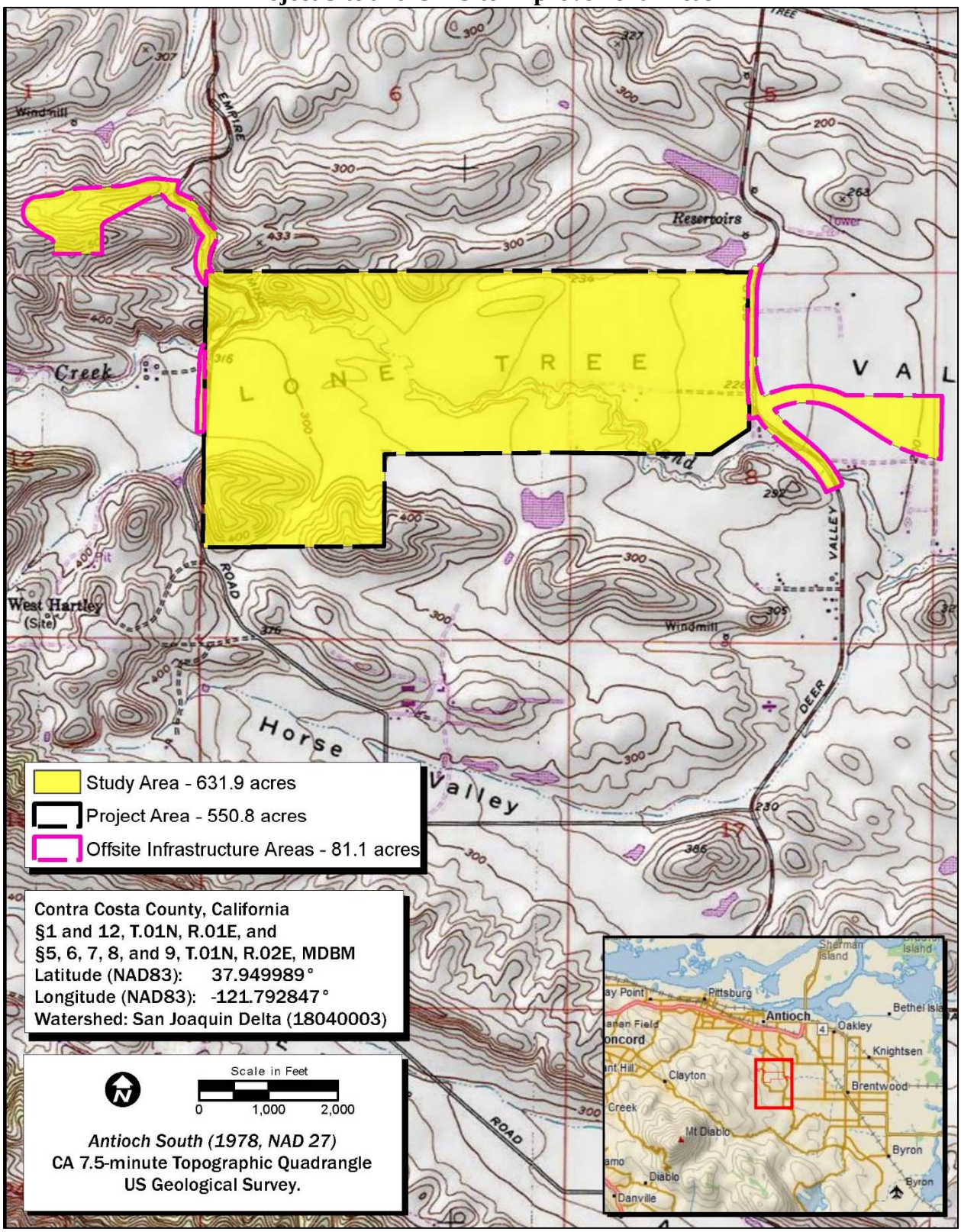
Annual Grassland

The majority of the project area is composed of annual grassland. Annual grasslands within the project area are dominated primarily by non-native annual grass species, including ripgut brome (*Bromus diandrus*), soft brome (*Bromus hordeaceous*), wild oat (*Avena fatua*), foxtail barley (*Hordeum murinum*), and Italian ryegrass (*Festuca perennis*). Common forb species within the annual grasslands include common gumplant (*Grindelia camporum*), bur clover (*Medicago polymorpha*), and redstemmed filaree (*Erodium cicutarium*). Annual grasslands within the project area also include scattered native trees, which occur at low density in the southwestern portion of the project area and along Sand Creek. Native tree species within annual grasslands in the project area include California buckeye, blue oak, valley oak, and interior live oak.

Ruderal Community Vegetation

Ruderal vegetation occurs adjacent to Deer Valley Road and Sand Creek Road within the eastern off-site improvement area, and surrounding the rural residence within the project area. The ruderal vegetation community is composed primarily of non-native forbs and grasses characteristic of recently disturbed sites. Dominant plant species within the ruderal vegetation communities in the project area include yellow star-thistle (*Centaurea solstitialis*), stinkwort (*Dittrichia graveolens*), Russian thistle (*Salsola tragus*), Italian ryegrass, and wild oat. A grove of planted blue gum (*Eucalyptus globulus*) also occurs along the western boundary of the project area.

Figure 4.4-1
Project Site and Off-Site Improvement Areas



Source: ECORP Consulting, Inc., 2017

Developed Land

Developed portions of the project area include roads, landscaped areas, a rural residence, a water tank in the northwestern off-site improvement area, and other paved or recently disturbed areas. The developed portions of the project area do not contain appreciable native or naturalized vegetation.

Sand Creek and Sand Creek Corridor

Sand Creek is located within portions of the off-site improvement areas and also runs east/west through the project site. Within the project site, Sand Creek and the associated approved California Department of Fish and Wildlife (CDFW) 1602 jurisdictional area are referred to as the Sand Creek corridor. CDFW 1602 jurisdictional areas include beds, channels, or banks of rivers, streams, and lakes. The CDFW reviews any proposed actions within 1602 areas, and, as necessary, requires proposed actions to comply with measures to protect fish and wildlife. The Sand Creek boundary within the off-site improvement areas has not yet been subject to agency review.

Special-Status Species

For this analysis, special-status species are considered any of the following:

- Listed or proposed for listing as threatened or endangered under federal Endangered Species Act (ESA) or candidates for possible future listing (U.S. Fish and Wildlife Service [USFWS] 2015);
- Listed or candidates for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA);
- Listed as Fully Protected under the California Fish and Game Code;
- Animals identified by CDFW as species of special concern;
- Plants considered by CDFW to be "rare, threatened, or endangered in California" and assigned a California Rare Plant Rank (CRPR). The CDFW system includes five rarity and endangerment ranks for categorizing plant species of concern, which are summarized as follows:
    - CRPR 1A Plants presumed to be extinct in California;
    - CRPR 1B Plants that are rare, threatened, or endangered in California and elsewhere;
    - CRPR 2 Plants that are rare, threatened, or endangered in California but more common elsewhere;
    - CRPR 3 Plants about which more information is needed (a review list); and
    - CRPR 4 Plants of limited distribution (a watch list);
- Meeting the definition of rare or endangered under CEQA Sections 15380(b) and (d).

<u>Special-Status Plants</u>

Based on queries of the CDFW's Natural Diversity Database (CNDDB) and other information sources, the BRA returned records of 75 special-status plants that occur within the project region. Table 4.4-1 provides a list of all special-status plant species that are known to occur or have the potential to occur within 10 miles of the project site based on their local and regional distribution, but are not listed as rare, threatened, or endangered by either the CDFW or USFWS. The table

provides information for each species, including common and scientific name, protected status, habitat suitability of the site, and potential for each species to occur based on protocol-level special-status plant surveys conducted within the project area by Monk and Associates (M&A) in March, April, and July of 2015 and habitat observed during a reconnaissance-level survey conducted by ECORP biologists on April 12 and August 22, 2017.

As shown in Table 4.4-1, a total of 75 special-status plant species were identified as having the potential to occur within the project site or off-site improvement areas based on a review of relevant literature. However, upon further analysis by ECORP and a review of habitat observed during the reconnaissance-level site surveys, 37 species were considered to be absent from the project site due to the lack of suitable habitat.

It should be noted that M&A conducted protocol-level rare plant surveys in 2015 and identified three California Native Plant Society (CNPS) ranked plants in the project site: shining navarretia (*Navarretia nigelliformis ssp. radians*); crownscale (*Atriplex coronata var. coronata*); and San Joaquin spearscale (*Extriplex joaquinana*) (see Figure 4.4-2). With the exception of Carquinez goldenbush (*Isocoma arguta*), M&A's survey dates correspond with all rare plant survey periods. Therefore, all other special-status plant species included in Table 4.4-1 are absent from the project site. Brief descriptions of the four-plant species that occur or have potential to occur within the project site are presented below. In addition, the 38-plant species that have the potential to occur within the off-site improvement areas, are listed below.

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Large-flowered fiddleneck	*Amsinckia grandiflora*	FE/CE/Rank 1B.1	Cismontane woodland and valley and foothill grasslands at elevations between 886 and 1,804 feet above sea level.	**Absent/Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.
California androsace	*Androsace elongata ssp. acuta*	Rank 4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland at elevations between 492 and 4,281 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Slender silver moss	*Anomobryum julaceum*	Rank 4.2	Damp rock and soil on outcrops, usually on road cuts in broadleaved upland forest, lower montane coniferous forest, and North Coast coniferous forest at elevations between 328 and 3,281 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Coast rockcress	*Arabis blepharophylla*	Rank 4.3	Rocky soils in broadleafed upland forest, coastal bluff scrub, coastal prairie, and coastal scrub at elevations between 10 and 3,609 feet above sea level.	**Absent/Absent.** The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Mt. Diablo manzanita	*Arctostaphylos auriculata*	Rank 1B.3	Sandstone chaparral and cismontane woodland at elevations between 443 and 2,133 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Contra Costa manzanita	*Arctostaphylos manzanita ssp. Laevigata*	Rank 1B.2	Rocky soils in chaparral at elevations between 1,410 and 3,609 feet above sea level.	**Absent/Absent.** The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas
Alkali Milk-Vetch	*Astragalus tener var. tener)*	Rank 1B.2	Playas, mesic areas within valley and foothill grasslands, and alkaline vernal pools at elevations between 3 and 197 feet above sea level.	**Absent/Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has potential to occur within the on-site improvement areas.
Heartscale	*Atriplex cordulata var. cordulata*	Rank 1B.2	Alkaline or saline valley and foothill grasslands, meadows and seeps, and chenopod scrub communities at elevations between 0 and 1,837 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Crownscale	*Atriplex coronata var. coronat*	Rank 4.2	Alkaline, often clay, substrates in chenopod scrub, valley and foothill grassland, and vernal pools at elevations between 3 and 1,936 feet above sea level.	**Present/Potential to Occur**. The species was identified within the project area during protocol level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.
Brittlescale	*Atriplex depressa*	Rank 1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grasslands, and vernal pools, and is typically found on alkaline clay soils at elevations between 3 and 1,050 feet above sea level.	**Absent/Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.
Big tarplant	*Blepharizonia plumosa*	Rank 1B.1	Valley and foothill grassland at elevations between 98 and 1,657 feet above sea level.	**Absent/Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
				conducted by M&A; the species has potential to occur within the off-site improvement areas.
Brewer's calandrinia	*Calandrinia breweri*	Rank 4.2	Sandy or loamy soils disturbed sites and burns within chaparral and coastal scrub at elevations between 33 and 4,003 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project areas or off-site improvement areas.
Round-Leaved filaree	*California macrophylla*	Rank 1B.2	Clay soils in cismontane woodland and valley and foothill grassland communities at elevations between 49 and 3,937 feet above sea level.	**Absent/Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.
Mt. Diablo fairy-lantern	*Calochortus pulchellus*	Rank 1B.2	Chaparral, cismontane woodland, riparian woodland, and valley and foothill grassland at elevations between 98 and 2,756 feet above sea level.	**Absent/Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.
Oakland star-tulip	*Calochortus umbellatus*	Rank 4.2	Often serpentinite substrates in broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland at elevations between 328 and 2,297 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Chaparral harebell	*Campanula exigua*	Rank 1B.2	Chaparral on rocky, usually serpentinite substrates at elevations between 902 and 4,101 feet above sea level.	**Absent/Absent.** The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
				does not occur within the project area or off-site improvement areas.
Congdon's Tarplant	*Centromadia parryi ssp. congdonii)*	Rank 1B.1	Valley and foothill grassland with alkaline soils at elevations between 0 to 75 feet above sea level.	**Absent/Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.
Soft bird's-beak	*Chloropyron molle ssp. molle)*	FE/CR/Rank 1B.2	Coastal salt marshes and swamps at elevations between 0 to 10 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Bolander's water-hemlock	*Cicuta maculata var. bolanderi*	Rank 2B.1	Coastal, fresh, or brackish marshes and swamps at elevations between 0 to 656 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Serpentine collomia	*Collomia diversifolia*	Rank 4.3	Serpentinite, rocky, or gravelly substrates in chaparral and cismontane woodland at elevations between 656 and 1,969 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Small-flowering morningglory	*Convolvulus simulans*	Rank 4.2	Clay, serpentinite seeps within chaparral, coastal scrub, and valley and foothill grassland at elevations between 98 and 2,428 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Mt. Diablo bird's-beak	*Cordylanthus nidularius*	CR/Rank 1B.1	Serpentinite substrates in chaparral at elevations between 1,969 and 2,625 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Hoover's cryptantha	*Cryptantha hooveri*	Rank 1A	Inland dunes, sandy substrates in valley and foothill grassland at elevations between 30 and 492 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Hospital Canyon larkspur	*Delphinium californicum ssp. interius*	Rank 1B.2	Openings in chaparral, mesic areas in cismontane woodland, and coastal scrub at elevations between 640 and 3,593 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Recurved larkspur	*Delphinium recurvatum*	Rank 1B.2	Alkaline soils within chenopod scrub, cismontane woodland, and valley and foothill grasslands at elevations between 10 and 2,592 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Western leatherwood	*Dirca occidentalis*	Rank 1B.2	Mesic areas in broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, and riparian woodland at elevations between 82 and 1,394 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Dwarf downingia	*Downingia pusilla*	Rank 2b.2	Mesic areas in valley and foothill grassland, and vernal pools. Species appears to have an affinity for slight disturbance (i.e., scraped depressions, ditches, etc.) at elevations between 3 and 1,460 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Lime Ridge eriastrum	*Eriastrum ertterae*	Rank 1B.1	Alkaline or semi-alkaline, sandy substrates in openings or along the edges of chaparral at elevations between 656 and 951 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Antioch Dunes buckwheat	*Eriogonum nudum var. psychicola*	Rank 1B.1	Inland dune at elevations between 0 and 66 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Mt. Diablo buckwheat	*Eriogonum truncatum*	Rank 1B.1	Sandy soils in chaparral, coastal scrub, valley and foothill grassland at elevations between 10 and 1,148 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Jepson's woolly sunflower	*Eriophyllum jepsonii*	Rank 4.3	Chaparral, cismontane woodland, and coastal scrub, sometimes on serpentinite at elevation between 656 and 3,363 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Jepson's coyote thistle	*Eryngium jepsonii*	Rank 1B.2	Clay soils of valley and foothill grassland, and vernal pools at elevations between 10 and 9,842 feet above sea level.	**Absent/Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.
Spiny-sepaled button-celery	*Eryngium spinosepalum*	Rank 1B.2	Vernal pools and valley and foothill grassland at elevations between 262 and 3,199 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Contra Costa wallflower	*Erysimum capitatum var. angustatum*	FE/CE/Rank 1B.1	Inland dunes at elevations between 10 and 66 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Diamond-petaled California poppy	*Eschscholzia rhombipetala*	Rank 1B.1	Valley and foothill grassland in alkaline and clay soils at elevations between 0 and 3,199 feet above sea level.	**Absent/Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.
San Joaquin spearscale	*Extriplex joaquinana*	Rank 1B.2	Alkaline soils in chenopod scrub, meadows seeps, playas, and valley and foothill grassland at elevations between 3 and 2,740 feet above sea level.	**Present/Potential to Occur**. The species was identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.
Stinkbells	*Fritillaria agrestis*	Rank 4.2	Clay and sometimes serpentinite soils in chaparral, cismontane woodland, Pinyon and juniper woodland, and	**Absent/Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
			valley and foothill grassland at elevations between 33 and 5,102 feet above sea level.	conducted by M&A; the species has potential to occur within the off-site improvement areas.
Fragrant fritillary	*Fritillaria liliaceae*	Rank 1B.2	Cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland, often on serpentinite substrates at elevations between 10 and 1,345 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Phlox-leaf serpentine bedstraw	*Galium andrewsii ssp. gatense*	Rank 4.2	Serpentinite, rocky soils in chaparral, cismontane woodland, lower montane coniferous forest at elevations between 492 and 4,757 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Toren's grimmia	*Grimmia torenii*	Rank 1B.3	Openings, rocky substrates, boulder and rock walls, carbonate substrates, and volcanic substrates in chaparral, cismontane woodland, and lower montane coniferous forest at elevations between 1,066 and 3,806 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Diablo helianthella	*Helianthella castanea*	Rank 1B.2	Usually rocky, axonal soils in broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland, often in partial shade at elevations between 197 and 4,265 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Hogwallow starfish	*Hesperevax caulescens*	Rank 4.2	Mesic areas with clay and sometimes alkaline soils within valley and foothill grassland and shallow vernal	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
			pools at elevations between 0 and 1,657 feet above sea level.	surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Brewer's western flax	*Hesperolinon breweri*	Rank 1B.2	Usually in serpentinite soils of chaparral, cismontane woodland, and valley and foothill grassland at elevations between 98 and 3,100 feet above sea level.	**Absent/Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.
Woolly rose-mallow	*Hibiscus lasiocarpos var. occidentalis*	Rank 1B.2	Marshes and freshwater swamps at elevations between 0 and 394 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Carquinez goldenbush	*Isocoma arguta*	Rank 1B.1	Alkaline soils in valley and foothill grasslands at elevations between 3 and 66 feet above sea level.	**Low Potential to Occur/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; however, the species' bloom period falls outside of M&A's survey dates; therefore, this species has low potential to occur within the project area.
Contra Costa Goldfields	*Lasthenia conjugens*	FE/Rank 1B.1	Mesic sites within cismontane woodland, playas with alkaline soils, valley and foothill grassland and vernal pools at elevations between 0 and 1,542 feet above sea level.	**Absent/Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.
Delta tule pea	*Lathyrus jepsonii var. jepsonii*	Rank 1B.2	Freshwater and brackish marshes and swamps at elevations between 0 and 17 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
				by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Mason's lilaeopsis	*Lilaeopsis masonii*	CR/Rank 1B.1	Brackish or freshwater marshes or swamps and riparian scrub at elevations between 0 and 33 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Delta mudwort	*Limosella australis*	Rank 2B.1	Usually mud banks in freshwater or brackish marshes and swamps and riparian scrub at elevations between 0 and 33 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Showy golden madia	*Madia radiata*	Rank 1B.1	Cismontane woodland and valley and foothill grassland at elevations between 82 and 3,986 feet above sea level.	**Absent/Potential to occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.
Hall's bush-mallow	*Malacothamnus hallii*	Rank 1B.2	Chaparral, coastal scrub at elevations between 32 and 2,493 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
San Antonio Hills monardella	*Monardella antonina ssp. antonina*	Rank 3	Chaparral, cismontane woodland at elevations between 1,050 and 3,281 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
				off-site improvement areas.
Woodland woolythreads	*Monolopia gracilens*	Rank 1B.2	Serpentinite substrates in openings in broadleafed upland forest and chaparral, cismontane woodland, openings in North Coast coniferous forest, and valley and foothill grassland at elevations between 328 and 3,937 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Lime Ridge navarretia	*Navarretia gowenii*	Rank 1B.1	Chaparral at elevations between 591 and 1,001 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Tehama navarretia	*Navarretia heterandra*	Rank 4.3	Mesic areas in valley and foothill grassland and vernal pools at elevations between 98 and 3,314 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Adobe navarretia	*Navarretia nigelliformis ssp. nigelliformis*	Rank 4.2	Clay and sometimes serpentinite soils in vernally mesic valley and foothill grasslands and sometimes in vernal pools.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Shining navarretia	*Navarretia nigelliformis ssp. radians*	Rank 1B.2	Vernal pools, cismontane woodland, and valley and foothill grassland at elevations between 249 and 3,281 feet above sea level.	**Present/Potential to Occur**. The species was identified within the project area during protocol level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Colusa Grass	*Neostapfia colusana*	FT/CE/Rank 1B.1	Large vernal pools with adobe soils at elevations between 16 and 656 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Antioch Dunes evening-primrose	*Oenothera deltoides ssp. howellii*	FE/CE/Rank 1B.1	Inland dunes at elevations between 0 and 98 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Mt. Diablo phacelia	*Phacelia phacelioides*	Rank 1B.1	Rocky substrates in chaparral and cismontane woodland at elevations between 1,640 and 4,495 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Bearded popcornflower	*Plagiobothrys hystriculus*	Rank 1B.1	Often in vernal swales, and in mesic areas of valley and foothill grassland and vernal pool margins at elevations between 0 and 899 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Eel-grass pondweed	*Potamogeton zosteriformis*	Rank 2B.2	Assorted freshwater marshes and swamps at elevations between 0 and 6,102 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
California alkali grass	*Puccinellia simplex*	Rank 1B.2	Alkaline, vernally mesic areas in sinks, flats and lake margins in chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools at elevations between 7 and 3,051 feet above sea level.	**Absent/Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.
Lobb's aquatic buttercup	*Ranunculus lobbii*	Rank 4.2	Mesic areas of cismontane woodland, North Coast coniferous forest, valley and foothill grassland, and vernal pools at elevations between 49 and 1,542 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Rock sanicle	*Sanicula saxatilis*	CR/Rank 1B.2	Rocky, scree, and talus substrates in broadleafed upland forest, chaparral, and valley and foothill grassland at elevations between 2,034 and 3,855 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Chaparral ragwort	*Senecio aphanactis*	Rank 2B.2	Sometimes alkaline soils in chaparral, cismontane woodland, coastal scrub at elevations between 49 and 2,625 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Sweet marsh ragwort	*Senecio hydrophiloides*	Rank 4.2	Mesic areas in lower montane coniferous forest and meadows and seeps at elevations between 0 and 9,186 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Keck's checkerbloom	*Sidalcea keckii*	FE/Rank 1B.1	Serpentinite clay soils within cismontane woodland and valley and foothill grasslands at elevations between 246 and 2,133 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Most beautiful jewelflower	*Streptanthus albidus ssp. peramoenus*	Rank 1B.2	Serpentinite soils in chaparral, cismontane woodland, and valley and foothill grassland at elevations between 312 and 3,281 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Mt. Diablo jewelflower	*Streptanthus hispidus*	Rank 1B.3	Rocky soils in chaparral and valley and foothill grassland at elevations between 1,198 and 3,937 feet above sea level.	**Absent/Low Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has low potential to occur within the off-site improvement areas.
Slender-leaved pondweed	*Stuckenia filiformis ssp. alpina*	Rank 2B.2	Assorted shallow freshwater marshes and swamps at elevations between 984 and 7,054 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Suisun marsh aster	*Symphyotrichum lentum*	Rank 1B.2	Brackish and freshwater marshes and swamps at elevations between 0 and 10 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.

Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Coastal triquetrella	*Triquetrella californica*	Rank 1B.2	Soil in coastal bluff scrub and coastal scrub at elevations between 33 and 328 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.
Caper-fruited tropidocarpum	*Tropidocarpum capparideum*	Rank 1B.1	Alkaline hills in valley and foothill grassland at elevations between 3 and 1,493 feet above sea level.	**Absent/Potential to Occur**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; the species has potential to occur within the off-site improvement areas.
Oval-leaved viburnum	*Viburnum ellipticum*	Rank 2B.3	Chaparral, cismontane woodland, and lower montane coniferous forest communities at elevations between 705 and 4,593 feet above sea level.	**Absent/Absent**. The species was not identified within the project area during protocol-level rare plant surveys conducted by M&A; suitable habitat for the species does not occur within the project area or off-site improvement areas.

Notes:
1A = CRPR/Presumed extinct
1B = CRPR/Rare or Endangered in California and elsewhere
2B = CRPR /Rare or Endangered in California, more common elsewhere
3 = CRPR /Plants About Which More Information is Needed - A Review List
4 = CRPR /Plants of Limited Distribution – A Watch List
0.1 = Threat Rank/Seriously threatened in California (over 80% of occurrences threatened / high degree and. immediacy of threat)
0.2 = Threat Rank/Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3 = Threat Rank/Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)
BCC = USFWS Bird of Conservation Concern
CC = Candidate for CESA listing as Endangered or Threatened
CE = CESA or NPPA listed, Endangered
CESA = California Endangered Species Act
CFP = California Fully Protected
CR = California NPPA listed, Rare

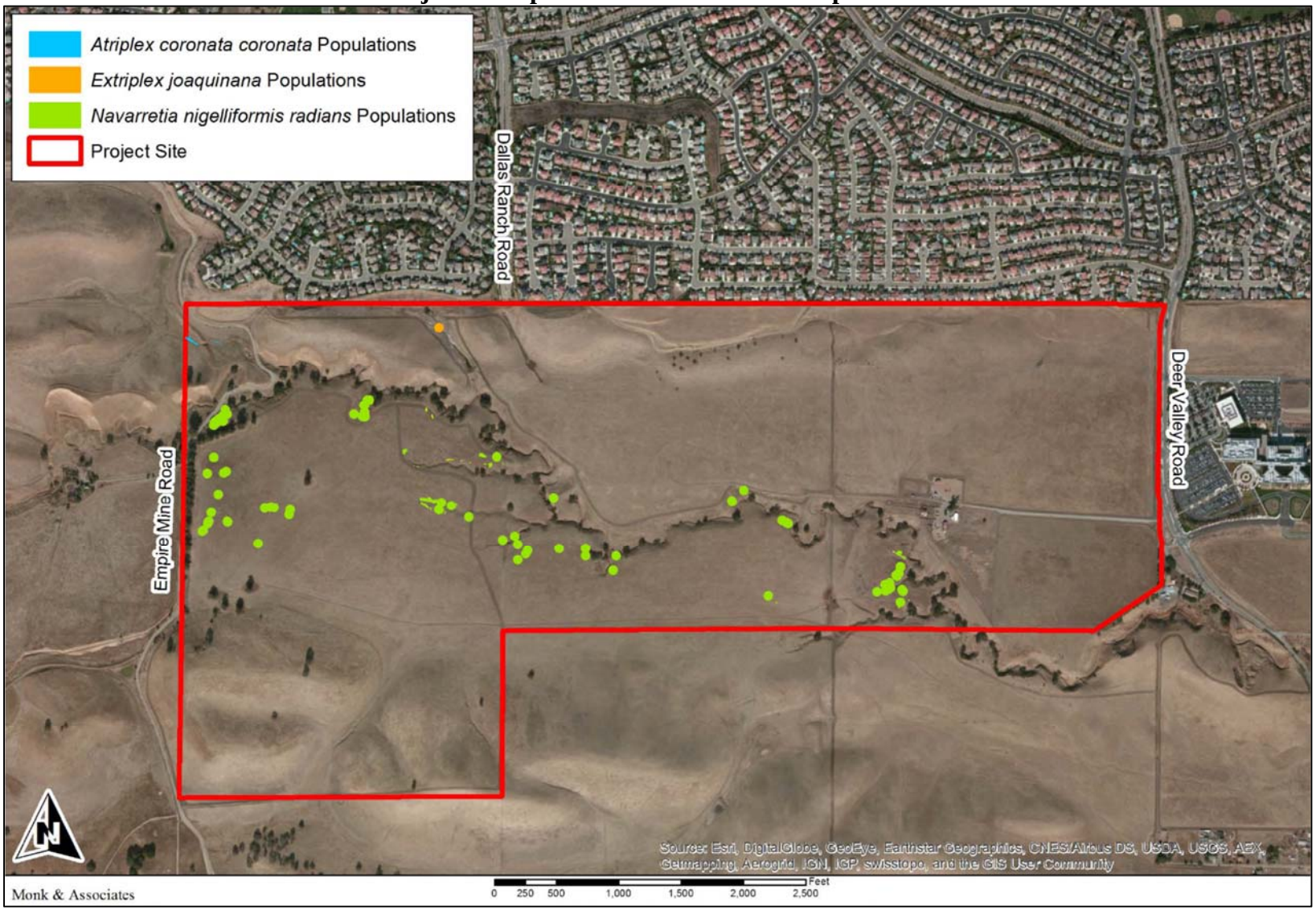
Table 4.4-1
Special-Status Plant Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas

CT = CESA or NPPA listed, Threatened
Delisted = Delisted from the ESA
ESA = Endangered Species Act
FC = Candidate for ESA listing as Threatened or Endangered
FE = FESA listed, Endangered.
FPD = Listed under ESA, but formally proposed
NPPA = California Native Plant Protection Act
SSC = CDFW Species of Special Concern
WL = CDFW Watch List

Source: ECORP Consulting, Inc, 2017.

Figure 4.4-2
Project Site Special-Status Rare Plant Populations



Source: ECORP Consulting, Inc., 2017

Special-Status Plant Species Potentially Occurring On-Site

The four special-status plant species with the potential to occur on-site are discussed below.

Shining Navarretia

Shining navarretia (*Navarretia nigelliformis ssp. radians*) is not listed pursuant to either the ESA or CESA, but is designated as a CRPR 1B.2 species. Shining navarretia is an herbaceous annual that occurs in vernal pools within cismontane woodland and Valley or foothill grassland. Shining navarretia blooms April through July and is known to occur at elevations ranging from 213 to 3,281 feet above sea level. According to the BRA, three occurrences of shining navarretia are documented within 10 miles of the project area, and shining navarretia was identified in the project area during rare plant surveys conducted by M&A in 2015.

Crownscale

Crownscale (*Atriplex coronata var. coronata*) is not listed pursuant to either the ESA or CESA, but is designated as a CRPR 4.2 species. Crownscale is an herbaceous annual that occurs in alkaline and often clay soils within chenopod scrub, valley and foothill grassland, and vernal pools. Crownscale blooms from March through October and is known to occur at elevations ranging from 3 to 1,936 feet above sea level. Crownscale was identified in within 10 miles of the project area during rare plant surveys conducted by M&A in 2015.

San Joaquin Spearscale

San Joaquin spearscale (*Extriplex joaquinana*) is not listed pursuant to either the ESA or CESA, but is designated as a CRPR 1B.2 species. San Joaquin spearscale is an annual herb that occurs often in alkaline soils in chenopod scrub, meadows seeps, playas, and valley and foothill grassland. San Joaquin spearscale blooms from April through October and is known to occur at elevations ranging from 3 to 2,740 feet above sea level. According to the BRA, 22 occurrences of San Joaquin spearscale are documented within 10 miles of the project area, and was identified in the project area during rare plant surveys conducted by M&A in 2015.

Carquinez Goldenbrush

Carquinez goldenbush (*Isocoma arguta*) is not listed pursuant to either the ESA or CESA, but is designated as a CRPR 1B.1 species. Carquinez goldenbush typically occurs on alkaline soils in valley and foothill grasslands. Carquinez goldenbush blooms from August through December and is known to occur at elevations ranging from 3 to 66 feet above sea level. Although occurrences of Carquinez goldenbush was not documented within 10 miles of the project area, and the Carquinez goldenbush's survey period occurs outside of the survey dates of the rare plant surveys conducted in the project area by M&A in 2015, the annual grassland within the project area provides suitable habitat for the Carquinez goldenbush. Therefore, the BRA identified Carquinez goldenbush as having have a low potential to occur within the project area.

Special-Status Plant Species Potentially Occurring Within Off-Site Improvement Areas

The following 38 special-status plant species were determined to have the potential to occur within the off-site improvement areas:

-large-flowered fiddleneck
-alkali milk-vetch
-crownscale
-big tarplant
-Mt. Diablo fairy-lantern
-Congdon's tarplant
-Hoover's cryptantha
-dwarf downingia
-Jepson's coyote thistle
-diamond-petaled California poppy
-stinkbells
-Diablo helianthella
-Brewer's western flax
-California androsace
-heartscale
-brittlescale
-round-leaved filaree
-Oakland start-tulip
-recurved larkspur
-Mount Diablo buckwheat
-spiny-sepaled button-celery
-San Joaquin spearscale
-Contra Costa goldfields
-woodland woolythreads
-adobe navarretia
-most beautiful jewelflower
-fragrant fritillary
-hogwallow starfish
-Carquinez goldenbush
-showy golden madia
-Tehama navarretia
-shining navarretia
-California alkali grass
-Keck's checkerbloom
-Mt. Diablo jewelflower
-caper-fruited tropidocarpum
-bearded popcornflower
-Lobb's aquatic buttercup

The habitat for the off-site improvement areas varies from mesic areas to annual grassland and wetlands. Therefore, the off-site improvement areas potentially provide suitable habitat for the 38-plant species listed above. Special-status plant surveys have not yet been conducted in the off-site improvement areas.

Special-Status Wildlife Species

Based on queries of the CNDDB and other information sources, the BRA returned records of 52 special-status wildlife species that occur within the project region. Table 4.4-2 provides a list of all special-status wildlife species, consisting of invertebrates, fish, amphibians, reptiles, birds, and mammals, that are known to occur or have the potential to occur within 10 miles of the project site based on their local and regional distribution.

Table 4.4-2
Special-Status Wildlife Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Invertebrates				
Conservancy fairy shrimp	*Branchinecta conservatio*	Federally Endangered	Vernal pools/wetlands.	**Absent/Absent**. The species has a highly restricted range and is not known from within 10 miles of the project area.
Lange's metalmark butterfly	*Apodemia mormo langei*	Federally Endangered	Requires specific sand dune habitat that is found only in Antioch Dunes National Wildlife Refuge. It is reliant on a specific subspecies of naked buckwheat for its diet as well as reproduction.	**Absent/Absent.** Suitable habitat for the species does not occur within the project area.
Longhorn fairy shrimp	*Branchinecta longiantenna*	Federally Endangered	Vernal pools/wetlands.	**Absent/Absent**. The species has a highly restricted range and is not known from within 10 miles of the project area.
San Bruno elfin butterfly	*Callophrys mossii bayensis*	Federally Endangered	Inhabits rocky outcrops and cliffs in coastal scrub on the San Francisco peninsula.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	Federally Threatened Formally Proposed for Delisting	Elderberry shrubs.	**Potential to Occur/Absent**. Suitable habitat for the species occurs within the project area, as one elderberry shrub was identified along Sand Creek during the site assessments; suitable habitat for this species does not occur within the off-site improvement areas, as elderberry shrubs were not identified during the site assessments**.**
Vernal pool fairy shrimp	*Branchinecta lynchi*	Federally Threatened	Vernal pools/wetlands.	**Present/Potential to Occur**. The CNDDB-documented an occurrence of this species within the project area suitable habitat for this species occurs within the off-site improvement areas.

Table 4.4-2
Special-Status Wildlife Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Vernal pool tadpole shrimp	Lepidurus packardi	Federally Endangered	Vernal pools/wetlands.	**Present/Potential to Occur**. The CNDDB-documented an occurrence of this species within the project area suitable habitat for this species occurs within the off-site improvement areas.
Fish				
Chinook salmon (Central Valley fall/late fall-run ESU)	*Oncorhynchus tshawytscha*	CDFW Species of Special Concern	Undammed rivers, streams, creeks.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
Delta smelt	*Hypomesus transpacificus*	Federally Threatened California Endangered	Sac-San Joaquin delta.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
Longfin smelt	*Spirinchus thaleichthys*	Federally Threatened California Threatened CDFW Species of Special Concern	Freshwater and seawater estuaries.	**Absent/Absent**. Suitable habitat for this species does not occur within the project area; the project area is outside of the known range of this species
Sacramento perch	*Archoplites interruptus*	CDFW Species of Special Concern	Ponds, rivers, backwaters, and lakes.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
Steelhead (CA Central Valley ESU)	*Oncorhynchus mykiss*	Federally Threatened	Undammed rivers, streams, creeks.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
Amphibians				
California red-legged frog	*Rana draytonii*	Federally Threatened	Lowlands or foothills at waters with dense shrubby or emergent riparian	**Present/Present**. The CNDDB-documented an occurrence of the species

Table 4.4-2
Special-Status Wildlife Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
		CDFW Species of Special Concern	vegetation. Adults must have aestivation habitat to endure summer dry down.	located partially within the project area and partially within the off-site improvement areas. Suitable habitat for the species occurs within the project area.
California tiger salamander (Central California DPS)	Ambystoma californiense	Federally Threatened California Threatened CDFW Species of Special Concern	Vernal pools, wetlands (breeding) and adjacent grassland or oak woodland; needs underground refuge (e.g., ground squirrel and/or gopher burrows). Largely terrestrial as adults.	**Present/Present**. The CNDDB-documented an occurrence of the species located partially within the project area and partially within the off-site improvement areas. Suitable habitat for the species occurs within the project area.
Foothill yellow-legged frog	*Rana boylii*	Candidate for CESA listing as Endangered or Threatened CDFW Species of Special Concern	Foothill yellow-legged frogs can be active all year in warmer locations, but may become inactive or hibernate in colder climates. At lower elevations, foothill yellow-legged frogs likely spend most of the year in or near streams. Adult frogs, primarily males, will gather along main-stem rivers during spring to breed.	**Low Potential to Occur/Low Potential to Occur**. Suitable habitat for the species occurs within the project area.
Reptiles				
Alameda whipsnake	*Masticophis lateralis euryxanthus*	Federally Threatened California Threatened	Occurs in coastal scrub and chaparral communities, but also forages in a variety of other communities in the inner Coast Range, including grasslands and open woodlands. Rock outcrops with deep crevices or abundant rodent burrows are important habitat components.	**Low Potential to Occur/Low Potential to Occur**. Suitable habitat for the species occurs within the project area.

Table 4.4-2
Special-Status Wildlife Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Blainville's ("Coast") horned lizard	*Phrynosoma blainvillii*	CDFW Species of Special Concern	Formerly a wide-spread horned lizard found in a wide variety of habitats, often in lower elevation areas with sandy washes and scattered low bushes. Occurs in Sierra Nevada foothills. Requires open areas for basking, but with bushes or grass clumps for cover, patches of loamy soil or sand for burrowing and an abundance of ants. In the northern Sacramento area, this species appears restricted to the foothills between 1000 to 3000 feet from Cameron Park (El Dorado County) north and west to Grass Valley and Nevada City.	**Low Potential to Occur/Low Potential to Occur**. Marginally suitable habitat for the species occurs within the project area.
California glossy snake	*Arizona elegans occidentalis*	CDFW Species of Special Concern	Occurs from the eastern part of the San Francisco Bay Area south to northwestern Baja California. Inhabits arid scrub, rocky washes, grasslands, and chaparral.	**Absent/Absent**. The project area is outside of the known range of the species.
Giant garter snake	*Thamnophis gigas*	Federally Threatened California Threatened	Freshwater ditches, sloughs, and marshes in the Central Valley. Almost extirpated from the southern parts of its range.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
Northwestern pond turtle	*Actinemys marmorata*	CDFW Species of Special Concern	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches.	**Potential to Occur/Potential to Occur**. Suitable habitat for the species occurs within the project area.

Table 4.4-2
Special-Status Wildlife Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Silvery legless lizard	*Anniella pulchra pulchra*	CDFW Species of Special Concern	Occurs in sandy or loose soils under sparse vegetation from Antioch south coastally and inland to Baja California. Bush lupine is often an indicator plant.	**Low Potential to Occur/Low Potential to Occur**. Marginally suitable habitat for the species occurs within the project area**.**
San Joaquin coachwhip	*Masticophis flagellum ruddocki*	CDFW Species of Special Concern	Occurs in open, dry, usually flat habitats in valley Grassland and Saltbush Scrub with little to no shrub cover in the San Joaquin Valley. A dietary generalist.	**Absent/Absent**. The project area is outside of the known range of the species.
Birds				
American peregrine falcon (nesting)	*Falco peregrinus anatum*	De-listed USFWS Bird of Conservation Concern California Fully Protected	In California, breeds in coastal region, northern California, and Sierra Nevada. Nesting habitat includes cliff ledges and human-made ledges on towers and buildings. Wintering habitat includes areas where there are large concentrations of shorebirds, waterfowl, pigeons or doves.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
Bank swallow (nesting)	*Riparia riparia*	California Threatened	Nests colonially along coasts, rivers, streams, lakes, reservoirs, and wetlands in vertical banks, cliffs, and bluffs in alluvial, friable soils. May also nest in sand, gravel quarries and road cuts. In California, breeding range includes northern and central California.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
Burrowing owl (burrow sites)	*Athene cunicularia*	USFWS Bird of Conservation Concern	Nests in burrows or burrow surrogates in open, treeless, areas within grassland, steppe, and desert biomes. Often with other burrowing mammals (e.g. prairie dogs, California ground	**Present/Potential to Occur**. The species was observed within the project area during the fall and winter months from 2013 to 2015. Suitable habitat for this species

Table 4.4-2
Special-Status Wildlife Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
		CDFW Species of Special Concern	squirrels). May also use human-made habitat such as agricultural fields, golf courses, cemeteries, roadside, airports, vacant urban lots, and fairgrounds.	occurs within the off-site improvement areas.
California black rail	*Laterallus jamaicensis coturniculus*	California Threatened USFWS Bird of Conservation Concern California Fully Protected	Salt marsh, shallow freshwater marsh, wet meadows, and flooded grassy vegetation. In California, primarily found in coastal and Bay-Delta communities, but also in Sierran foothills (Butte, Yuba, Nevada, Placer counties).	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
California horned lark	*Eremophila alpestris actia*	CDFW Watch List	San Joaquin Valley, coast range from Sonoma County south to Baja California; grassland, and agricultural fields with very short or no vegetation.	**Potential to Occur/Potential to Occur**. Suitable habitat for the species occurs within the project area.
California least tern (nesting colony)	*Sternula antillarum browni*	Federally Endangered California Endangered California Fully Protected	Nests along Pacific Coast from San Francisco Bay south the Mexico; nests colonially, on sand or dried mudflats, sand or shell islands, and gravel and sand pits and rarely in agricultural fields, parking lots, airports, and flat/graveled rooftops.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
Double-crested cormorant (nesting colony)	*Phalacrocorax auritus*	CDFW Watch List	Nests near ponds, lakes, artificial impoundments, slow-moving rivers, lagoons, estuaries, and open coastlines and typically forages in shallow water. Non-nesters are found in many coastal and inland waters.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.

Table 4.4-2
Special-Status Wildlife Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Ferruginous hawk (wintering)	*Buteo regalis*	USFWS Bird of Conservation Concern California Fully Protected	Rarely breeds in California (Lassen County); winter range includes grassland and shrubsteppe habitats from Northern California (except northeast and northwest corners) south to Mexico and east to Oklahoma, Nebraska, and Texas.	**Potential to Occur/Potential to Occur**. Suitable wintering habitat for the species occurs within the project area. The project area is outside of the nesting range of the species.
Golden eagle (nesting and wintering)	*Aquila chrysaetos*	USFWS Bird of Conservation Concern California Fully Protected	Nesting habitat includes mountainous canyon land, rimrock terrain of open desert and grasslands, riparian, oak woodland/savannah, and chaparral. Nesting occurs on cliff ledges, river banks, trees, and human-made structures (e.g. windmills, platforms, and transmission towers). Breeding occurs throughout California, except the immediate coast, Central Valley floor, Salton Sea region, and the Colorado River region, where they can be found during Winter.	**Potential to Occur/Potential to Occur**. Suitable habitat for the species occurs within the project area.
Grasshopper sparrow	*Ammodramus savannarum*	CDFW Species of Special Concern	In California, breeding range includes most coastal counties south to Baja California; western Sacramento Valley and western edge of Sierra Nevada region. Nests in moderately open grasslands and prairies with patchy bare ground. Avoids grasslands with extensive shrub cover; more likely to occupy large tracts of habitat than small fragments; removal of grass cover by grazing often detrimental.	**Potential to Occur/Potential to Occur**. Suitable habitat for the species occurs within the project area.

Table 4.4-2
Special-Status Wildlife Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Loggerhead shrike	*Lanius ludovicianus*	USFWS Bird of Conservation Concern CDFW Species of Special Concern	Found throughout California in open country with short vegetation, pastures, old orchards, grasslands, agricultural areas, open woodlands. Not found in heavily forested habitats.	**Potential to Occur/Potential to Occur**. Suitable habitat for the species occurs within the project area
Northern harrier (nesting)	*Circus hudsonicus*	CDFW Species of Special Concern	Nests on the ground in open wetlands, marshy meadows, wet/lightly grazed pastures, (rarely) freshwater/brackish marshes, tundra, grasslands, prairies, croplands, desert, shrub-steppe, and (rarely) riparian woodland communities.	**Potential to Occur/Potential to Occur**. Suitable habitat for the species occurs within the project area
Prairie falcon (nesting)	*Falco mexicanus*	USFWS Bird of Conservation Concern CDFW Watch List	Found in open habitat at all elevations up to 11,000 feet. Nests on cliffs and bluffs in arid plains and steppes; In California, nesting throughout state except northwest corner, along immediate coast, and the Central Valley floor. Winters throughout California, in open habitats, such as grasslands in Central Valley.	**Present/Present**. The species was observed foraging within the project area. Suitable wintering habitat for the species occurs within the project area. No suitable nesting habitat occurs within the project area.
Ridgway's rail (California clapper rail)	*Rallus obsoletus obsoletus)*	Federally Endangered California Endangered California Fully Protected	San Francisco and San Pablo Bay tidal marshes, sloughs, with pickleweed (Salicornia spp.), cordgrass (Spartina spp.), and gum plant (Grindelia spp.).	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.

Table 4.4-2
Special-Status Wildlife Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	USFWS Bird of Conservation Concern CDFW Species of Special Concern	Breeds in salt marshes of San Francisco Bay; winters San Francisco south along coast to San Diego County.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
Short-eared owl (nesting)	*Asio flammeus*	CDFW Species of Special Concern	Nests in large expanses of prairie, coastal grasslands, heathlands, shrub-steppe, tundra, and agricultural areas.	**Present/Present**. Suitable wintering habitat for the species occurs within the project area. No suitable nesting habitat occurs within the project area.
Song sparrow "Modesto"	*Melospiza melodia heermanni*	USFWS Bird of Conservation Concern CDFW Species of Special Concern	Resident in central and southwest California, including Central Valley; nests in marsh, scrub habitat.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
Suisun song sparrow	*Melospiza melodia maxillaris)*	USFWS Bird of Conservation Concern CDFW Species of Special Concern	Resident of brackish marshes of Suisun Bay.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
Swainson's hawk (nesting)	*Buteo swainsoni*	California Threatened USFWS Bird of Conservation Concern	Nesting occurs in trees in agricultural, riparian, oak woodland, scrub, and urban landscapes. Forages over grassland, agricultural lands, particularly during disking/harvesting, irrigated pastures.	**Present/Present**. The species was observed foraging within the project area by M&A biologists during site visits conducted from 2013 to 2015; ECORP biologists also observed the species foraging in 2017. Suitable habitat for the species occurs within the project area.
Tricolored blackbird (nesting colony)	*Agelaius tricolor*	Candidate for CESA listing as	Breeds locally west of Cascade-Sierra Nevada and southeastern deserts from Humboldt and Shasta Cos south to	**Low Potential to Occur/Low Potential to Occur**. Marginally suitable foraging habitat for the species occurs within the project

Table 4.4-2
Special-Status Wildlife Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
		Endangered or Threatened USFWS Bird of Conservation Concern CDFW Species of Special Concern	San Bernardino, Riverside and San Diego Counties. Central California, Sierra Nevada foothills and Central Valley, Siskiyou, Modoc and Lassen Counties. Nests colonially in freshwater marsh, blackberry bramble, milk thistle, triticale fields, weedy (mustard, mallow) fields, giant cane, safflower, stinging nettles, tamarisk, riparian scrublands and forests, fiddleneck and fava bean fields.	area. Suitable nesting habitat does not occur within the project area.
White-tailed kite (nesting)	*Elanus leucurus*	California Fully Protected	Nesting occurs within trees in low elevation grassland, agricultural, wetland, oak woodland, riparian, savannah, and urban habitats.	**Potential to Occur/Potential to Occur**. Suitable habitat for the species occurs within the project area.
Mammals				
American badger	*Taxidea taxus*	CDFW Species of Special Concern	Drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	**Potential to Occur/Potential to Occur**. Suitable habitat for the species occurs within the project area.
Pallid bat	*Antrozous pallidus*	CDFW Species of Special Concern	Crevices in rocky outcrops and cliffs, caves, mines, trees (e.g. basal hollows of redwoods, cavities of oaks, exfoliating pine and oak bark, deciduous trees in riparian areas, and fruit trees in orchards). Also roosts in various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings.	**Potential to Occur/Potential to Occur**. Suitable habitat for the species occurs within the project area.
Ringtail	(*Bassariscus astutus*)	California Fully Protected	Most often found in riparian corridors in forested, shrubby habitats. Dens in rock outcrops, hollow trees and snags	**Low Potential to Occur/Low Potential to Occur**. Marginally suitable habitat for this species occurs within the project area.

Table 4.4-2
Special-Status Wildlife Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
			at low to middle elevations. Its range includes the North and South Coast Ranges, Sierra Nevada, Cascades, and the mountainous areas of the Mojave Desert.	
Salt-marsh harvest mouse	*Reithrodontomys raviventris*	Federally Endangered California Endangered California Fully Protected	Saline emergent marsh.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	CDFW Species of Special Concern	Dense chaparral, mixed deciduous forest with thick understory, coniferous forest, and coastal sage scrub. Builds large houses that are made of twigs, leaves, and other debris.	**Absent/Absent**. Suitable habitat for the species does not occur within the project area.
San Joaquin kit fox	*Vulpes macrotis mutica*	Federally Endangered California Threatened	Grasslands, sagebrush scrub.	**Potential to Occur/Potential to Occur**. Suitable habitat for the species occurs within the project area.
Townsend's big-eared bat	*Corynorhinus townsendii*	CDFW Species of Special Concern	Caves, mines, buildings, rock crevices, trees.	**Potential to Occur/Potential to Occur**. Suitable habitat for the species occurs within the project area.
Greater mastiff bat	(*Eumops perotis californicus*)	CDFW Species of Special Concern	Primarily a cliff-dwelling species, found in similar crevices in large boulders and buildings.	**Low Potential to Occur/Absent.** Marginally suitable habitat for this species occurs within the project area.

Table 4.4-2
Special-Status Wildlife Species

Common Name	Scientific Name	Status	Habitat	Potential for Occurrence in the Project Site/Off-Site Improvement Areas
Western red bat	*Eumops perotis californicus*	CDFW Species of Special Concern	Roosts in foliage of trees or shrubs; Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores).	**Potential to Occur/Potential to Occur**. Suitable habitat for the species occurs within the project area.

Notes:
1A = CRPR/Presumed extinct
1B = CRPR/Rare or Endangered in California and elsewhere
2B = CRPR /Rare or Endangered in California, more common elsewhere
3 = CRPR /Plants About Which More Information is Needed - A Review List
4 = CRPR /Plants of Limited Distribution – A Watch List
0.1 = Threat Rank/Seriously threatened in California (over 80% of occurrences threatened / high degree and. immediacy of threat)
0.2 = Threat Rank/Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3 = Threat Rank/Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)
BCC = USFWS Bird of Conservation Concern
CC = Candidate for CESA listing as Endangered or Threatened
CE = CESA or NPPA listed, Endangered
CESA = California Endangered Species Act
CFP = California Fully Protected
CR = California NPPA listed, Rare
CT = CESA or NPPA listed, Threatened
Delisted = Delisted from the ESA
ESA = Endangered Species Act
FC = Candidate for ESA listing as Threatened or Endangered
FE = FESA listed, Endangered.
FPD = Listed under ESA, but formally proposed
NPPA = California Native Plant Protection Act
SSC = CDFW Species of Special Concern
WL = CDFW Watch List

Source: ECORP Consulting, Inc, 2017.

Invertebrates

A total of seven special-status invertebrate species were identified as having the potential to occur within the project area based on literature review (Table 4.4-2). However, upon further analysis and after the site visits, four special-status invertebrate species were considered to be absent from the project area due to the lack of suitable habitat, and further discussion of these four special-status invertebrate species is not provided in this analysis. Brief descriptions of the remaining three special-status invertebrate species that are present or have the potential to occur within the project area and/or the off-site improvement areas are presented below.

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle (VELB) (D*esmocerus californicus dimorphus*) is listed as threatened in accordance with the FESA. The VELB is completely dependent on its host plant, elderberry (*Sambucus* species). Elderberry shrubs are most common in riparian areas or in areas that were historically riparian or floodplain terraces.

The adult VELB flight season extends from late March through June. During that time, the adults feed on foliage and perhaps flowers, mate, and females lay eggs on living elderberry plants. The majority of VELB occurrences have been recorded below 500 feet; however, if suitable VELB habitat exists and known VELB occurrences in a riparian corridor that is lower in elevation and connected to the area in question, VELB may be present.

According to the BRA, VELB occurrences are not documented within 10 miles of the project area; however, one elderberry shrub was observed in the western central portion of the project area, along Sand Creek. The observed elderberry shrub within the project area provides suitable habitat for this species; therefore, the BRA determined VELB has the potential to occur within the project area. It should be noted that elderberry shrubs were not observed within the off-site improvement areas; therefore, the BRA determined VELB is absent from the off-site improvement areas.

Vernal Pool Fairy Shrimp

The vernal pool fairy shrimp (*Branchinecta lynchi*) is listed as threatened in accordance with the FESA. Vernal pool fairy shrimp may occur in seasonal ponds, vernal pools, and swales during the wet season, which generally occurs from December through May. Vernal pool fairy shrimp can be found in a variety of pool sizes, ranging from less than 0.001 acre to over 24.5 acres.

According to the BRA, 14 occurrences of vernal pool fairy shrimp are documented within 10 miles of the project area and one documented occurrence within the project area. Wetlands within the project area provide suitable habitat for this species. The BRA determined vernal pool fairy shrimp is present within the project area and has potential to occur within the off-site improvement areas.

Vernal Pool Tadpole Shrimp

The vernal pool tadpole shrimp (*Lepidurus packardi*) is listed as endangered pursuant to the FESA. Vernal pool tadpole shrimp inhabits vernal pools containing clear to highly turbid water, ranging in size from 0.001 acre to 89.0 acres. Vernal pool tadpole shrimp are distinguished from other vernal pool branchiopods by a large, shield like carapace that covers the anterior half of their body.

According to the BRA, one occurrence of vernal pool tadpole shrimp is documented within 10 miles of the project area. Wetlands within the project area provide suitable habitat for vernal pool tadpole shrimp. The BRA determined vernal pool tadpole shrimp are present within the project area and has potential to occur within the off-site improvement areas.

Fish

A total of five special-status fish species were identified as having the potential to occur within the project area (Table 4.4-2). However, upon further analysis and after the site visits, all special-status fish species were considered to be absent from the project area due to the lack of suitable habitat, and, thus, further discussion of these five special-status fish species is not warranted.

Amphibians

A total of three special-status amphibian species were identified as having the potential to occur within the project area (Table 4.4-2). Brief descriptions of the three special-status amphibian species that are present or have the potential to occur within the project area and/or off-site improvement areas are presented below.

California Red-Legged Frog

The California red-legged frog (CRLF) (*Rana draytonii*) is listed as Federally Threatened and a California Species of Special Concern. CRLF occur in different habitats depending on life stage, season, and weather conditions. Breeding habitat includes coastal lagoons, marshes, springs, permanent and semi-permanent natural ponds, and ponded and backwater portions of streams. According to the BRA, 113 documented occurrences of CRLF exist within 10 miles of the project area, including one documented occurrence in 1998 along Sand Creek within the northwestern portion of the project area, which is located partially within the project site and the off-site improvement area.

The ponds/impoundments and large main channel pools within Sand Creek provide potential suitable breeding habitat for CRLF. In addition, Sand Creek, other aquatic features, and the annual grassland within the project area provide suitable dispersal habitat for the CRLF. Therefore, the BRA determined CRLF is present within the project area.

California Tiger Salamander

The California tiger salamander (CTS) (*Ambystoma californiense*), is federally listed as threatened and listed as a threatened species under the CESA. CTS is most commonly associated with intact annual grassland habitats and vernal pool landscapes but may also occur within open woodlands in low hills and valleys. Suitable breeding sites include vernal pools, seasonal wetlands, stock ponds, or, rarely, slow-moving streams.

According to the BRA, 115 documented occurrences of CTS exist within 10 miles of the project area, including one documented occurrence in 1989 in the northwestern portion of the project area and partially within the off-site improvement areas. The occurrence in the project area was documented on the site in 1989, which is located partially within the project site and the off-site improvement area. Therefore, the BRA determined CTS is present within the project area.

Foothill Yellow-Legged Frog

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The foothill yellow-legged frog (FYLF) (*Rana boylii*) is not listed pursuant to the FESA, but is a candidate for listing under the CESA. The FYLF is also designated as a California Species of Special Concern. FYLF occupy rocky streams in valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow plant communities. The FYLF is a small (1.5 – 2.8 inches), highly aquatic frog that occurs almost exclusively in shallow, flowing streams with cobble substrates at elevations below 1,830 meters (6,000 feet). They are rarely found far from water and will often dive into water to take refuge under rocks or sediment when disturbed.

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According to the BRA, one documented occurrence of FYLF exists within 10 miles of the project area. Sand Creek within the project area provides marginally suitable habitat for FYLF; therefore, the BRA determined FYLF has a low potential to occur within the project area.

Reptiles

A total of seven special-status reptile species were identified as having the potential to occur within the project area (Table 4.4-2). However, upon further analysis and after the site visits, three special-status reptile species were considered to be absent from the project area due to the lack of suitable habitat, and further discussion of these three special-status reptile species is not provided in this analysis. Brief descriptions of the remaining four special-status reptile species that have the potential to occur within the project area and/or the off-site improvement areas are presented below.

Alameda Whipsnake

The Alameda whipsnake (*Masticophis lateralis euryxanthus*), also known as the Alameda striped racer, (*Coluber lateralis euryxanthus*) is a narrow, medium-sized (up to four feet),

snake of the widespread family Columbida. The Alameda whipsnake is listed as threatened under the FESA and the CESA. The Alameda whipsnake is a snake of foothills, chaparral, and scrub habitats in the eastern San Francisco Bay Area. Common microhabitat associations include rocky outcrops and talus slopes in an open or broken canopy, usually with a south-, southeastern-, southwestern- or northeast-facing aspect. Grasslands and woodlands, rock outcrops are considered an essential feature of the Alameda whipsnake habitat.

According to the BRA, 47 documented occurrences of the Alameda whipsnake exist within 10 miles of the project area. The annual grassland within the project area provides suitable dispersal habitat for this species; however, the project area and immediate vicinity lack coastal scrub and chaparral communities, which have been found to serve as the center of home ranges for the species. Although Alameda whipsnake have been found to utilize and disperse through annual grasslands, they are frequently found within 500 feet of coastal scrub and chaparral. Because coastal scrub or chaparral is not in the immediate vicinity of the project area, the BRA has determined the Alameda whipsnake has a low potential to occur within the project area.

Blainville's (Coast) Horned Lizard

Blainville's horned lizard (*Phrynosoma blainvillii*) is considered a California Species of Special Concern. The Blainville's horned lizard is a relatively large (up to 105 millimeters) lizard. Formally considered the coast horned lizard (*P. coronatum*), this diurnal species can occur within a variety of habitats including scrubland, annual grassland, valley-foothill woodlands and coniferous forests, though the species is most common along lowland desert sandy washes and chaparral. Blainville's horned lizard is found in open microhabitats such as sandy washes with scattered shrubs or firebreaks in chaparral, where they forage for ants, small beetles and other insects. Horned lizards (*Phrynosoma*) generally emerge from hibernation in March or April, and are active until September or later. Mating takes place in April through early May, and an average of 12 (but up to 21) eggs are laid from April to June. Hatchlings 25 - 27 millimeters in length emerge from July through September.

According to the BRA, three documented occurrences of Blainville's horned lizard exist within 10 miles of the project area. However, the annual grassland within the project area provides only marginally suitable habitat for this species. Therefore, the BRA determined the Blainville's horned lizard has low potential to occur within the project area.

Northwestern Pond Turtle

The northwestern pond turtle (*Actinemys marmorata*) is not listed pursuant to either CESA or FESA; however, the northwestern pond turtle is designated as a California Species of Special Concern. Northwestern pond turtles occur in a variety of fresh and brackish water habitats including marshes, lakes, ponds, and slow-moving streams. The northwestern pond turtle species is primarily aquatic; however, they typically leave aquatic habitats in the fall and winter. Deep, still water with abundant emergent woody debris, overhanging vegetation, and rock outcrops are optimal for basking and thermoregulation. Mating

generally occurs during late April and early May and eggs are deposited between late April and early August. The majority of nesting sites are located within 650 feet (200 meters) of the aquatic sites; however, nests have been documented as far as 1,310 feet (400 meter) from the aquatic habitat.

According to the BRA, 31 documented occurrences of northwestern pond turtle exist within 10 miles of the project area. Sand Creek and the ponds/impoundments within the project area provide suitable habitat for the northwestern pond turtle species. Therefore, the BRA has determined the northwestern pond turtle has potential to occur within the project area.

Silvery Legless Lizard

The silvery legless lizard (*Anniella pulchra pulchra*) is not listed pursuant to the CESA or FESA, but is designated as a California Species of Special Concern. According to the BRA, six documented occurrences of silvery legless lizard exist within 10 miles of the project area. However, the annual grasslands within the project area provide only marginally suitable habitat for this species. Therefore, the BRA has determined the silvery legless lizard has low potential to occur within the project area.

Birds

A total of 21 special-status bird species were identified as having the potential to occur within the project area based on literature review (Table 4.4-2). However, upon further analysis and after the site visits, nine special-status bird species were considered to be absent from the project area due to the lack of suitable habitat, and further discussion of these nine special-status bird species is not provided in this analysis.

During the 2017 site visits two special-status bird species, prairie falcon (*Falco mexicanus*) and Swainson's hawk (*Buteo swainsoni*), were observed foraging in the vicinity of the project area. During site visits in 2013 and 2015, Swainson's hawks were previously observed foraging within the project area (M&A 2015). In addition, during previous site visits in the fall and winter months, one burrowing owl was observed along the banks of Sand Creek; however, burrowing owls were not observed within the project area in the spring or summer months. Brief descriptions of the 12 special-status bird species that are present or have the potential to occur within the project area and/or off-site improvement areas are presented below.

Burrowing Owl

The burrowing owl (*Athene cunicularia*) is not listed pursuant to either CESA or FESA; however, the burrowing owl is designated as a federal Bird of Conservation Concern and a California Species of Special Concern. Burrowing owls inhabit dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. The burrowing owl can also inhabit developed areas such as golf courses, cemeteries, road sides within cities, airports, vacant lots in residential areas, school campuses, and fairgrounds. The burrowing owl species typically uses burrows created by fossorial mammals, most notably

the California ground squirrel, but may also use manmade structures such as cement culverts or pipes; cement, asphalt, wood debris piles, or openings beneath cement or asphalt pavement. The breeding season typically occurs between February 1 and August 31.

According to the BRA, 75 documented occurrences of burrowing owl exist within 10 miles of the project area. Although, one burrowing owl along the banks of Sand Creek was observed during the fall and winter months from 2013 to 2015, burrowing owls were not observed nesting within the project area in the spring or summer months. The BRA determined burrowing owls winter within the project site and have potential to winter within the off-site improvement areas. In addition, burrows within the annual grassland and ruderal areas in the project area provide suitable nesting habitat.

California Horned Lark

The horned lark (*Eremophila alpestris*) is widely distributed throughout North America with 21 recognized subspecies. The California horned lark (*E. a. actia*) is one of approximately nine subspecies that breeds and/or winters in California. The California horned lark are found in grasslands and other open habitats with sparse vegetation. Nests are grass-lined and built on the ground. Breeding season includes March through July, with a peak of activity in May. According to the BRA, zero documented occurrences of the California horned lark exist within 10 miles of the project area. However, because the annual grassland in the project area provides suitable nesting habitat for this species, the BRA has determined California horned lark has potential to occur within the project area.

Ferruginous Hawk

Ferruginous hawks (*Buteo regalis*) are not listed pursuant to either CESA or FESA. However, ferruginous hawks are a California watch list species and a federal Bird of Conservation Concern. Ferruginous hawk occurrences typically occur in open environments within the State and are restricted to the nonbreeding season (approximately September through March). Winter foraging habitat includes a variety of open communities including annual grasslands, agricultural areas, deserts, and savannahs. Ferruginous hawks do not nest in the region but may occasionally forage within grassland and other open vegetation communities within the project area during winter or migration. According to the BRA, one documented occurrence of ferruginous hawk exists within 10 miles of the project area and the annual grassland in the project area provides suitable winter foraging habitat for ferruginous hawks.

Golden Eagle

The golden eagle (*Aquila chrysaetos*) is not listed pursuant to either CESA or FESA. However, the golden eagle is fully protected according to §3511 of the California Fish and Game Code and the federal Bald and Golden Eagle Protection Act. Golden eagles generally nest on cliff ledges and/or large lone trees in rolling to mountainous terrain. Golden eagles nest throughout California except the Central Valley, the immediate coast, and portions of southeastern California. Occurrences within the Central Valley are usually dispersing post-

breeding birds, non-breeding sub-adults, or migrants. Foraging habitat includes open grassland and savannah and nesting occurs during February through August. According to the BRA, 11 documented occurrences of golden eagle exist within 10 miles of the project area. Trees within the annual grassland in the project area provide suitable nesting habitat for golden eagles. Therefore, the BRA determined the golden eagle has potential to occur within the project area.

Grasshopper Sparrow

The grasshopper sparrow (*Ammodramus savannarum*) is not listed pursuant to either CESA or FESA, but is designated as a California Species of Special Concern. The grasshopper sparrow species generally inhabits moderately open grasslands and prairies with patchy bare ground and scattered shrubs. Breeding generally occurs from early May through August. According to the BRA, zero documented occurrences of the grasshopper sparrow exist within 10 miles of the project area. However, because the annual grassland within the project area provides suitable nesting habitat for the grasshopper sparrow, the BRA determined the grasshopper sparrow has potential to occur within the project area.

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is not listed pursuant to either CESA or FESA, but is designated a federal Bird of Conservation Concern and a California Species of Special Concern. Loggerhead shrikes nest in small trees and shrubs in open country with short vegetation such as pastures, old orchards, mowed roadsides, cemeteries, golf courses, agricultural fields, riparian areas, and open woodlands. The nesting season extends from March through June. According to the BRA, one documented occurrence of loggerhead shrike exists within 10 miles of the project area. Shrubs and trees within the annual grassland in the project area provide suitable nesting habitat for this species. Therefore, the BRA had determined the loggerhead shrike has potential to occur within the project area.

Northern Harrier

The northern harrier (*Circus cyaneus*) is not listed pursuant to either CESA or FESA; however, the northern harrier is considered to be a California Species of Special Concern. The northern harrier is a ground-nesting species and typically nests in emergent wetland/marsh, open grasslands, or savannah communities usually in areas with dense vegetation. Foraging occurs within a variety of open environments such as marshes, agricultural fields, and grasslands. Nesting occurs during April through September. According to the BRA, zero documented occurrences of the northern harrier exist within 10 miles of the project area. Wetlands and annual grassland within the project area provide suitable nesting habitat for this species. Therefore, the BRA had determined the northern harrier has potential to occur within the project area.

Prairie Falcon

Prairie falcons are not listed pursuant to either CESA or FESA; however, prairie falcons are considered to be a California watch list species and a federal Bird of Conservation Concern. Nesting occurs during March through July. However, prairie falcons have not been documented to nest in the Central Valley but may occur as migrants and wintering birds. Prairie falcons nest primarily on shelves, ledges, or potholes in cliffs, but may also use trees, power line structures, buildings, mine highwalls, caves, or stone quarries. Breeding habitat includes open habitat at all elevation up to 3,350 meters (11,000 feet) in arid plains and steppes, wherever cliffs or bluffs are present.

According to the BRA, seven documented occurrences of prairie falcon exist within 10 miles of the project area, and a prairie falcon was observed flying overhead by ECORP biologists during the 2017 project area site visits. The annual grassland in the project area provides suitable migration or winter foraging habitat for this species, although the project area does not provide suitable nesting habitat. The BRA determined the prairie falcon is present migrating through or wintering within the project area, but does not nest in the region.

Short-Eared Owl

Short-eared owls (*Asio flammeus*) are not listed pursuant to either CESA or FESA; however, they are designated as a California Species of Special Concern. In the Central Valley, short-eared owls are a wintering species. Wintering habitat includes large open areas within woodlots, weedy areas, stubble fields, and marsh and shrub thickets. Nesting occurs during March through July. According to the BRA, zero documented occurrences of the short-eared owl exist within 10 miles of the project area. The annual grassland in the project area provides suitable winter foraging habitat for the short-eared owl, although the project area does not provide suitable nesting habitat. Therefore, the BRA has determined the short-eared owl has the potential to migrate through or winter within the project area.

Swainson's Hawk

Swainson's hawk is listed as a threatened species and is protected pursuant to the CESA. In California, the nesting season for Swainson's hawk ranges from early-March to late August. Swainson's hawks nest within tall trees in a variety of wooded communities including riparian, oak woodland, roadside landscape corridors, urban areas, and agricultural areas, among others. Foraging habitat includes open grassland, savannah, low-cover row crop fields, and livestock pastures. According to the BRA, 28 documented occurrences of Swainson's hawk exist within 10 miles of the project area. M&A observed Swainson's hawk foraging during their project area site visits from 2013 to 2015. A Swainson's hawk was also observed flying overhead by ECORP biologists during the 2017 project area site visits. The annual grassland and large trees within the project area provide suitable foraging and nesting habitat for the Swainson's hawk. Therefore, the BRA has determined the Swainson's hawk is present foraging within the project area and has potential to nest within the project area.

Tricolored Blackbird

The tricolored blackbird (TRBL) (*Agelaius tricolor*) was granted emergency listing for protection under the CESA in December 2014; however, the protection listing status was not renewed in June 2015. The TRBL is currently considered a candidate for listing under the CESA and undergoing a status review by the CDFW. The TRBL is currently considered a USFWS BCC and is designated as a California Species of Special Concern. The TRBL nest in colonies that can range from several pairs to several thousand pairs, depending on prey availability, the presence of predators, or level of human disturbance. TRBL nesting habitat includes emergent marsh, riparian woodland/scrub, blackberry thickets, densely vegetated agricultural and idle fields (e.g., wheat, triticale, safflower, fava bean fields, thistle, mustard, cane, and fiddleneck), usually with some nearby standing water or ground saturation. The TRBL feed mainly on grasshoppers during the breeding season, but may also forage upon a variety of other insects, grains, and seeds in open grasslands, wetlands, feedlots, dairies, and agricultural fields. The nesting season is generally from March through August. According to the BRA, five documented occurrences of TRBL exist within 10 miles of the project area. The annual grassland within the project area provides marginally suitable foraging habitat, although the project area does not provide suitable nesting habitat. Therefore, the BRA has determined the TRBL has low potential to occur within the project area.

White-Tailed Kite

White-tailed kite (*Elanus leucurus*) is not listed pursuant to either CESA or FESA; however, the white-tailed kite is fully protected pursuant to §3511 of the California Fish and Game Code. In northern California, white-tailed kite nesting occurs from March through early August, with nesting activity peaking from March through June. Nesting occurs in trees within riparian, oak woodland, savannah, and agricultural communities that are near foraging areas such as low elevation grasslands, agricultural, meadows, farmlands, savannahs, and emergent wetlands. According to the BRA, four documented occurrences of white-tailed kite exist within 10 miles of the project area. The annual grassland and large trees within the project area provide suitable nesting habitat for the white-tailed kite. Therefore, the BRA has determined the white-tailed kite has potential to occur within the project area.

Mammals

A total of nine special-status mammal species were identified as having the potential to occur within the project area based on literature review (Table 4.4-2). However, upon further analysis and after the site visits, two special-status mammal species were considered to be absent from the project area due to the lack of suitable habitat, and further discussion of these special-status mammal species is not provided in this analysis. Brief descriptions of the remaining seven special-status mammal species that have the potential to occur within the project area and/or the off-site improvement areas are presented below.

American Badger

The American badger (*Taxidea taxus*) is designated as a California Species of Special Concern. Badgers occupy a variety of habitats, including grasslands and savannas. The principal requirements seem to be significant food supply friable soils, and relatively open uncultivated ground. According to the BRA, five documented occurrences of American badger exist within 10 miles of the project area. The annual grassland within the project area provides suitable habitat for the American badger. Therefore, the BRA has determined the American badger has potential to occur within the project area.

Pallid Bat

The pallid bat (*Antrozous pallidus*) is not listed pursuant to either CESA or FESA; however, the pallid bat is considered a California Species of Special Concern. The pallid bat is a large, light-colored bat with long, prominent ears and pink, brown, or grey wing and tail membranes. The pallid bat inhabits low elevation (below 6,000 feet) rocky arid deserts and canyonlands, shrub-steppe grasslands, karst formations, and higher elevation coniferous forest (above 7,000 feet). The pallid bat roosts alone or in groups in the crevices of rocky outcrops and cliffs, caves, mines, trees, and in various human structures such as bridges, and barns. Pallid bats are feeding generalists that glean a variety of arthropod prey from surfaces as well as capturing insects on the wing. Foraging occurs over grasslands, oak savannahs, ponderosa pine forests, talus slopes, gravel roads, lava flows, fruit orchards, and vineyards. The pallid bat is not thought to migrate long distances between summer and winter sites. According to the BRA, three documented occurrences of pallid bat exist within 10 miles of the project area. Trees and structures within the project area provide suitable roosting habitat for the pallid bat. Therefore, the BRA has determined the Pallid bat has potential to occur within the project area.

Ringtail

Ringtail (*Bassariscus astutus*) is not listed pursuant to CESA or FESA; however, is designated as Fully Protected in California by CDFW. The ringtail is a smallish procyonid, related to the widespread raccoon (*Procyon lotor*) and neotropical white-nosed coati (*Nasua narica*). Ringtails are mesocarnivores of riparian areas, especially with abundant rocky outcrops, in low to middle elevation drainages in blue oak woodlands, foothill pine/oak forests, chaparral, ponderosa pine woodlands, black oak woodlands, riparian deciduous forests, and mixed coniferous forest. Highly nocturnal, ringtails consume small rodents, snakes, birds and their eggs, invertebrates, and some fruits, nuts, and carrion. According to the BRA, the ringtail is not tracked by the CNDDB; therefore, zero documented occurrences of ringtail exist within 10 miles of the project area. Because the trees along Sand Creek within the project area provide marginally suitable habitat for the ringtail, the BRA has determined the ringtail has the potential to occur within the project area.

San Joaquin Kit Fox

The San Joaquin kit fox (*Corynorhinus townsendii*) is listed as threatened under the CESA and as endangered under the FESA. San Joaquin kit fox has been listed as endangered for over 30 years; yet despite the loss of habitat and apparent decline in numbers since the early 1970s, a comprehensive survey of its entire range or habitat that was once thought to be occupied has never been conducted. Kit foxes inhabit grazed grasslands, grasslands with wind turbines, and also live adjacent to and forage in tilled and fallow fields, and irrigated row crops. Kit foxes usually inhabit areas with loose-textured (friable) soils, suitable for den excavation. In addition, kit foxes frequently use and modify burrows built by other animals. Structures such as culverts, abandoned pipelines, and well casings also may be used as den sites. According to the BRA, 17 documented occurrences of San Joaquin kit fox exist within 10 miles of the project area. Annual grassland and ruderal areas within the project area provide suitable habitat for kit fox. Therefore, the BRA has determined the San Joaquin kit fox has the potential to occur within the project area.

Townsend's Big-Eared Bat

The Townsend's big-eared bat (*Corynorhinus townsendii*) is not listed pursuant to either CESA or FESA; however, the Townsend's big-eared bat is considered a California Species of Special Concern. Townsend's big-eared bat is a fairly large bat with prominent bilateral nose lumps and large rabbit-like ears. The Townsend's big-eared bat has been reported from wide variety of habitat types and elevations from sea level to 10,827 feet. Habitats used include coniferous forests, mixed mesophytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Habitat distribution is strongly associated with the availability of caves and cave-like roosting habitat including abandoned mines, buildings, bridges, rock crevices, and hollow trees. Foraging habitat is generally edge habitats along streams adjacent to and within a variety of wooded habitats. According to the BRA, two documented occurrences of Townsend's big-eared bat exist within 10 miles of the project area. Because trees and structures within the project area provide suitable roosting habitat for this species, the BRA has determined the Townsend's big-eared bat has the potential to occur within the project area.

Greater Mastiff Bat

The greater mastiff bat (*Eumops perotis californicus*) is not listed pursuant to either CESA or FESA; however, the greater mastiff bat is considered a California Species of Special Concern. The greater mastiff bat is the largest North American molossid (free-tailed bat) with a forearm length of 73-83 millimeters. The greater mastiff bat can be found in a variety of habitats, including desert scrub, chaparral, oak woodland, the ponderosa pine belt, and at high elevation meadows and mixed conifer forests. The greater mastiff bat is primarily a cliff-dwelling species and roosting colonies are generally found on under exfoliating rock slabs. Roosts have also been identified in similar crevices in large boulders and buildings. Foraging has been documented as high as 2000 feet above the ground, although 100 to 200 feet is more typical. The greater mastiff bat is most commonly encountered in open broad open areas including dry desert washes, flood plains, chaparral, oak woodland, open

ponderosa pine forest, grassland, and agricultural areas. According to the BRA, zero documented occurrences of greater mastiff bat exist within 10 miles of the project area. Structures within the project area provide marginally suitable roosting habitat for this species. Therefore, the BRA has determined the greater mastiff bat has a low potential to occur within the project area.

Western Red Bat

The western red bat (*Lasiurus blossevillii*) is not listed pursuant to either CESA or FESA; however, the western red bat is considered a California Species of Special Concern. The western red bat day roosts primarily in the foliage of trees or shrubs in edge habitats bordering streams or open fields, in orchards, and occasionally urban areas. The western red bat may be associated with intact riparian habitat, especially with willows, cottonwoods, and sycamores, and may occasionally utilize caves for roosting as well. According to the BRA, one documented occurrence of western red bat exists within 10 miles of the project area. Trees within the project area provide suitable roosting habitat for this species. Therefore, the BRA has determined the western red bat has the potential to occur within the project area.

Sensitive Natural Communities

Wetlands within the project area include all the mapped waters of the U.S. and State with the exception of Sand Creek and the Sand Creek corridor. Wetlands are areas that are saturated by surface or ground water at a frequency and duration to support a prevalence of vegetation adapted for life in saturated soil conditions. Wetlands usually must possess plants adapted to saturated conditions, wetland hydrology, and soils that are periodically or permanently saturated.

Project Site

A jurisdictional delineation of waters of the U.S. was conducted for the project site by Live Oak Associates, Inc. in 2014, and an Approved Jurisdictional Determination was issued on February 23, 2016. Waters of the U.S. mapped within the project site include wetlands and other waters. A total of 3.948 acres of waters of the U.S. were mapped within the project site. Jurisdictional wetlands consist of seasonal wetland pools and wetland seeps. Other jurisdictional waters include an intermittent tributary (Sand Creek), ephemeral tributaries, and impoundments. A total of 1.111 acres of non-jurisdictional, isolated waters and wetlands were also mapped within the project site. Non-jurisdictional wetlands within the project site include seasonal wetland pools and a wetland drainage. Other non-jurisdictional waters include ephemeral drainages.

Off-Site Improvement Areas

A jurisdictional delineation of waters of the U.S. has not been conducted for the off-site improvement areas. However, a preliminary wetland assessment was conducted for off-site improvement areas on August 22, 2017. Potential waters of the U.S. mapped within the off-site improvement areas include wetlands and other waters. A total of 0.692 acre of potential wetlands and other waters were mapped within the off-site improvement areas. Wetlands and other waters

include seasonal wetland, seasonal wetland swale, intermittent drainage, ephemeral drainage, ditch, and pond, which are described in detail below.

Seasonal Wetland

Seasonal wetlands are ephemerally wet due to accumulation of surface runoff and rainwater within low-lying areas. Inundation periods tend to be relatively short and they are commonly dominated by nonnative annual and sometimes perennial hydrophytic species. Four seasonal wetlands occur within the eastern off-site improvement area, which are shallow features dominated by Italian ryegrass and Mediterranean barley (*Hordeum marinum*).

Seasonal Wetland Swale

Seasonal wetland swales are generally linear wetland features that convey precipitation runoff and support a predominance of hydrophytic vegetation, but do not exhibit an OHWM. Seasonal wetland swales are typically inundated for short periods during and immediately after rain events, but usually maintain soil saturation for longer periods during the wet season. Three seasonal wetland swales occur in the northwestern off-site improvement area. The two westernmost seasonal wetland swales occur in a steep drainage adjacent to the water tank, and are dominated by Italian ryegrass and soft brome. The easternmost seasonal wetland swale is a broad, low-gradient feature dominated by inland saltgrass (*Distichlis spicata*).

Intermittent Drainage (Sand Creek)

Intermittent drainages are linear features that exhibit a bed and bank and an OHWM. Intermittent drainages differ from ephemeral drainages in that they flow for longer duration, typically weeks or months following rainfall events, and are often influenced by groundwater, which usually results in greater quantities and duration of flow relative to ephemeral drainages. One intermittent drainage, Sand Creek, occurs in the southeastern off-site improvement area. Sand Creek is a highly incised intermittent drainage with steep banks and an unvegetated bed.

Ephemeral Drainage

Ephemeral drainages are linear features that exhibit a bed and bank and an OHWM, which typically conveys runoff for short periods of time, during and immediately following rain events, and are not influenced by groundwater sources at any time during the year. Ephemeral drainages occur in the two westernmost off-site improvement areas, which are sparsely vegetated. Vegetated portions of ephemeral drainages within the off-site improvement areas are dominated by alkali mallow (*Malvella leprosa*).

Ditch

Ditches are linear features constructed to convey storm water and/or irrigation water. One ditch occurs within the southwestern off-site improvement area adjacent to Empire Mine Road, which is a maintained roadside drainage ditch with an unvegetated bed.

Sensitive Trees

In 2015, a tree survey was conducted for the project site. The tree survey identified, mapped, and evaluated 16 tree species and 255 individual trees for indicators of health. A large majority of the trees identified within the project site belonged to five species, including 73 blue oaks, 60 valley oaks, 54 blue gums, 29 California buckeyes, and 13 interior live oaks. Tree surveys have not been conducted for the off-site improvement areas.

Wildlife Movement/Corridors

The annual grassland within the project site provides a large area of open space along Sand Creek. The annual grassland and Sand Creek may be used by both aquatic and terrestrial species as a wildlife movement corridor. The off-site improvement areas are small, disjunct areas along existing roads and infrastructure and are not likely used as major wildlife movement corridors. A large portion of the annual grassland within the project site would be converted to development; however, wildlife that use the annual grassland as a movement corridor would be able to use the Sand Creek corridor or the annual grassland surrounding the project site for dispersal.

4.4.3 REGULATORY CONTEXT

The following is a description of federal, State, and local environmental laws and policies that are relevant to the CEQA review process.

Federal Regulations

The following are the federal environmental laws and policies relevant to biological resources.

Federal Clean Water Act

The National Pollutant Discharge Elimination System (NPDES) permit system was established in the federal Clean Water Act (CWA) to regulate municipal and industrial discharges to surface waters of the U.S. Each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that EPA must consider in setting effluent limits for priority pollutants.

Nonpoint sources are diffuse and originate over a wide area rather than from a definable point. Nonpoint pollution often enters receiving water in the form of surface runoff, but is not conveyed by way of pipelines or discrete conveyances. As defined in the federal regulations, such nonpoint sources are generally exempt from federal NPDES permit program requirements. However, two types of nonpoint source discharges are controlled by the NPDES program – nonpoint source discharge caused by general construction activities, and the general quality of stormwater in municipal stormwater systems. The 1987 amendments to the CWA directed the federal EPA to implement the stormwater program in two phases. Phase I addressed discharges from large (population 250,000 or above) and medium (population 100,000 to 250,000) municipalities and

certain industrial activities. Phase II addresses all other discharges defined by EPA that are not included in Phase I.

Section 402 of the CWA mandates that certain types of construction activities comply with the requirements of the NPDES stormwater program. The Phase II Rule, issued in 1999, requires that construction activities that disturb land equal to or greater than one acre require permitting under the NPDES program. In California, permitting occurs under the General Permit for Stormwater Discharges Associated with Construction Activity, issued to the State Water Resources Control Board (SWRCB), implemented and enforced by the nine Regional Water Quality Control Boards (RWQCBs).

As of July 1, 2010, all dischargers with projects that include clearing, grading or stockpiling activities expected to disturb one or more acres of soil are required to obtain compliance under the NPDES Construction General Permit Order 2009-0009-DWQ. The General Permit requires all dischargers, where construction activity disturbs one or more acres, to take the following measures:

1. Develop and implement a Stormwater Pollution Prevention Plan (SWPPP) to include a site map(s) of existing and proposed building and roadway footprints, drainage patterns and storm water collection and discharge points, and pre- and post- project topography;
2. Describe types and placement of best management practices (BMPs) in the SWPPP that will be used to protect storm water quality;
3. Provide a visual and chemical (if non-visible pollutants are expected) monitoring program for implementation upon BMP failure; and
4. Provide a sediment monitoring plan if the area discharges directly to a water body listed on the 303(d) list for sediment.

To obtain coverage, a SWPPP must be submitted to the RWQCB electronically and a copy of the SWPPP must be submitted to the City of Antioch. When project construction is completed, the landowner must file a Notice of Termination (NOT).

Construction Site Runoff Management

In accordance with NPDES regulations, in order to minimize the potential effects of construction runoff on receiving water quality, the State requires that any construction activity affecting one acre or more must obtain a General Construction Activity Stormwater Permit. Permit applicants are required to prepare a SWPPP and implement BMPs to reduce construction effects on receiving water quality by implementing erosion and sediment control measures.

Federal Endangered Species Act

The United States Congress passed the Federal Endangered Species Act (FESA) in 1973 to protect endangered species or species that are threatened with extinction. The FESA is intended to operate in conjunction with the National Environmental Policy Act (NEPA) to help protect the ecosystems upon which endangered and threatened species depend.

The FESA prohibits the "take" of endangered or threatened wildlife species. "Take" is defined as harassing, harming (including significantly modifying or degrading habitat), pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species, or any attempt to engage in such conduct (16 USC 1532, 50 CFR 17.3). Taking can result in civil or criminal penalties.

The FESA and NEPA Section 404 guidelines prohibit the issuance of wetland permits for projects that would jeopardize the existence of threatened or endangered wildlife or plant species. Section 7(a)(2) of the FESA requires that each federal agency consult with the USFWS to ensure that any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of critical habitat for listed species. Critical habitat designations mean: (1) specific areas within a geographic region currently occupied by a listed species, on which are found those physical or biological features that are essential to the conservation of a listed species and that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a listed species that are determined essential for the conservation of the species. The U.S. Army Corps of Engineers (USACE) must consult with the USFWS and National Oceanic Atmospheric Administration (NOAA) when threatened or endangered species may be affected by a proposed project to determine whether issuance of a Section 404 permit would jeopardize the species.

In the absence of a federal action, a developer seeking authorization for an incidental take of a listed species must obtain an "incidental take permit" under Section 10 of the FESA (Title 16 U.S. Code, §1539). A Section 10 permit requires that a Habitat Conservation Plan be developed to mitigate any impacts of the take. Antioch has begun the process of attempting to develop a habitat conservation/natural community conservation plan that would operate similar to the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan and would be managed by the East Contra Costa County Habitat Conservancy.

Migratory Bird Treaty Act

Raptors (birds of prey), migratory birds, and other avian species are protected by a number of state and federal laws. The federal Migratory Bird Treaty Act of 1918 (MBTA) prohibits the killing, possessing, or trading of migratory birds except in accordance with regulations prescribed by the Secretary of Interior. Section 3503.5 of the California Fish and Game Code states, "It is unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

U.S. Army Corps of Engineers

This section presents an overview of the criteria used by the USACE to determine those areas within a project area that would be subject to their regulation.

Section 404 of the Clean Water Act

Congress enacted the Clean Water Act "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (33 U.S.C. §1251(a)). Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), the USACE regulates the disposal of dredged or fill material into "waters of the U.S." (33 CFR Parts 328 through 330). This requires project applicants to obtain authorization from the USACE prior to discharging dredged or fill materials into any water of the United States.

In the Federal Register "waters of the U.S." are defined as, "...all interstate waters including interstate wetlands...intrastate lakes, rivers, streams (including intermittent streams), wetlands, [and] natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce..." (33 CFR Section 328.3).

Section 404 jurisdiction in "other waters" such as lakes, ponds, and streams, extends to the upward limit of the OHWM or the upward extent of any adjacent wetland. The OHWM on a non-tidal water is:

- the "line on 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 soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR Section 328.3[e]).

Wetlands are defined as: "...those areas that are inundated or saturated by surface or ground water at a frequency and duration to support a prevalence of vegetation adapted for life in saturated soil conditions" (33 CFR Section 328.8 [b]). Wetlands usually must possess hydrophytic vegetation (i.e., plants adapted to inundated or saturated conditions), wetland hydrology (e.g., topographic low areas, exposed water tables, stream channels), and hydric soils (i.e., soils that are periodically or permanently saturated, inundated or flooded) to be regulated by the USACE pursuant to Section 404 of the Clean Water Act.

Permitting in USACE Jurisdictional Areas

Pursuant to Section 404 of the Clean Water Act, the USACE normally provides two alternatives for permitting impacts to the type of "waters of the U.S." found in the proposed project area. The first alternative would be to use Nationwide Permit(s) (NWP). The second alternative is to apply to the USACE for an Individual Permit (33 CFR Section 235.5(2)(b)).

NWPs are a type of general permit administered by the USACE and issued on a nationwide basis that authorize minor activities that affect USACE regulated waters. Under a NWP, if certain conditions are met, the specified activities can take place without the need for an individual or regional permit from the USACE (33 CFR, Section 235.5[c][2]). In order to use NWP(s), a project must meet one of 27 general nationwide permit conditions, and all specific conditions pertaining to the NWP being used (as presented at 33 CFR Section 330, Appendices A and C).

On April 10, 2008, the USACE and the Environmental Protection Agency (EPA) issued a Final Mitigation Rule governing mitigation requirements for unavoidable impacts to wetlands and other waters of the U.S. under the section 404 program of the Clean Water Act (USACE 2008). 70 Fed. Reg. 19594. In this Rule the USACE and the EPA established a new approach to mitigating the loss of wetlands and waters resulting from projects they permit under section 404 the Clean Water Act. This approach is summarized as follows:

- Establish, to the extent feasible, equivalent standards for all forms of compensatory mitigation (i.e., mitigation banks, in-lieu fee programs, and permittee-responsible mitigation) and thus level the playing field and promote mitigation banking;
- Encourage watershed-based decisions on the best locations of mitigation sites;
- Require measurable, enforceable ecological performance standards for mitigation;
- Encourage the use of science-based assessment methods to evaluate impacts on wetlands and waters and the success of mitigation;
- Require written mitigation plans, suitable financial assurances, and legal arrangements to ensure long term protection of mitigation sites;
- Require regular performance monitoring of mitigation;
- Affirm the "sequential approach" to mitigation in which the USACE first considers avoidance of impacts, then minimization of impacts, and finally compensation for unavoidable impacts.

The Mitigation Rule also establishes a preference hierarchy for mitigation options for projects that impact waters of the U.S. as follows:

1. Mitigation bank credits
2. In-lieu fee program credits
3. Permittee-responsible mitigation under a watershed approach
4. On-site and/or in-kind permittee-responsible mitigation
5. Off-site and/or out-of-kind permittee-responsible mitigation

State Regulations

The following are the State environmental laws and policies relevant to biological resources.

California Endangered Species Act

The State of California enacted the CESA in 1984. The CESA is similar to the FESA but pertains to State-listed endangered and threatened species, and does not pertain to loss of habitat. The CESA prohibits the taking of State-listed endangered or threatened plant and wildlife species. CDFW exercises authority over mitigation projects involving state-listed species, including those resulting from CEQA mitigation requirements. CDFW may authorize taking if an approved habitat management plan or management agreement that avoids or compensates for possible jeopardy is implemented pursuant to Section 2080 of the California Fish and Game Code. CDFW requires preparation of mitigation plans in accordance with published guidelines.

The CDFW exercises jurisdiction over wetland and riparian resources associated with rivers, streams, and lakes under California Fish and Game Code Sections 1600 to 1607. The CDFW has the authority to regulate work that will substantially divert, obstruct, or change the natural flow of a river, stream, or lake; substantially change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed.

In addition, CDFW enforces the Fish & Wildlife Code of California, which provides protection for "fully protected birds" (§3511), "fully protected mammals" (§4700), "fully protected reptiles and amphibians" (§5050), and "fully protected fish" (§5515). The California Code of Federal Regulations (Title 14) prohibits the take of Protected amphibians (Chapter 5, §41), Protected reptiles (Chapter 5, §42) and Protected furbearers (Chapter 5, §460). The CESA, which prohibits "take" of state-listed endangered or threatened species, is also enforced by CDFW.

California Species of Special Concern

In addition to formal listing under FESA and CESA, plant and wildlife species receive consideration during the CEQA process. Species that may be considered for review are included on a list of "Species of Special Concern" developed by the CDFW. CDFW tracks species in California whose numbers, reproductive success, or habitat may be threatened.

California Native Plant Society

The CNPS maintains a list of plant species native to California that have low numbers, limited distribution, or are otherwise threatened with extinction. The list information is published in the Inventory of Rare and Endangered Plants of California. Potential impacts to populations of CNPS-listed plants receive consideration under CEQA review. The following identifies the definitions of the CNPS listings:

List 1A:	Plants believed extinct.
List 1B:	Plants rare, threatened, or endangered in California and elsewhere.
List 2:	Plants rare, threatened, or endangered in California, but more numerous elsewhere.
List 3:	Plants about which we need more information - a review list.
List 4:	Plants of limited distribution - a watch list.

Natural Community Conservation Program

The Natural Community Conservation Program (NCCP) is an unprecedented effort by the State of California, as well as numerous private and public partners, which takes a broad-based ecosystem approach to planning for the protection and perpetuation of biological diversity. The NCCP, which began in 1991 under the California Natural Community Conservation Planning Act, is broader in orientation and objectives than CESA and FESA; these laws are designed to identify and protect individual species that are already listed as threatened or endangered. The primary objective of the NCCP is to conserve natural communities at the ecosystem scale, while accommodating compatible land uses (CDFG, 2003).

State Water Resources Control Board and Regional Water Quality Control Board

This section presents an overview of the criteria used by the SWRCB and RWQCB to determine those areas within a project area that would be subject to their regulation.

Section 401 of the Clean Water Act

The SWRCB and RWQCB regulate activities in "waters of the State" (which includes wetlands) through Section 401 of the Clean Water Act. While the USACE administers a permitting program that authorizes impacts to waters of the U.S., including wetlands and other waters, any USACE permit authorized for a proposed project would be inoperative unless it is a NWP that has been certified for use in California by the SWRCB, or if the RWQCB has issued a project specific certification or waiver of water quality. Certification of NWPs requires a finding by the SWRCB that the activities permitted by the NWP will not violate water quality standards individually or cumulatively over the term of the permit (the term is typically for five years). Certification must be consistent with the requirements of the federal Clean Water Act, the California Environmental Quality Act, the CESA, and the SWRCB's mandate to protect beneficial uses of waters of the State. Any denied (i.e., not certified) NWPs, and all Individual USACE permits, would require a project specific RWQCB certification of water quality.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, Water Code Section 13260, requires that "any person discharging waste, or proposing to discharge waste, that could affect the waters of the State to file a report of discharge" with the RWQCB through an application for waste discharge (Water Code §13260(a)(1). The term "waters of the State" is defined as any surface water or groundwater, including saline waters, within the boundaries of the State (Water Code §13050(e)).

The RWQCB generally considers filling in waters of the State to constitute "pollution." Pollution is defined as an alteration of the quality of the waters of the state by waste that unreasonably affects its beneficial uses (Water Code §13050(1)). The RWQCB litmus test for determining if a project should be regulated pursuant to the Porter-Cologne Water Quality Control Act is if the action could result in any "threat" to water quality.

The RWQCB requires complete pre- and post-development Best Management Practices Plan (BMPs) of any portion of the project site that is developed. This means that a water quality treatment plan for the pre- and post-developed project site must be prepared and implemented. Preconstruction requirements must be consistent with the requirements of the NPDES. That is, a SWPPP must be developed prior to the time that a site is graded. In addition, a post construction BMPs plan, or a Stormwater Management Plan (SWMP) must be developed and incorporated into any site development plan.

Local Regulations

The following are the local government's environmental policies relevant to biological resources.

City of Antioch General Plan

The Antioch General Plan objectives and policies relating to the protection of biological resources that are applicable to the proposed project are presented below.

Objective 10.3.1 Maintain, preserve, and acquire open space and its associated natural resources by providing parks for active and passive recreation, trails, and by preserving natural, scenic, and other open space resources.

Policy 10.3.2.e Require proposed development projects containing significant natural resources (e.g. sensitive habitats, habitat linkages, steep slopes, cultural resources, wildland fire hazards, etc.) to prepare Resource Management Plans (RMP) to define appropriate responses to General Plan policies calling for their protection or preservation. The purpose of the RMP is to look beyond the legal status of species at the time the plan is prepared, and provide a long-term plan for conservation and management of the natural communities found onsite. RMP shall accomplish the following.

- Determine the significance of the resources that are found on-site and their relationship to resources in the surrounding area, including habitat linkages and wildlife movement corridors;
- Define areas that are to be maintained in long-term open space based on the significance of on-site resources and their relationship to resources in the surrounding area; and
- Establish mechanisms to ensure the long term protection and management of lands retained in open space.

Objective 10.4.1 Preserve natural streams and habitats supporting rare and endangered species of plants and animals.

Policy 10.4.2.a Comply with the Federal policy of no net loss of wetlands through avoidance and clustered development. Where preservation in place is found not to be feasible (such as where a road crossing cannot be avoided, or where shore stabilization or creation of shoreline trails must encroach into riparian habitats), require 1) on-site replacement of wetland areas, 2) off-site replacement, or 3) restoration of degraded wetland areas at a minimum ratio of one acre of replacement/restoration for each acre of impacted onsite

habitat, such that the value of impacted habitat is replaced.

Policy 10.4.2.b Preserve in place and restore existing wetlands and riparian resources along the San Joaquin River and other natural streams in the Planning Area, except where a need for structural flood protection is unavoidable.

Policy 10.4.2.c Require appropriate setbacks adjacent to natural streams to provide adequate buffer areas ensuring the protection of biological resources, including sensitive natural habitat, special-status species habitats and water quality protection.

Policy 10.4.2.d Through the project approval and environmental review processes, require new development projects to protect sensitive habitat areas, including, but not limited to, oak woodlands, vernal pools, and native grasslands. Ensure the preservation in place of habitat areas found to be occupied by State and federally protected species.

- If impacts to sensitive habitat areas are unavoidable, appropriate compensatory mitigation shall be required off-site within eastern Contra Costa County. Such compensatory mitigation shall be implemented through the provisions of a Resources Management Plan (RMP) as described in Policy 10.3.2.e, except where, in the discretion of the Community Development Director, an RMP is not necessary or appropriate due to certain characteristics of the site and the project. Among the factors that are relevant to determining whether an RMP is necessary or appropriate for a given project are the size of the project and the project site, the location of the project (e.g., proximity to existing urban development or open space), the number and sensitivity of biological resources and habitats on the project site, and the nature of the project (e.g., density and intensity of development).
- Where preserved habitat areas occupy areas that would otherwise be graded as part of a development project, facilitate the transfer of allowable density to other, non-sensitive portions of the site.

Policy 10.4.2.e Limit uses within preserve and wilderness areas to resource-dependent activities and other uses compatible with the protection of natural habitats (e.g., passive recreation and public trails).

Policy 10.4.2.f Through the project review process, permit the removal of healthy, mature oak trees on a case-by-case basis only where it is necessary to do so.

Policy 10.4.2.g Preserve heritage trees, require the incorporation of native vegetation, and avoid the introduction of invasive species in the landscape plans for new development.

Policy 10.5.1.c In designing buffer areas, the following criteria shall be considered and provided for (when applicable) within the buffer areas to avoid or mitigate significant impacts.

- Habitat Management: How will proposed development affect habitat values on adjacent open space and resource areas? How will development prevent the spread of introduced animals and plant pests into adjacent open space and resource areas? How will proposed development affect wildlife migration corridors between or within open space and/or resource areas?

Policy 4.4.6.7s Adequate buffer areas adjacent to the top of banks along Sand Creek shall protect sensitive plant and amphibian habitats and water quality shall be provided. Adequate buffer areas shall also be provided along the edge of existing areas of permanently preserved open space adjacent to the Sand Creek Focus Area, including but not limited to Black Diamond Mines Regional Park. Buffers established adjacent to existing open space areas shall be of an adequate width to minimize light/glare, noise, fire safety, public safety, habitat, public access impacts within the existing open space areas, consistent with the provisions of Section 10.5, Open Space Transitions and Buffers Policies of the General Plan.

Policy 4.4.6.7t Because of the sensitivity of the habitat areas within the Sand Creek Focus Area, and to provide for mitigation of biological resources impacts on lands in natural open space, a RMP attached as Appendix A to this General Plan shall be prepared and approved prior to development of the Sand Creek Focus Area.

Policy 4.4.6.7w To mitigate the impacts of habitat that would be lost to future development within the Focus Area, an appropriate amount of habitat shall be preserved on- or off-site per the compensatory provisions of the Framework Resources Management Plan prepared for the Sand Creek Focus Area (attached as Appendix A of the General Plan).

Policy 4.4.6.7y Chaparral, scrub, and rock outcrop community within the western portion of the (Sand Creek) Focus Area (west of Empire Mine Road), as well as adjacent grassland community that is suitable habitat for the Alameda whipsnake (*masticophis lateralis euryxanthus*) shall be retained in natural open space. Within other portions of the Focus Area, the chaparral, scrub, and rock outcrop shall be retained in natural open space contiguous to the required grassland linkage to protect the grassland linkage south of the chaparral, scrub, and outcrop community.

City of Antioch Tree Ordinance

According to the City of Antioch's Zoning Ordinance, Article 12: Tree Preservation and Regulation (Section 9-5.1205), tree removal for the proposed project is evaluated as part of the "regular development application process." In deciding whether to approve the removal of a tree, or require its preservation, the City considers whether the tree being evaluated is considered a landmark, indigenous, mature, or established tree. In addition, the City would also evaluate the tree's appearance, species type, and aesthetic compatibility with the proposed project.

The City's Design Requirements under the Subdivision Ordinance (Section 9-4.617), requires the removal of all trees that conflict with grading, utilities, or improvements in the public right-of-way. Therefore, trees within any right-of-way that would conflict with roadway improvements proposed as part of the project must be removed. The trees in which the City authorizes removal, must be replaced. The City's Tree Preservation and Regulation Ordinance (Section 9-5.1205) requires two 24-inch box trees for each established tree, two 48-inch box trees for each mature tree, and the City Council has discretion in determining the appropriate ratio of box tree replacement for any landmark or indigenous trees. The City of Antioch's Tree Ordinance defines six categories of trees:

- An established tree is any tree that is at least ten inches in diameter, at diameter at breast height (DBH). DBH is measured 4.5 feet above natural or finished grade.
- An indigenous tree is a naturally growing tree of the following species: Blue Oak (*Quercus douglasii*), Valley Oak (*Quercus lobata*), Coast Live Oak (*Quercus agrifolia*), Canyon Live Oak (*Quercus chrysolepis*), Interior Live Oak (*Quercus wislizenii*), California Buckeye (*Aesculus californica*), and California Bay (*Umbellularia californica*)
- A landmark tree is any tree that is at least 48 inches in DBH and/or is over 40 feet in height.
- A mature tree is any tree which is at least 26 inches in DBH.

- A street tree is any tree planted within a public right-of-way and/or a tree planting easement.
- A protected tree is any tree required to be preserved as a condition of an approval from a regular development application.

4.4.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology utilized to analyze and determine the proposed project's potential impacts related to biological resources. A discussion of the project's impacts, as well as mitigation measures, are also presented.

Standards of Significance

For the purposes of this EIR, the following standards of significance were adapted from Appendix G of the CEQA Guidelines. Impacts are considered significant if implementation of the proposed project would do any one or more of the following:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFW or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to marshes, vernal pools, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- Have a substantial adverse effect on the environment by converting oak woodlands; and/or
- Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other local, regional, or State habitat conservation plan.

An evaluation of whether an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish or result in the loss of an important biological resource, or impacts that would conflict with local, State, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important, but not significant according to CEQA. The reason for this is that although the impacts would result in an adverse alteration of existing conditions, the impacts would not substantially diminish or result in the permanent loss of a defined important resource on a population-wide or region-wide basis.

Method of Analysis

The BRA prepared for the proposed project by ECORP Consulting, Inc. is based on a review of biological resource databases, inventories, regional literature on both plants and animals and limited site reconnaissance. It should be noted that the BRA does not include determinate field surveys conducted according to agency-promulgated protocols. The purpose of the BRA prepared specifically or the proposed project is to assess the potential for occurrence of special-status plant and animal species or their habitat, and sensitive habitats such as wetlands within the project area. The BRA was peer reviewed by Live Oak Associates, Inc. (see Appendix E).[5]

The ECORP BRA included information from a Biological Assessment previously completed by Monk & Associates, which was drafted in 2015. The Monk & Associates Biological Assessment included protocol-level special-status plant surveys, as well as observations of special status wildlife.

In addition to the aforementioned studies, Live Oak Associates, Inc completed jurisdictional wetland delineations for the on-site project areas in 2014. The study methodology used was consistent with the USACE guidance, the *1987 Corps of Engineers Wetlands Delineation Manual* and the *Regional Supplement to the Corp of Engineers Wetland Delineation Manual, Arid West Region (Version 2.0)*.

Project-Specific Impacts and Mitigation Measures

The following discussion of biological resources impacts is based on implementation of the proposed project in comparison to existing conditions and the standards of significance presented above. As discussed in Chapter 3, Project Description, of this EIR, two development scenarios for the proposed project are currently being considered: a Multi-Generational Plan and a Traditional Plan. The following discussion of impacts is based on implementation of either of the development scenarios. Where impacts would be similar under both of the development scenarios, the discussion of impacts presented below is applicable for both scenarios. However, where impacts would differ between the two development scenarios, the impacts are discussed separately for each scenario. It should be noted that while potential impacts related to both development scenarios are analyzed, ultimately, only one development scenario would be constructed.

4.4-1 Have a substantial adverse effect, either directly or through habitat modifications, on special-status plant species. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

As shown in Table 4.4-1 above, a total of 75 special-status plant species were identified as having the potential to occur within the project site or off-site improvement areas based on a review of relevant literature. However, upon further analysis by ECORP and a review of

[5] Live Oak Associates, Inc. *Peer review for the proposed The Ranch project in Antioch (Cowan Ranch), Antioch, Contra Costa County, California (PN 2160-01).* November 13, 2017.

habitat observed during the reconnaissance-level site surveys, 37 species were considered to be absent from the project site due to the lack of suitable habitat.

Special-Status Plant Species Potentially Occurring On-Site

The four special-status plant species with the potential to occur on-site would be the shining navarretia (*Navarretia nigelliformis ssp. radians*), crownscale (*Atriplex coronata var. coronata*), San Joaquin spearscale (*Extriplex joaquinana*), and the Carquinez goldenbush (*Isocoma arguta*). According to the BRA protocol-level rare plant surveys that were conducted in 2015, shining navarretia, Crownscale, and San Joaquin spearscale have all been identified in the project site. Occurrences of Carquinez goldenbush was not documented in the project site; however, and the Carquinez goldenbush's survey period occurs outside of the survey that was conducted. The annual grassland within the project area provides suitable habitat for the Carquinez goldenbush; therefore, the BRA identified Carquinez goldenbush as having have a potential to occur within the project site. However, because the protocol-level rare plant survey was conducted during the appropriate blooming period for all special-status plant species the BRA determined that all special-status plant species, excluding the three-identified species and the Carquinez goldenbush, included in Table 4.4-1 are absent from the project site.

Special-Status Plant Species Potentially Occurring Within Off-Site Improvement Areas

Special-status plant surveys have not yet been conducted in the off-site improvement areas, and the habitat for the off-site improvement areas varies from mesic areas to annual grassland and wetlands. Therefore, the off-site improvement areas potentially provide suitable habitat for the following 38 plant species listed below:

- large-flowered fiddleneck
- alkali milk-vetch
- crownscale
- big tarplant
- Mt. Diablo fairy-lantern
- Congdon's tarplant
- Hoover's cryptantha
- dwarf downingia
- Jepson's coyote thistle
- diamond-petaled California poppy
- stinkbells
- Diablo helianthella
- Brewer's western flax
- fragrant fritillary
- hogwallow starfish
- Carquinez goldenbush
- showy golden madia
- California androsace
- heartscale
- brittlescale
- round-leaved filaree
- Oakland start-tulip
- recurved larkspur
- Mount Diablo buckwheat
- spiny-sepaled button-celery
- San Joaquin spearscale
- Contra Costa goldfields
- woodland woolythreads
- adobe navarretia
- most beautiful jewelflower
- Keck's checkerbloom
- Mt. Diablo jewelflower
- caper-fruited tropidocarpum
- bearded popcornflower

- Tehama navarretia
- shining navarretia
- Lobb's aquatic buttercup
- California alkali grass

Conclusion

The proposed project would involve development of the project site with urban land uses. Such development activity would include the clearing and grading of land throughout the project site, and may include ground disturbance in the off-site areas identified in Figure 4.4-1. Ground disturbance associated with implementation of the proposed project would have the potential to result in adverse impacts to the three special-status plant species known to occur within the project site (shining navarretia, crownscale, and San Joaquin spearscale), as well as the Carquinez goldenbush, which may occur within the project site, and the special-status plants indicated to potentially occur in off-site project disturbance areas. Therefore, the proposed project could result in adverse effects to special-status plants, as a result of construction activity, and a ***significant*** impact could result.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-1(a) *Prior to approval of grading permits for each phase, a qualified biologist shall conduct protocol-level floristic surveys for Carquinez goldenbush (Isocoma arguta) within the appropriate bloom period for the project site. If Carquinez goldenbush is found during the surveys within the project site, a qualified biologist shall establish avoidance zones around the plant species. The avoidance zones around the plant populations shall clearly demarcate areas for avoidance. If the plant populations cannot be avoided, the applicant shall hire a qualified biologist to prepare a seed collection and replanting plan in coordination with the City of Antioch to reduce impacts to the identified special-status plant populations, subject to review and approval by the City of Antioch Planning Division. All survey results shall be submitted to the City of Antioch Planning Division prior to approval of grading permits.*

4.4-1(b) *Prior to the initiation of any construction activities for each phase, a qualified biologist shall establish avoidance zones around the special-status plant species identified within the project site (shining navarretia, crownscale, and San Joaquin spearscale). The avoidance zones around the plant populations shall clearly demarcate areas for avoidance. If the plant populations cannot be avoided, the applicant shall hire a qualified biologist to prepare a seed collection and replanting plan in coordination with the City of Antioch to reduce impacts to the identified special-status plant*

populations, subject to review and approval by the City of Antioch Planning Division.

4.4-1(c) *Prior to approval of grading permits for each phase, a qualified biologist shall conduct focused special-status plant surveys for the off-site improvement areas. Focused surveys shall be performed according to CNPS protocols. Surveys shall be timed according to the blooming period for target species and known reference populations, if available, and/or local herbaria should be visited prior to surveys to confirm the appropriate phenological state of the target species. If special-status plants are not found within the off-site improvement areas, measures pertaining to special-status plants in the off-site improvement areas are not necessary. All survey results shall be submitted to the City of Antioch Planning Division prior to approval of grading permits.*

If special-status plant species are found during the focused special-status plant surveys in the off-site improvement areas, a qualified biologist shall establish avoidance zones around the plant species. The avoidance zones around the plant populations shall clearly demarcate areas for avoidance. Avoidance measures and buffer distances may vary between species and the specific avoidance zone distance shall be determined in coordination with the City of Antioch Planning Division.

If the plant populations cannot be avoided, the applicant shall hire a qualified biologist to prepare a seed collection and replanting plan in coordination with the City of Antioch to reduce impacts to the identified special-status plant populations, subject to review and approval by the City of Antioch Planning Division.

Alternatively, the project applicant could comply with one of the following conditions:

1. *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or*
2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

4.4-2 Have a substantial adverse effect, either directly or through habitat modifications, on valley elderberry longhorn beetle. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant*.

Multi-Generational Plan and Traditional Plan

The VELB (D*esmocerus californicus dimorphus*) is listed as threatened in accordance with the FESA. The VELB is completely dependent on its host plant, elderberry (*Sambucus* species). Elderberry shrubs are most common in riparian areas or in areas that were historically riparian or floodplain terraces. As described above and according to the BRA, VELB occurrences are not documented within 10 miles of the project site; however, one elderberry shrub was observed in the western central portion of the project site, along Sand Creek. The observed elderberry shrub within the project site provides suitable habitat for this species; as a result, the BRA determined VELB has the potential to occur within the project site. It should be noted that elderberry shrubs were not observed within the off-site improvement areas; therefore, the BRA determined VELB is absent from the off-site improvement areas.

Implementation of the proposed project would include disturbance of much of the project site during site grading, and subsequent development with urban land uses. In general, such development would be limited to the upland areas of the project site, and would not extend into Sand Creek or the areas immediately adjacent to Sand Creek. However, limited work within Sand Creek and the adjacent area may be necessary to facilitate construction of vehicle and pedestrian bridges, and/or utility crossings over Sand Creek. Thus, project-related construction could occur in proximity to the existing elderberry shrub, which would have the potential to adversely affect VELB using the on-site elderberry shrub as habitat. Therefore, impacts related to the VELB, as a result of the proposed project, are considered ***significant***.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-2 Prior to the initiation of any construction activities for each phase, a qualified biologist shall establish a minimum 100-foot no-disturbance buffer around the elderberry shrub identified within the project site. The on-site no-disturbance buffer shall be maintained throughout all construction activities. High-visibility Environmental Sensitive Area fencing and signage shall be placed at least 100 feet from the dripline of each elderberry shrub. If the elderberry shrub cannot be avoided by 100 feet, consultation with USFWS is required.

4.4-3 Have a substantial adverse effect, either directly or through habitat modifications, on vernal pool fairy shrimp and the vernal pool tadpole shrimp. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

The vernal pool fairy shrimp (*Branchinecta lynchi*) is listed as threatened in accordance with the FESA, and the vernal pool tadpole shrimp (*Lepidurus packardi*) is listed as endangered pursuant to the FESA. As described above and according to the BRA, 14 occurrences of vernal pool fairy shrimp are documented within 10 miles of the project site and one documented occurrence in the project site. In addition, one occurrence of vernal pool tadpole shrimp is documented within 10 miles of the project site. Wetlands within the project site and the off-site improvement areas provide suitable habitat for both species. Implementation of the proposed project would involve ground disturbing activity, which would have the potential to disturb portions of the project site that represent confirmed or potential habitat for the vernal pool fairy shrimp and/or vernal pool tadpole shrimp. Therefore, the proposed project would have the potential to result in adverse effects to vernal pool fairy shrimp and the vernal pool tadpole shrimp, and a ***significant*** impact would result.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-3(a) *Prior to any approval of grading permits, the project applicant shall consult with the USFWS regarding impacts to vernal pool fairy shrimp and vernal pool tadpole shrimp from the proposed project. The project sponsor shall obtain the appropriate take authorization (Section 7 Biological Opinion) from the USFWS prior to approval of grading permits. The project applicant shall comply with all terms of the endangered species permits including any mitigation requirements and provide proof of compliance to the City of Antioch Planning Division prior to issuance of a grading permit.*

Alternatively, the project applicant could comply with one of the following conditions:

1. *Comply with the applicable terms and conditions of the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (ECCC HCP/NCCP), as determined in written "Conditions of Coverage" by the East Contra Costa County Habitat Conservancy (Conservancy), provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCCHCP/NCCP Covered Species; or*

2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

4.4-3(b) *Subject to review and approval by the City of Antioch Building Division, project grading shall only occur during the dry season (April 15 – October 30) and only after a qualified biologist has determined that all wetland areas of the site providing potential habitat for vernal pool crustaceans are dry, and individuals of these species, if present, would be in cyst form.*

4.4-4 Have a substantial adverse effect, either directly or through habitat modifications, on California red-legged frog. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

The CRLF (*Rana draytonii*) is listed as Federally Threatened and a California Species of Special Concern. As described above and according to the BRA, 113 documented occurrences of CRLF exist within 10 miles of the project area, including one documented occurrence in 1998 along Sand Creek within the northwestern portion of the project area, which is located partially within the project site and the off-site improvement area.

Sand Creek provides suitable breeding and dispersal habitat for the CRLF; therefore, Sand Creek is considered occupied habitat of the CRLF. In addition, lands adjacent to Sand Creek including the project site constitute potential upland dispersal habitat for the CRLF. The proposed project would include development of the upland areas adjacent to Sand Creek. Development of the upland areas of the project site, including areas in proximity to Sand Creek, would involve grading and urban development that would have the potential to impact individual CRLFs and would involve the disturbance and loss of potential upland CRLF habitat. Additionally, construction of the vehicle bridge, pedestrian bridge, outfall structure, and utility crossings over Sand Creek may involve limited work within Sand Creek. Development within Sand Creek would have the potential to disturb existing CRLF breeding or dispersal habitat. Thus, implementation of the proposed project would have the potential to result in adverse effects to CRLF, which would be considered a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-4 *Prior to approval of grading permits, the project applicant shall consult with the USFWS and CDFW regarding impacts to California red-legged frog from the proposed project. The project sponsor shall obtain the*

appropriate take authorization from the USFWS (Section 7 or 10 of the FESA) and/or from the CDFW (Section 2081 of the California Fish and Game Code). The project applicant shall comply with all required compensatory mitigation determined during consultation with the USFWS and CDFW, and provide proof of compliance to the City of Antioch Planning Division.

Alternatively, the project applicant could comply with one of the following conditions:

1. *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or*
2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

4.4-5 Have a substantial adverse effect, either directly or through habitat modifications, on California tiger salamander. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

The CTS (*Ambystoma californiense*), is federally listed as threatened and listed as a threatened species under the CESA. As described above and according to the BRA, 115 documented occurrences of CTS exist within 10 miles of the project area, including one documented occurrence in 1989 in the northwestern portion of the project area, which is located partially within the project site and the off-site improvement area.

Implementation of the proposed project would include ground disturbing activities within the project site and within the off-site areas depicted in Figure 4.4-1. Ground disturbing activities would involve grading and development of land for urban uses or utility infrastructure, which could result in the loss of potential CTS habitat or individual CTS. Consequently, the proposed project would result in adverse effects to CTS, which would be considered a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-5 Prior to approval of grading permits, the project applicant shall consult with the USFWS and CDFW regarding impacts to California tiger salamander from the proposed project. The project sponsor shall obtain the appropriate take authorization from the USFWS (Section 7 or 10 of the FESA) and/or from the CDFW (Section 2081 of the California Fish and Game Code).. The project applicant shall comply with all required compensatory mitigation determined during consultation with the USFWS and CDFW, and provide proof of compliance to the City of Antioch Planning Division.

Alternatively, the project applicant could comply with one of the following conditions:

1. *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or*
2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

4.4-6 Have a substantial adverse effect, either directly or through habitat modifications, on foothill yellow-legged frog. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

The FYLF (*Rana boylii*) is not listed pursuant to the FESA, but is a candidate for listing under the CESA. The FYLF is also designated as a California Species of Special Concern. As described above and according to the BRA, one documented occurrence of FYLF exists within 10 miles of the project area. Sand Creek within the project area provides marginally suitable habitat for FYLF. Therefore, the BRA determined FYLF has a low potential to occur within the project area.

The majority of ground disturbing activity associated with the proposed project would occur in upland areas of the project site. However, the project would include work within Sand Creek related to the vehicle bridge, pedestrian bridge, outfall structure, and utility crossings over Sand Creek. Although the potential for FYLF to occur within the project site is low, because some potential for FYLF to occur within the project site exists, and the proposed project would include disturbance of the site and Sand Creek, implementation of the proposed project, could result in adverse effects to FYLF, which would be considered a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-6 *Within 48 hours prior to the initiation of any construction activities for each phase, a qualified biologist shall conduct a preconstruction foothill yellow-legged frog clearance survey within the vicinity of Sand Creek. If foothill yellow-legged frogs are found within the project site or off-site improvement areas during the preconstruction surveys, or during construction activities, consultation with CDFW shall occur and a 2081 Incidental Take Permit shall be required. If foothill yellow-legged frogs are not found, further measures pertaining to foothill yellow-legged frogs are not necessary. All survey results shall be submitted to the City of Antioch Planning Division prior to the initiation of any construction activities or where construction has been halted for 30 days or more.*

Alternatively, the project applicant could comply with one of the following conditions:

1. *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or*
2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

4.4-7 Have a substantial adverse effect, either directly or through habitat modifications, on Alameda whipsnake. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

The Alameda whipsnake (*Masticophis lateralis euryxanthus*), also known as the Alameda striped racer, (*Coluber lateralis euryxanthus*) is listed as threatened under the FESA and the CESA. As described above and according to the BRA, 47 documented occurrences of the Alameda whipsnake exist within 10 miles of the project area. The annual grassland within the project area provides suitable dispersal habitat for the Alameda whipsnake; however, the project area and immediate vicinity lack coastal scrub and chaparral communities, which have been found to serve as the center of home ranges for the species. Although Alameda whipsnake have been found to utilize and disperse through annual grasslands, they are frequently found within 500 feet of coastal scrub and chaparral, which

is not in the immediate vicinity of the project area; therefore, the BRA has determined the Alameda whipsnake has a low potential to occur within the project area. Although the Alameda whipsnake has a low potential to occur within the project area, the proposed project would involve disturbance of the annual grassland portions of the project site during grading and development of the site. Such ground disturbing activities would have the potential to adversely effect and Alameda whipsnakes within the disturbance areas, which would be considered a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-7(a) *Prior to the start of construction, a qualified biologist shall conduct a training program for all construction personnel including contractors and subcontractors. The training shall include, at a minimum, a description of Alameda whipsnake and their habitats within the project area; an explanation of the species status and protection under State and federal laws; the avoidance and minimization measures to be implemented to reduce take of the species; communication and work stoppage procedures in case a listed species is observed within the project area; and an explanation of the importance of the Environmentally Sensitive Areas (ESAs) and Wildlife Exclusion Fencing (WEF). A fact sheet conveying this information shall be prepared and distributed to all construction personnel. The training shall provide interpretation for non-English speaking workers. The same instruction shall be provided to any new workers before they are authorized to perform project work.*

4.4-7(b) *Prior to the start of each phase of construction, environmentally sensitive areas (ESAs) (defined as areas containing sensitive habitats adjacent to or within construction work areas for which physical disturbance is not allowed) shall be clearly delineated using high visibility orange fencing. The ESA fencing shall remain in place throughout the duration of the proposed action, while construction activities are ongoing, and shall be regularly inspected and fully maintained at all times.*

4.4-7(c) *A qualified biologist(s) shall be on-site during initial ground disturbance in portions of the project area that contain suitable habitat for Alameda whipsnake. If any Alameda whipsnakes are encountered during the initial grading, the snake shall be allowed to leave the construction area on its own.*

4.4-7(d) *Prior to the start of each phase of construction, wildlife exclusion fencing (WEF) shall be installed at the edge of the project footprint in all areas where sensitive species could enter the construction area. The location of*

the fencing shall be determined by the contractor and the qualified biologist in cooperation with the USFWS and CDFW prior to the start of staging or ground- disturbing activities. A conceptual fencing plan shall be submitted to the USFWS and CDFW for review and approval prior to WEF installation. The location, fencing materials, installation specifications, and monitoring and repair criteria shall be approved by the USFWS and CDFW prior to start of construction. The WEF shall remain in place throughout the duration of the project and shall be regularly inspected and fully maintained. Repairs to the WEF shall be made within 24 hours of discovery. Upon project completion the WEF shall be completely removed, the area cleaned of debris and trash, and returned to natural conditions. An exception to the foregoing fencing measures is that for work sites where the duration of work activities is very short (e.g., three days or less) and that occur during the dry season, and the installation of exclusion fencing will result in more ground disturbance than from project activities, then the boundaries and access areas and sensitive habitats may be staked and flagged by the qualified biologist prior to disturbance and species monitoring would occur during all project activities at that site. Modifications to this fencing measure may be made on a case-by-case basis with approval from the USFWS and CDFW.

4.4-7(e) *As an alternative to Mitigation Measures 4.4-7(a) through 4.4-7(d) above, the project applicant could comply with one of the following conditions:*

1. *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or*
2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

4.4-8 Have a substantial adverse effect, either directly or through habitat modifications, on Blainville's horned lizard and silvery legless lizard. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

Blainville's horned lizard (*Phrynosoma blainvillii*) is considered a California Species of Special Concern. As described above and according to the BRA, three documented occurrences of the Blainville's horned lizard exists within 10 miles of the project area. The annual grassland within the project area provides only marginally suitable habitat for this species. Therefore, the BRA determined the Blainville's horned lizard has low potential to occur within the project area.

The silvery legless lizard (*Anniella pulchra pulchra*) is not listed pursuant to the CESA or FESA, but is designated as a California Species of Special Concern. As described above and according to the BRA, six documented occurrences of the silvery legless lizard exist within 10 miles of the project area. However, the annual grasslands within the project area provide only marginally suitable habitat for this species. Therefore, the BRA has determined the silvery legless lizard has low potential to occur within the project area.

Implementation of the proposed project would involve disturbance of the existing grassland areas of the project site through grading and urbanization of the site. Although the Blainville's horned lizard and silvery legless lizards have a low potential to occur within the project area, because some potential for the species to occur on-site exists, the construction activity related to implementation of the proposed project would have the potential to result in adverse effects to the Blainville's horned lizard and silvery legless lizards. Consequently, the proposed project would be considered to result in a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-8 *Within 14 days prior to the initiation of any construction activities for each phase, a qualified biologist shall conduct preconstruction surveys for Blainville's horned lizards and silvery legless lizards. If Blainville's horned lizards and/or silverly legless lizards are found prior to the initiation of, and/or during, construction activities, a qualified biologist shall relocate them outside of the project area, subject to review and approval by the appropriate resource agencies (i.e., CDFW, USFWS, and the City of Antioch Planning Division). All survey results shall be submitted to the City of Antioch Planning Division prior to the initiation of any construction activities or where construction has been halted for 30 days or more.*

Alternatively, the project applicant could comply with one of the following conditions:

1. *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or*
2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

4.4-9 Have a substantial adverse effect, either directly or through habitat modifications, on northwestern pond turtle. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

The northwestern pond turtle (*Actinemys marmorata*) is not listed pursuant to either CESA or FESA; however, the northwestern pond turtle is designated as a California Species of Special Concern. As described above and according to the BRA, 31 documented occurrences of northwestern pond turtles exist within 10 miles of the project area.

As discussed in further depth in Impact 4.4-18, construction activities related to implementation of the proposed project could result in disturbance of Sand Creek or the ponds/impoundments, both of which are considered suitable habitat for the northwestern pond turtle. Disturbance of suitable northwestern pond turtle habitat would be considered an adverse effect on the species, and, as such, the proposed project would result in a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-9 *Within 14 days prior to the initiation of any construction activities for each phase, a qualified biologist shall conduct preconstruction surveys for northwestern pond turtles. If northwestern pond turtles are found prior to the initiation of, and/or during, construction activities, a qualified biologist shall relocate them outside of the project area, subject to review and approval by the appropriate resource agencies (i.e., CDFW, USFWS, and the City of Antioch Planning Division). All survey results shall be submitted to the City of Antioch Planning Division prior to the initiation of any construction activities or where construction has been halted for 30 days or more.*

Alternatively, the project applicant could comply with one of the following conditions:

1. *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or*
2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including*

payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.

4.4-10 Have a substantial adverse effect, either directly or through habitat modifications, on burrowing owl. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

The burrowing owl (*Athene cunicularia*) is not listed pursuant to either CESA or FESA; however, the burrowing owl is designated as a federal Bird of Conservation Concern and a California Species of Special Concern and is covered by the Migratory Bird Treaty Act and the California Fish and Game Code Sections 3503, 3503.5. As described above and according to the BRA, 75 documented occurrences of burrowing owl exist within 10 miles of the project area. Although, one burrowing owl along the banks of Sand Creek was observed during the fall and winter months from 2013 to 2015, burrowing owls were not observed nesting within the project area in the spring or summer months. The BRA determined burrowing owls winter within the project site and have potential to winter within the off-site improvement areas. In addition, burrows within the annual grassland and ruderal areas in the project area provide suitable nesting habitat.

Implementation of the proposed project would include ground disturbing, such as grading and development, within much of the upland areas of the project site. Ground disturbing activities would have the potential to disturb nesting or overwintering burrowing owls within the project site. Such disturbance would be considered an adverse effect of the project on the species, and, as a result, the proposed project would be considered to result in a ***significant*** impact on burrowing owls.

Mitigation Measure(s)
Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-10(a) *Prior to the initiation of any construction activities for each phase during burrowing owl breeding season (February 1 through August 31), burrowing owl surveys shall be conducted by a qualified biologist walking the entire project site, including all off-site improvement areas, and (where possible) in areas within 150 meters (approx. 500 feet) of the proposed project impact zone. The 150-meter buffer zone is surveyed to identify burrows and owls outside of the proposed project area which may be impacted by factors such as noise and vibration (heavy equipment) during project construction. If the qualified biologist does not find evidence of burrowing owls, further mitigation is not required. All survey results shall be submitted to the City of Antioch Planning Division prior to the initiation of any construction activities or where construction has been halted for 30 days or more.*

If the qualified biologist finds evidence of burrowing owls, all project-related activities shall avoid nest sites during the remainder of the breeding season or while the nest remains occupied by adults or young (nest occupation includes individuals or family groups foraging on or near the site following fledging). Avoidance is establishment of a minimum 300-foot buffer zone around nests. Construction and other project-related activities may occur outside of the 300-foot buffer zone. Construction and other project-related activities may be allowed inside of the 300-foot non-disturbance buffer during the breeding season if the nest is not disturbed, and the project activities are monitored by a qualified biologist and subject to review and approval by the appropriate resource agencies (i.e., CDFW, USFWS, and the City of Antioch Planning Division).

If monitoring by the qualified biologist indicates that the nest is abandoned prior to the end of nesting season and the burrow is no longer in use, the non-disturbance buffer zone may be removed if approved by CDFW. The qualified biologist shall excavate the burrow in accordance with the latest CDFW guidelines for burrowing owl to prevent reoccupation subject to review and approval from CDFW.

4.4-10(b) *Prior to the initiation of any construction activities associated with the proposed project, including off-site improvements, during the burrowing owl non-breeding season (September 1 through January 31), the qualified biologist shall establish a minimum 300-foot non-disturbance buffer around identified occupied burrows. If the qualified biologist does not find evidence of occupied burrows, further mitigation is not required. Construction activities outside of the 300-foot non-disturbance buffer are allowed. Subject to review and approval by the appropriate resource agencies (i.e., CDFW, USFWS, and the City of Antioch Planning Division), construction activities within the non-disturbance buffer may be allowed if the following criteria are met to prevent owls from abandoning over-wintering sites:*

- *A burrowing owl exclusion plan shall be developed for the project and approved by CDFW. The approved exclusion plan shall include the results of the preconstruction surveys and proposed methods for the installation and monitoring of one-way doors and the exclusion of burrowing owls;*
- *Upon approval by CDFW a qualified biologist shall install a one-way door at the entrance of each occupied burrow. The burrows shall then be monitored twice daily for 48 hours to ensure that the owls have vacated the burrow. After the burrows have been vacated at the end of the 48-hour monitoring period the one-way doors shall be removed and the burrow shall be hand-excavated to its terminus and completely backfilled. The site shall then be monitored daily for one week to ensure that the site is not reoccupied by burrowing owls.*

Alternatively, the project applicant could comply with one of the following conditions:

1. *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or*
2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

4.4-11 Have a substantial adverse effect, either directly or through habitat modifications, on Swainson's hawk and other nesting raptors. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

Swainson's hawk (*Buteo swainsoni)* is listed as a California threatened species and is protected pursuant to the CESA and from direct take pursuant to the Migratory Bird Treaty Act. In addition, Swainson's hawk eggs and nests are protected under California Fish and Game Code 3503.5 and 3513. As described above and according to the BRA, 28 documented occurrences of Swainson's hawk exist within 10 miles of the project area. Swainson's hawks have been observed throughout the project area during the project area site visits. The annual grassland and large trees within the project area provide suitable foraging and nesting habitat for the Swainson's hawk. Therefore, the BRA has determined the Swainson's hawk is present foraging within the project area and has potential to nest within the project area, including the off-site improvement areas.

The proposed project would involve the disturbance and development of the grassland areas of the site, which would represent a loss of foraging habitat for the species. Additionally, while the proposed project does not currently involve removal of protected on-site trees, the possibility exists that implementation of the project could require the removal of trees, which are considered potential nesting habitat for Swainson's hawks. The loss of foraging habitat and the potential loss of nesting habitat would be considered an adverse effect of the project on Swainson's hawks; thus, the proposed project would result in a ***significant*** impact.

Mitigation Measure(s)

Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-11(a) *Within 14 days prior to the initiation of any construction activities for each phase, a qualified biologist shall conduct preconstruction nesting bird survey of all suitable habitat within the project area, including the off-site improvement areas, during the nesting season (February 1 – August 31). Preconstruction surveys shall be conducted within 0.5 mile of the project area for Swainson's hawk and 300 feet for other nesting raptors. If the qualified biologist does not find evidence of active nests, further mitigation is not required. All survey results shall be submitted to the City of Antioch Planning Division prior to the initiation of any construction activities or where construction has been halted for 30 days or more.*

If active nests are found, an on-site no-disturbance buffer around the nest shall be established. The buffer distance shall be established by a qualified biologist in consultation with CDFW, but is recommended to be 300 feet for Swainson's hawk and other nesting raptors. The buffer shall be maintained until the fledglings are capable of flight and become independent of the nest, as determined by the qualified biologist. Once the young are independent of the nest, further measures are not necessary.

Preconstruction nesting bird surveys are not required for construction activity outside the nesting season.

4.4-11(b) *The grassland habitat present at the proposed project site is considered suitable foraging habitat for Swainson's hawks. The loss of potential Swainson's hawk foraging habitat shall be mitigated prior to issuance of a grading permit via the permanent preservation of Swainson's hawk foraging habitat pursuant to the CDFW's Mitigation Guidelines at a 1:1 ratio. Acceptable mitigation may include one of the following options:*

- *The project applicant shall acquire Fee Title of Swainson's hawk habitat, or acquire the right to record a conservation easement over lands that can be managed for Swainson's hawk (hereinafter Habitat Management Lands). Any land acquired through Fee Title shall be donated to a suitable conservation organization for management and the applicant shall be assessed a management endowment fee for the long-term management of the Habitat Management Lands by a CDFW-approved conservation organization; or*
- *In lieu of fee title acquisition of mitigation land, or in lieu of recording a conservation easement over suitable Swainson's hawk foraging habitat, the applicant shall purchase Swainson's hawk mitigation credits from a CDFW-approved Swainson's hawk Conservation Bank. As there are no Swainson's hawk conservation banks that have a service area that covers the project site, an out of*

service area Swainson's hawk Conservation Bank shall be allowed as determined appropriate based on consultation with CDFW.

Alternatively, the project applicant could comply with one of the following conditions:

1. *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or*
2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

4.4-12 Have a substantial adverse effect, either directly or through habitat modifications, on nesting special-status bird species and nesting common bird species. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

California Fish and Game Code (Sections 3503, 3503.5), and the Federal Migratory Bird Treaty Act protect special-status birds including the loggerhead shrike and tricolored blackbird as well as other passerine birds, also known as perching birds, and their nests. The on-site trees and grassland would represent nesting and foraging habitat for many such species.

The proposed project would involve the disturbance and development of the grassland areas of the site, which would represent a loss of foraging and nesting habitat for the species that use such habitat. Additionally, while the proposed project does not currently involve removal of protected on-site trees, the possibility exists that implementation of the project could require the removal of trees. The removal of trees would represent a further loss of foraging and nesting habitat for species that use such habitat. Considering that implementation of the proposed project would result in the loss of nesting and foraging habitat for special-status bird species, the proposed project would result in adverse effects to special-status bird species, which would be considered a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant level.*

Multi-Generational Plan and Traditional Plan

4.4-12 Within 14 days prior to the initiation of any construction activities for each phase, a qualified biologist shall conduct preconstruction nesting bird survey of all suitable habitat within the project area, including off-site improvement areas, during the nesting season (February 1 – August 31). Preconstruction surveys shall be conducted within 500 feet for tricolored blackbird, and 100 feet of the project area for nesting songbirds. If the qualified biologist does not find evidence of active nests, further mitigation is not required. All survey results shall be submitted to the City of Antioch Planning Division prior to the initiation of any construction activities or where construction has been halted for 30 days or more.

If active nests are found, an on-site no-disturbance buffer around the nest shall be established. The buffer distance shall be established by a qualified biologist in consultation with CDFW, but is recommended to be 50 feet for non-raptor songbirds. The buffer shall be maintained until the fledglings are capable of flight and become independent of the nest. Once the young are independent of the nest, further measures are not necessary.

Preconstruction nesting bird surveys are not required for construction activity outside the nesting season.

"

Alternatively, the project applicant could comply with one of the following conditions:

1. *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or*
2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

4.4-13 Have a substantial adverse effect, either directly or through habitat modifications, on American badger. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant*.

Multi-Generational Plan and Traditional Plan

The American badger (*Taxidea taxus*) is designated as a California Species of Special Concern. As described above and according to the BRA, five documented occurrences of American badger exist within 10 miles of the project area. The annual grassland within the project area provides suitable habitat for the American badger.

Implementation of the proposed project would involve disturbance and development within the annual grassland habitat areas of the project site. Such development would result in a loss of American badger habitat and potential disturbance of individual badgers within the project site. Therefore, the proposed project would have the potential to result in adverse effects to the American badger, which would be considered a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measurewould reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-13 *Within 14 days prior to the initiation of any construction activities for each phase, a qualified biologist shall conduct a preconstruction American badger survey within the project area. If American badgers or burrows with American badger signs are found within the project site or off-site improvement areas during the preconstruction surveys, consultation with CDFW shall occur prior to the initiation of any construction activities to determine an appropriate burrow excavation and/or relocation method. If American badgers are not found, further measures pertaining to American badgers are not necessary. All survey results shall be submitted to the City of Antioch Planning Division prior to the initiation of any construction activities or where construction has been halted for 30 days or more.*

Alternatively, the project applicant could comply with one of the following conditions:

1. *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or*
2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

4.4-14 Have a substantial adverse effect, either directly or through habitat modifications, on San Joaquin kit fox. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

The San Joaquin kit fox (*Corynorhinus townsendii*) is listed as threatened under the CESA and as endangered under the FESA. According to the BRA, 17 documented occurrences of San Joaquin kit fox exist within 10 miles of the project area. Annual grassland and ruderal

areas within the project area provide suitable habitat for kit fox. Therefore, the BRA has determined the San Joaquin kit fox has the potential to occur within the project area.

Implementation of the proposed project would involve disturbance and development within the annual grassland habitat areas of the project site. Such development would result in a loss of San Joaquin kit fox habitat and potential disturbance of individual badgers within the project site. Therefore, the proposed project would have the potential to result in adverse effects to the San Joaquin kit fox, which would be considered a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-14 *The project shall implement the following avoidance measures for potential effects on San Joaquin kit fox during construction, including construction of off-site improvements:*

- *Prior to any ground disturbance for each phase, a USFWS/CDFW-qualified biologist shall conduct a pre-construction survey within the proposed disturbance footprint and a surrounding 250-foot radius. The survey shall establish the presence or absence of San Joaquin kit foxes and/or suitable dens and evaluate use by kit foxes in accordance with USFWS survey guidelines (USFWS 1999). The pre-construction survey shall be conducted no more than 30 days prior to ground disturbance. On the parcel where the activity is proposed, the biologist shall survey the proposed disturbance footprint and a 250-foot radius from the perimeter of the proposed footprint to identify San Joaquin kit foxes and/or suitable dens. Adjacent parcels under different land ownership are not required to be surveyed. The status of all surveyed dens shall be determined and mapped. Written results of pre-construction surveys shall be submitted to USFWS within 5 working days after survey completion and before the start of ground disturbance. Concurrence is not required prior to ground disturbance. If San Joaquin kit foxes and/or suitable dens are not identified in the survey area, further mitigation is not necessary. All survey results shall be submitted to the City of Antioch Planning Division prior to the initiation of any construction activities or where construction has been halted for 30 days or more.*

- *If San Joaquin kit foxes and/or suitable dens are identified in the survey area, the measures described below shall be implemented.*

- *If a San Joaquin kit fox den is discovered in the proposed development footprint, the den shall be monitored for 3 days by a USFWS/CDFW–qualified biologist using a tracking medium or an infrared beam camera to determine if the den is currently being used.*
- *Unoccupied dens shall be destroyed immediately to prevent subsequent use.*
- *If a natal or pupping den is found, USFWS and CDFW shall be notified immediately. The den shall not be destroyed until the pups and adults have vacated and then only after further consultation with USFWS and CDFW.*
- *If kit fox activity is observed at the den during the initial 3-day monitoring period, the den shall be monitored for an additional 5 consecutive days from the time of the first observation to allow any resident animals to move to another den while den use is actively discouraged. For dens other than natal or pupping dens, use of the den can be discouraged by partially plugging the entrance with soil such that any resident animal can easily escape. Once the den is determined to be unoccupied it may be excavated under the direction of the biologist. Alternatively, if the animal is still present after 5 or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of the biologist, it is temporarily vacant (i.e., during the animal's normal foraging activities).*

- *If dens are identified in the survey area outside the proposed disturbance footprint, exclusion zones around each den entrance or cluster of entrances shall be demarcated. The configuration of exclusion zones should be circular, with a radius measured outward from the den entrance(s). Ground disturbance activities shall not occur within the exclusion zones. Exclusion zone radii for potential dens shall be at least 50 feet and shall be demarcated with four to five flagged stakes. Exclusion zone radii for known dens shall be at least 100 feet and shall be demarcated with staking and flagging that encircles each den or cluster of dens but does not prevent access to the den by kit fox.*

Alternatively, the project applicant could comply with one of the following conditions:

1. *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or*

2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

4.4-15 Have a substantial adverse effect, either directly or through habitat modifications, on ringtail. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

Ringtail (*Bassariscus astutus*) is not listed pursuant to CESA or FESA; however, the ringtail is designated as Fully Protected in California by CDFW. As described above and according to the BRA, the ringtail is not tracked by the CNDDB; therefore, zero documented occurrences of ringtail exist within 10 miles of the project area. Because the trees along Sand Creek within the project area provide marginally suitable habitat for the ringtail, the BRA has determined the ringtail has the potential to occur within the project area.

Implementation of the proposed project is anticipated to involve minor disturbance within Sand Creek related to construction of the proposed vehicle bridge, pedestrian bridge, outfall structure and utility overcrossing. Additionally, while the project is not anticipated to include removal of any protected trees within the project site, the possibility exists that some trees may be removed during implementation of the proposed project. Because trees along Sand Creek provide marginally suitable habitat for ringtails, disturbance within Sand Creek and removal of trees from the project site would be considered to have the potential to result in adverse effects to the species, which would be considered a ***significant*** impact.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-15 *Prior to the initiation of any construction activities for each phase, a qualified biologist shall conduct a preconstruction ringtail survey within the project area. If occupied ringtail dens are found within the project site or off-site improvement areas during the preconstruction surveys, the occupied dens shall be marked and mapped, and a 200-foot avoidance buffer shall be mapped around the occupied den. Occupied dens shall be monitored daily by a qualified biologist and destroyed after they are confirmed to be abandoned by ringtails. If occupied ringtail dens cannot be avoided, a qualified biologist shall passively relocate the ringtail from impact areas. If occupied ringtail dens are not found, further measures pertaining to ringtails are not necessary. All survey results shall be submitted to the City of Antioch Planning Division prior to the initiation of*

any construction activities or where construction has been halted for 30 days or more.

Alternatively, the project applicant could comply with one of the following conditions:

1. *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or*
2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

4.4-16 Have a substantial adverse effect, either directly or through habitat modifications, on special status bat species, including pallid bat, Townsend's big-eared bat, greater mastiff bat, and western red bat. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant*.

Multi-Generational Plan and Traditional Plan

The pallid bat (*Antrozous pallidus*), the Townsend's big-eared bat (*Corynorhinus townsendii*), the greater mastiff bat (*Eumops perotis californicus*), and the western red bat (*Lasiurus blossevillii*) are not listed pursuant to either CESA or FESA; however, they are all considered a California Species of Special Concern. As described above and according to the BRA, three documented occurrences of the pallid bat, two documented occurrences of the Townsend's big-eared bat, and one documented occurrence of the western red bat exists within 10 miles of the project area. It should be noted that zero documented occurrences of the greater mastiff bat exist within 10 miles of the project area.

Trees and structures within the project area provide suitable roosting habitat for the pallid bat, Townsend's big-eared bat, and the western red bat and marginal habitat for the greater mastiff bat. Implementation of the proposed project would include demolition of the existing structures within the project site. Although the proposed project is not anticipated to include the removal of protected trees from the project site, some tree removal may occur with implementation of the proposed project. Demolition of existing structures as well as removal of on-site trees would have the potential to result in adverse effects to the foregoing bat species. Consequently, the proposed project would be considered to have a ***significant*** impact on pallid bats, Townsend's big-eared bats, the greater mastiff bat, and the western red bat.

Mitigation Measure(s)

Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-16 Prior to the initiation of any construction activities for each phase, including construction of off-site improvements, a qualified biologist shall conduct preconstruction roosting bat surveys for all suitable roosting habitat (i.e., trees and manmade structures) that would be impacted during construction activities. If impacted suitable roosting habitat is identified, a qualified biologist shall conduct an evening bat emergence survey that may include acoustic monitoring to determine whether bats are present. If pallid bat, Townsend's big eared bat, greater mastiff bat, and/or western red bat are found, consultation with CDFW shall be required prior to the initiation of any construction activities. If special-status bats are not found during the preconstruction surveys, further measures pertaining to special-status bat are not necessary. All survey results shall be submitted to the City of Antioch Planning Division prior to the initiation of any construction activities or where construction has been halted for 30 days or more.

Alternatively, the project applicant could comply with one of the following conditions:

1. *Comply with the applicable terms and conditions of the ECCC HCP/NCCP, as determined in written "Conditions of Coverage" by the Conservancy, provided that the City has first entered into an agreement with the Conservancy for coverage of impacts to ECCC HCP/NCCP Covered Species; or*
2. *Comply with a habitat conservation plan and/or natural community conservation plan developed and adopted by the City, including payment of applicable fees, provided that CDFW and USFWS have approved the conservation plan.*

4.4-17 Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to marshes, vernal pools, coastal, etc.) or waters of the State through direct removal, filling, hydrological interruption, or other means. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

Wetlands within the project area include all the mapped waters of the U.S. for the project site and the off-site improvement areas.

Project Site

A total of 3.948 acres of waters of the U.S. have been mapped and verified by USACE within the project site, which includes 1.901 acres of intermittent tributary (Sand Creek), 0.340 acre of ephemeral tributary (tributaries to Sand Creek), 1.372 acres of impoundment,

0.303 acre of seasonal wetland pool, and 0.030 acre of wetland seep (see Figure 4.4-3). An additional 1.111 acres of non-jurisdictional waters were verified by USACE within the project site, which includes 0.132 acre of non-tributary ephemeral drainage, 0.286 acre of isolated wetland drainage, 0.588 acre of isolated seasonal wetland pool, and 0.105 acre of non-wetland seasonal pool.

Off-Site Improvement Areas

A total of 0.692 acre of potential waters of the U.S. has been mapped within the off-site improvement areas, which includes ±0.141 acre of seasonal wetland, 0.099 acre of seasonal wetland swale, 0.135 acre of intermittent drainage, 0.043 acre of ephemeral drainage, 0.041 acre of ditch, and 0.233 acre of pond (see Figure 4.4-4 through Figure 4.4-6). Prior to any impacts to these features, both a Section 404 permit and a Section 401 water quality certification permit would need to be obtained from the USACE and RWQCB, respectively.

Project Implementation

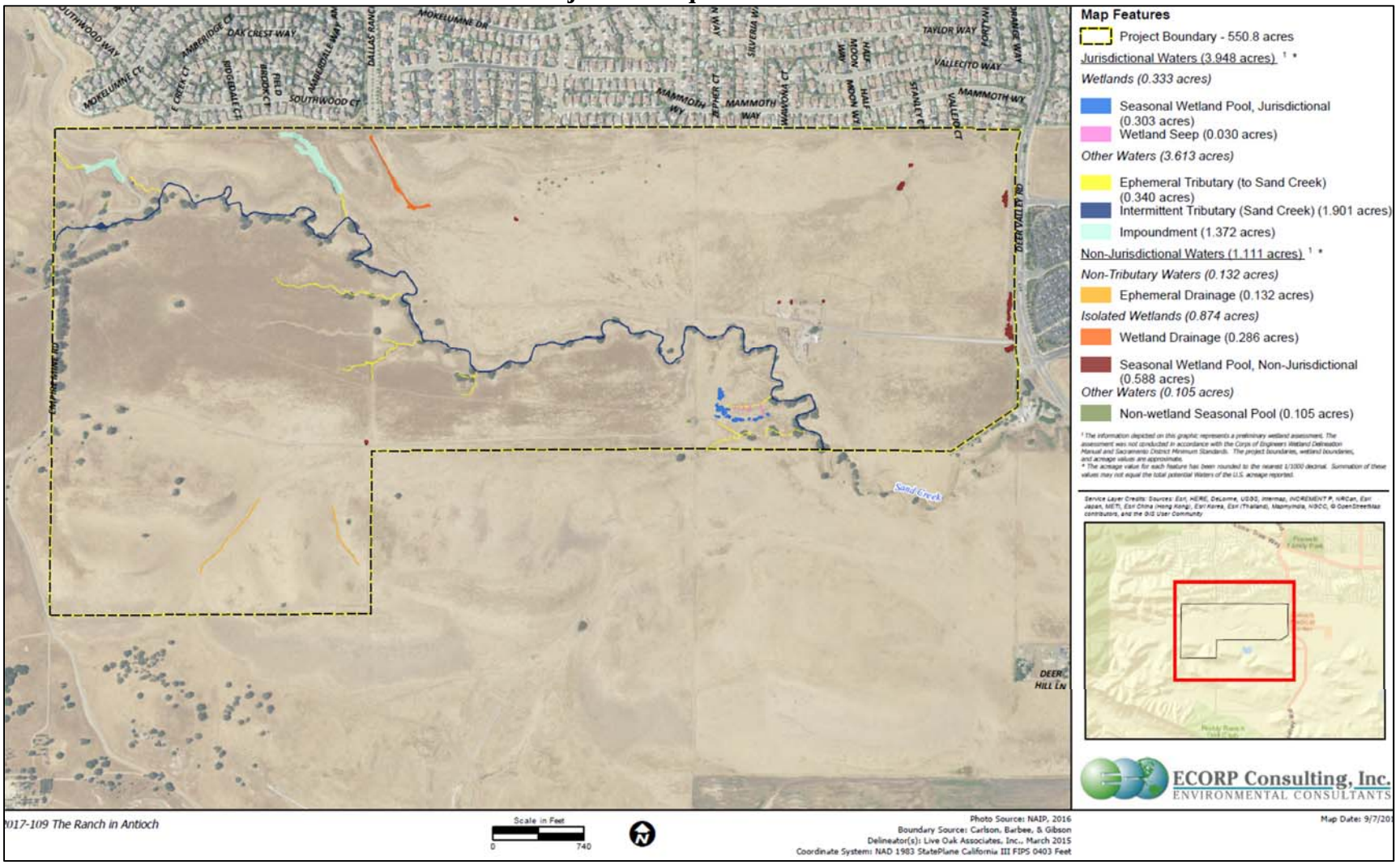
Although the proposed project would include development of much of the upland areas within the project site, the areas classified as jurisdictional seasonal wetland pools, wetland seeps, and impoundments would be preserved within open space areas on the project site. Additionally, development within the project site would include a 50-foot no-disturbance setback from Sand Creek to avoid potential impacts to the jurisdictional ephemeral and intermittent wetland areas associated with Sand Creek. Although disturbance within Sand Creek and wetland areas would be generally avoided, the proposed project would include development of a vehicle bridge, pedestrian bridge, outfall structure and utility overcrossing of Sand Creek. Construction of the vehicle bridge is anticipated to include the placement of rip-rap, which would be considered a fill of wetland areas associate with Sand Creek. The design of the pedestrian bridge, outfall structure and utility overcrossing is currently unknown; thus, both structures could involve the placement of piers, fill, or other material within wetland areas associated with Sand Creek.

The proposed project does not include specific design proposals for off-site improvements; however, potential waters of the U.S. exist in the areas designated for future project-related off-site improvements. Given the lack of specific design proposals, the off-site improvements would have the potential to result in fill or disturbance of off-site wetlands.

Conclusion

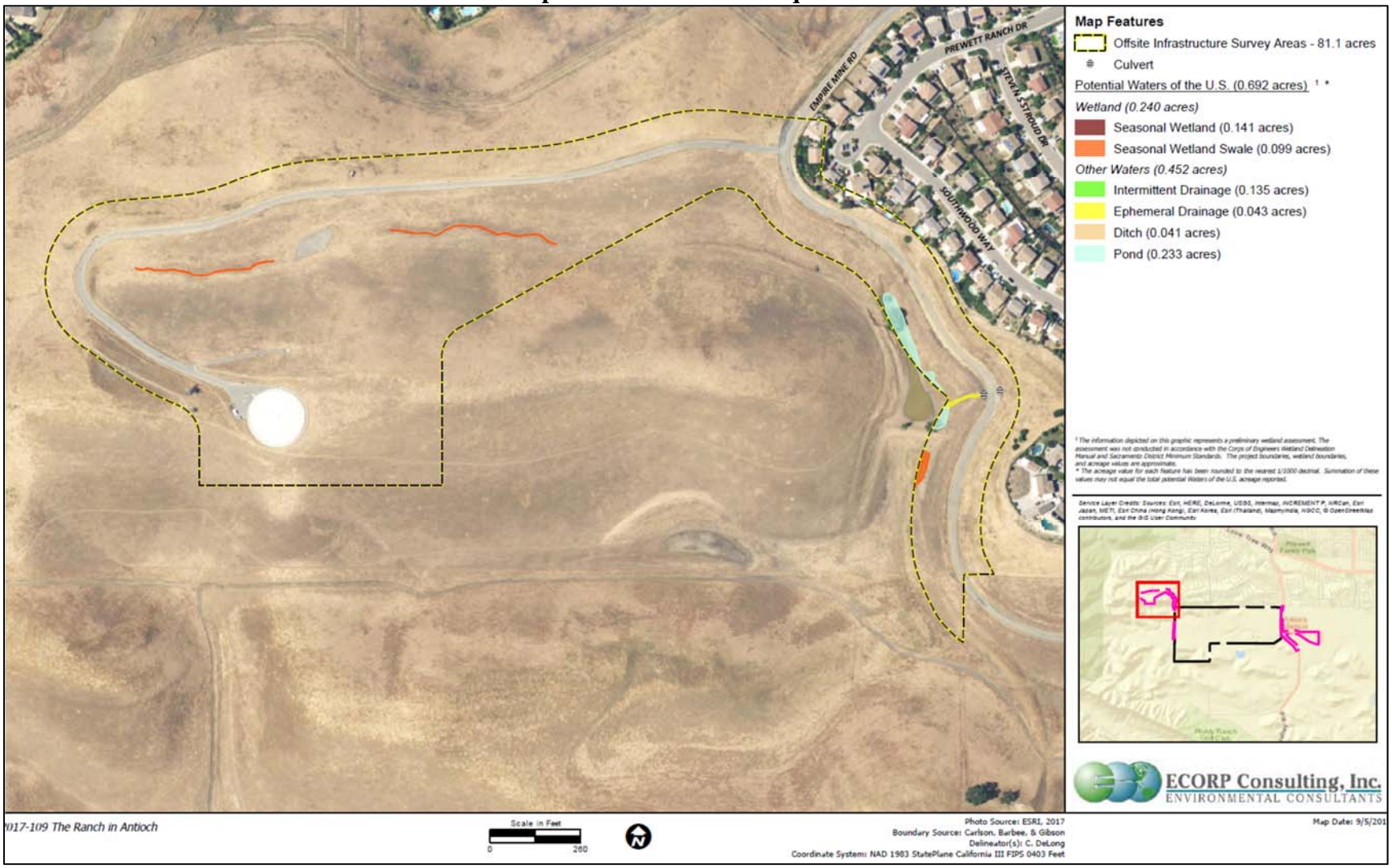
Considering the above, the proposed project may result in fill or other disturbance of waters of the U.S. and State, and the project would result in a ***significant*** impact to waters of the U.S.

Figure 4.4-3
Project Site Aquatic Resources



Source: ECORP Consulting, Inc., 2017

Figure 4.4-4
Off-Site Improvement Area A - Aquatic Resources



Source: ECORP Consulting, Inc., 2017

Figure 4.4-5
Off-Site Improvement Area B - Aquatic Resources

Source: ECORP Consulting, Inc., 2017

Figure 4.4-6
Off-Site Improvement Area C - Aquatic Resources

Source: ECORP Consulting, Inc., 2017

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-17 *Prior to discharging any dredged or fill materials into any waters of the U.S. within the project site and/or the off-site improvement areas, the applicant shall obtain permit authorization to fill wetlands under Section 404 of the federal CWA (Section 404 Permit) from USACE. The Section 404 Permit application shall include an assessment of directly impacted, avoided, and preserved acreages to waters of the U.S. Mitigation measures shall be developed as part of the Section 404 Permit to ensure no net loss of wetland function and values. Mitigation for direct impacts to waters of the U.S. within the project site and/or the off-site improvement areas would occur at a minimum of 1:1 ratio for direct impacts; however, final mitigation requirements shall be developed in consultation with USACE. In addition, a Water Quality Certification or waiver pursuant to Section 401 of the CWA must be obtained for Section 404 permit actions. Proof of compliance with the mitigation measure shall be submitted to the City of Antioch Planning Division prior to the issuance of grading permits.*

4.4-18 Have a substantial adverse effect on Department of Fish and Wildlife Fish and Game Code Section 1602 jurisdictional areas. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant*.

Multi-Generational Plan and Traditional Plan

The proposed project would result in impacts to Sand Creek during the construction of the two proposed bridges (a vehicular bridge and a pedestrian bridge), and the utility overcrossing. CDFW regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream which CDFW typically considers to include its riparian vegetation. Any proposed activity in a natural stream channel that would substantially adversely affect an existing fish and/or wildlife resource, would require entering into a Streambed Alteration Agreement (SBAA) with the CDFW prior to commencing with work in the stream. However, prior to authorizing such permits, the CDFW typically reviews an analysis of the expected biological impacts, any proposed mitigation plans that would be implemented to offset biological impacts and engineering and erosion control plans. Any project modifications to Sand Creek would be subject to the CDFW's jurisdiction pursuant to Section 1602 of the California Fish and Game Code. The applicant would apply for a SBAA with CDFW for several aspects of the proposed project. For instance, on-site improvements including construction of the vehicular bridge and placement of rip-rap, construction of the pedestrian bridge, construction of the proposed outfall structure on the northern bank of Sand Creek, and construction of the proposed utility crossing. Additionally, future off-site improvements may require applications for SBAAs with CDFW. Based the information above, the proposed project

could result in ***significant*** impacts to CDFW's Fish and Game Code Section 1602 jurisdictional areas.

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-18 *Prior to the initiation of any construction activities within the project site and/or the off-site improvement areas that would impact features subject to CDFW Section 1602 jurisdiction (e.g., intermittent tributary [Sand Creek], ephemeral tributaries, and non-tributary ephemeral drainages), the applicant shall obtain a SBAA pursuant to Section 1602 of the California Fish and Game Code. The SBAA shall be obtained for any activity that would impact the bed, bank, or channel of any river, stream or lake. Mitigation measures shall be developed during consultation with CDFW as part of the SBAA permit process to ensure protections for affected fish and wildlife resources.*

The following measures are required to minimize potential impacts to the bed, bank, or channel of rivers, streams, or lakes within the project site and/or the off-site improvement areas.

- *The project shall be designed to maintain pre-project flows and prevent sedimentation downstream of the project.*
- *Potential light and noise impacts to Sand Creek shall be minimized through the use of setback buffers (minimum of 50 feet) as well as native plantings and landscaping. Lights shall be directed and/or shaded away from Sand Creek. The vehicular bridge crossing over Sand Creek shall have native plantings to reduce light pollution.*

Proof of compliance with the mitigation measure shall be submitted to the City of Antioch Planning Division prior to the issuance of grading permits.

"

4.4-19 Substantially interfere with movement of native, resident, or migratory fish or wildlife species or with established native resident or migratory wildlife corridors. Based on the analysis below the impact is *less than significant.*

Multi-Generational Plan and Traditional Plan

Wildlife corridors are linear and/or regional habitats that provide connectivity to other natural vegetation communities within a landscape fractured by urbanization and other development. Wildlife corridors have several functions. Firstly, wildlife corridors provide avenues along which wide-ranging animals can travel, migrate, and breed, allowing genetic interchange to occur. Second, populations can move in response to environmental changes

and natural disasters. Lastly, individuals can recolonize habitats from which populations have been locally extirpated. All three of these functions can be met if both regional and local wildlife corridors are accessible to wildlife. Regional wildlife corridors provide foraging, breeding, and retreat areas for migrating, dispersing, immigrating, and emigrating wildlife populations. Local wildlife corridors also provide access routes to food, cover, and water resources within restricted habitats.

As described above, the annual grassland within the project site provides a large area of open space along Sand Creek. The annual grassland and Sand Creek may be used by both aquatic and terrestrial species as a wildlife movement corridor. The off-site improvement areas are small, disjunct areas along existing roads and infrastructure and are not likely used as major wildlife movement corridors. A large portion of the annual grassland within the project site would be converted to development; however, wildlife that use the annual grassland as a movement corridor would be able to use the Sand Creek corridor or the annual grassland surrounding the project site for dispersal. Development within the Sand Creek corridor would be limited to a clear span vehicular bridge, a pedestrian bridge, a proposed outfall structure, and a utility crossing over Sand Creek. Although the foregoing improvements would include limited development within Sand Creek, such improvements would not be anticipated to significantly restrict wildlife movement. Aside from the foregoing improvements, the remaining areas within Sand Creek would be protected from development by a 50-foot no-disturbance buffer.

It should be noted that according to the BRA, native wildlife species have been observed within the project area and likely use the project area for foraging, dispersal, nesting, permanent residence, etc. Although development of the proposed project would result in permanent disturbance of annual grassland, the project applicant is proposing to preserve two mitigation properties of comparable habitat value, which would serve to offset impacts to native wildlife species.

Therefore, the proposed project would not interfere with the movement of native wildlife, and impacts to wildlife corridors as a result of the implementation of the project site, would be ***less-than-significant***.

Mitigation Measure(s)
None required.

4.4-20 Conflict with any local policies or ordinances protecting biological resources, such as the City of Antioch's Tree Preservation and Regulation Ordinance. Based on the analysis below and with implementation of mitigation, the impact would be *less than significant.*

Multi-Generational Plan and Traditional Plan

As described above, a tree survey was conducted for the project site in 2015, which identified 16 tree species and 255 individual trees. It should be noted that tree surveys have not yet been conducted for the off-site improvement areas.

Approximately 181 of the 255 trees identified within the project site are indigenous trees as identified in the City of Antioch Tree Ordinance. The indigenous trees in the project site consist of native oaks (coast live oak, blue oak, valley oak, and interior live oak) and California buckeye. Various planted and ornamental trees such as blue gum eucalyptus, manna gum (*Eucalyptus viminalis*), black locust (*Robinia pseudoacacia*), and others also exist in the project site. Some of the planted and ornamental trees are protected under the City of Antioch Tree Ordinance as "mature trees" or "landmark trees" because the trees exceed the 26 inches DBH or 48 inches DBH respective thresholds.

Although a tree survey was not conducted for the off-site improvement areas, trees that would be protected under the City of Antioch Tree Ordinance were observed during the site visit of the off-site improvement areas. In particular, several large eucalyptus trees and several indigenous oak trees were observed.

Although the proposed project is not anticipated to remove protected trees, the possibility exists that protected trees within the project area (i.e., indigenous trees, street trees, mature trees, and/or landmark trees) may require removal due to project-related activities. In the event that protected trees are removed from the project site, a tree permit/authorization must be acquired from the City of Antioch. The removal of a protected tree without a tree permit from the City of Antioch is considered a significant adverse impact pursuant to CEQA. Therefore, impacts related to protected trees under the City's Tree Preservation and Regulation Ordinance, could be considered ***potentially significant.***

Mitigation Measure(s)
Implementation of the following mitigation measure would reduce the above impact to a *less-than-significant* level.

Multi-Generational Plan and Traditional Plan

4.4-20 *Prior to the approval of each Tentative Map for The Ranch Project, a project level tree survey shall be prepared for the review and approval from the City of Antioch Planning Division. The project level tree survey shall identify how many, and indicate which trees are protected under the City of Antioch Tree Ordinance as "mature trees" or "landmark trees." In addition, the project level tree survey shall show compliance with the City of Antioch's Tree Preservation and Regulation ordinance, including grade cuts and fills, hardscapes, structures, and utility lines shall be located outside of the drip line of any trees being preserved within the project area. All survey results shall be submitted to the City of Antioch Planning Division prior to the approval of each Tentative Map.*

4.4-21 Conflict with an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan. Based on the analysis below, the project would have *no impact*.

Multi-Generational Plan and Traditional Plan

In July 2007 the East Contra Costa County (ECCC) Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) was adopted by Contra Costa County, other member cities, the USFWS, and the CDFW. The City of Antioch, however, declined to participate in the HCP/NCCP. While the City is attempting to obtain coverage under the ECCC HCP/NCCP, the process is long and arduous, and is only in the beginning stages. Therefore, the project site is not located in an area with an approved HCP/NCCP, or local, regional, or State habitat conservation plan. As a result, ***no impact*** would occur.

Mitigation Measure(s)
None required.

Cumulative Impacts and Mitigation Measures

The following discussion of impacts is based on the implementation of the proposed project in combination with other proposed and pending projects in the region. Other proposed and pending projects in the region under the cumulative context would include buildout of the City's General Plan, as well as development of the most recent planned land uses within the vicinity of the project area.

4.4-22 Cumulative loss of biological resources in the City of Antioch. Based on the analysis below, the project's incremental contribution to this cumulative impact is *less than cumulatively considerable*.

Multi-Generational Plan and Traditional Plan

As defined in Section 15355 of the State CEQA Guidelines, "cumulative impacts" refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects (CEQA Guidelines 15355). An assessment of cumulative impacts should consider impacts identified as significant, as well as impacts identified as less-than-significant for individual projects that may become significant in a collective sense when considering the co-occurrence of multiple projects.

In compliance with Policy 10.3.2.e of the City of Antioch General Plan, the applicant shall prepare a RMP to address preservation of habitat areas. The City of Antioch, like other cities and communities in the region, is experiencing urban growth. The General Plan EIR concluded that impacts to species identified as a candidate, sensitive or special status

species, as well as riparian, wetland, or other natural communities would be less-than-significant after implementation of General Plan Policies 10.3.2 and 10.4.2. The proposed project site was included as part of the Antioch General Plan Area.

The proposed project would be capable of mitigating all project-level impacts related to biological resources to less-than-significant levels and ensuring that a net loss of wetlands, riparian habitat, and the like would not occur. Further, given that other projects within the City have been and would be required to do the same, a combined effect on biological resources, when considering the project in conjunction with other projects within the City, would not occur. Even if one assumed a cumulatively significant impact could occur out of an abundance of caution, the project itself would not have any incremental effects on biological resources. Therefore, the proposed project's incremental contribution to cumulative impacts related to biological resources be ***less than cumulatively considerable***.

Mitigation Measure(s)
None required.