APPENDIX B

Biological Assessment

Prepared by

Live Oak Associates

July 2019

LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

CHESTNUT SOLAR PROJECT
BIOLOGICAL ASSESSMENT
KINGS COUNTY, CALIFORNIA

Prepared by

LIVE OAK ASSOCIATES, INC.

Rick Hopkins, Principal and Senior Conservation Biologist/Ecologist
Katrina Krakow, M.S., Project Manager and Staff Ecologist
Geoff Cline, Senior Project Manager/Senior Ecologist

Prepared for

Bert Verrips, AICP
Environmental Consulting Service
11942 Red Hill Avenue
Santa Ana, CA 92705

July 30, 2019 PN 2349-01

EXECUTIVE SUMMARY

Live Oak Associates, Inc., (LOA) conducted an investigation of the biological resources of the Chestnut Solar project site ("Project Site", "Site") in Kings County, California, and the associated Project Access Corridor ("Access Corridor") in Kings County, California.

LOA evaluated likely impacts to biological resources resulting from development of an approximately 1,040-acre photo-voltaic solar energy project on the Chestnut Solar site. The Project Site is located in west-central Kings County southeast of Avenal Cutoff Road, and is south of the intersection of Laurel Avenue and the 25th Avenue alignment. The project site includes Assessor's Parcel Nos. 026-320-009, 026-330-001, and -074. On April 10 and May 28, 2018 and April 11, 2019, Live Oak Associates (LOA) conducted site visits to assess for biotic habitats, the plants and animals occurring in those habitats, and significant habitat values that may be protected by state and federal law.

The approximately 1,040-acre Project Site consists of agricultural lands within a region dominated by similar agricultural lands. Several agricultural canals run through and along the site. The Empire Westside Main Canal runs north-south along the eastern portion of the project site and another large canal runs in a north-south direction along the western portion of the site along the 25th Avenue alignment. Smaller irrigation canals and ditches run through the project site in a north-south direction. There are no buildings, sheds or other structures on the Chestnut Solar project site. The Project Site does not provide suitable habitat for locally occurring special-status plant or animal species except for burrowing owls and foraging habitat for Swainson's hawks. However, a number of special status animal species may occur onsite. Suitable habitat was found for fourteen special status animal species that potentially occur as regular foragers or residents of the Project Site. These include the western snowy plover, mountain plover, white-faced ibis, Swainson's hawk, northern harrier, white-tailed kite, western burrowing owl, long-eared owl, loggerhead shrike, tricolored blackbird, Townsend's big-eared bat, pallid bat, and California mastiff bat. Additional impacts to Swainson's hawks will be mitigated through avoidance of active nests found during required preconstruction surveys; and if active nests are found onsite or on adjacent lands, additional mitigation for loss of habitat may be required. Similar avoidance and preconstruction surveys will reduce impacts to burrowing owls, raptors, loggerhead shrike, tricolored blackbird, and other nesting birds protected by the federal Migratory Bird Treaty Act. While there are no reported sightings of San Joaquin kit fox or American badgers within or near the Project Site, and no evidence of kit fox or badger was found during LOA's field surveys, impacts to kit fox and badger are potentially significant. Prior to the construction of the solar development, preconstruction surveys will be conducted. Preconstruction surveys and avoidance measures will reduce impacts to kit fox and badgers from direct construction related mortality to a less-than-significant level. Impacts to wildlife movements and movement corridors will be minimized through the planned retention of canals as well as the construction of wildlife-friendly fencing. Waters of the U.S. are absent from the Project Site.

The planned Access Corridor will connect the Chestnut Solar project to the Nevada Avenue located one mile south of the Project Site. Land uses along the Access Corridor consist of agricultural use, fallowed/pasture, and canals.

TABLE OF CONTENTS

1 INTRODUCTION

Live Oak Associates, Inc. (LOA) has prepared the following report. This report describes the biotic resources of the proposed approximately 1,040-acre Chestnut Solar project site ("Project Site, site"), and the associated Project Access Corridor ("Access Corridor") evaluates likely impacts to biological resources resulting from the construction of these projects.

The Chestnut Solar Project Site is located to the northwest of State Route 41, south of Laurel Avenue, and west of 22nd Avenue. The site is bounded on the north by the unimproved Madison Avenue alignment, and on the west by the unimproved 25th Avenue alignment. The nearest improved County road is Nevada Avenue located one mile south of the project site. The project site includes Assessor's Parcel Nos. 026-320-009, 026-330-001, and -074 (Figure 1). The Project Site is located within the Westhaven U.S. Geological Survey (USGS) 7.5-minute quadrangle.

The Chestnut Solar project site is virtually level with elevations ranging from a high of 220 feet above mean sea level (amsl) at the southwest corner of the site to a low of 195 feet amsl at the southeast corner. Most of the site is currently used for the cultivation of winter wheat during the wet season and is typically left fallow during the dry season. The 70-kV Henrietta to Tulare Lake sub-transmission line runs along the west boundary of the site along the 25th Avenue alignment. Several agricultural canals run through and along the site. The Empire Westside Main Canal runs north-south along the eastern portion of the project site, and another large canal runs in a north-south direction along the western portion of the project site along the 25th Avenue alignment, and smaller irrigation canals and ditches run through the project site in a north-south direction. There are no buildings, sheds or other structures on the Chestnut Solar project site.

1.1 PROJECT DESCRIPTION

Chestnut Solar Project

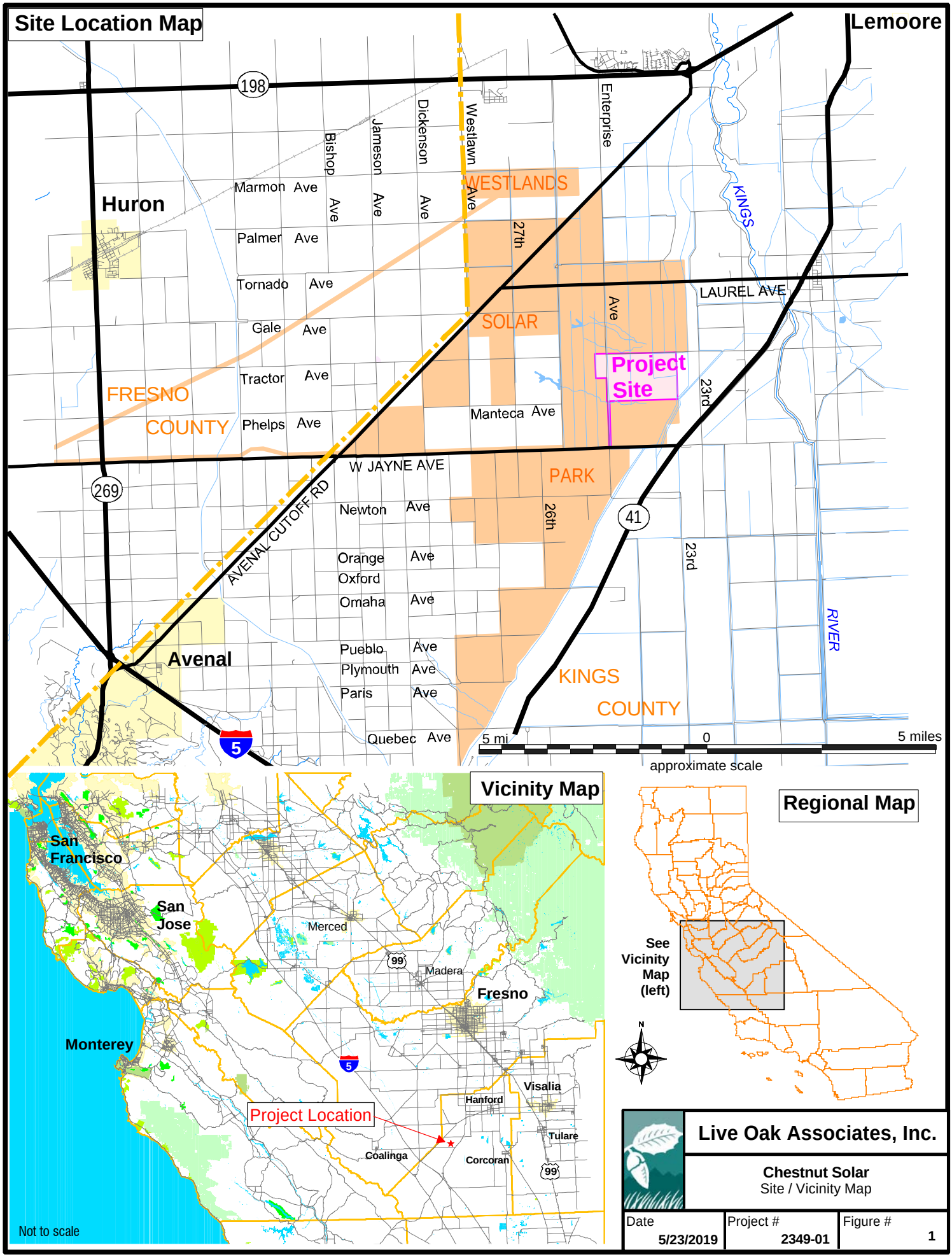
The Chestnut Solar Project is planned to generate at total of 150 MW (AC) of electrical output from solar photovoltaic (PV) modules. The project is planned to be constructed over a 12-month period commencing in 2020.

The solar modules will be mounted on a series of horizontal single-axis trackers which will be oriented north-south and will rotate the solar arrays in an east-west direction. The solar modules produce direct current (DC) power and the electricity travels to power conversion stations (PCS)

via underground cables to be converted to alternating current (AC) power. The project will include a total of 60 PCSs with power rating of 2.5 MW each, which will step up the generated power to a collection voltage of 34.5-kV.

The Chestnut Solar Project will include an Operations and Maintenance (O&M) facility and substation in the southwest corner of the site near the unimproved 25th Avenue. The on-site substation will step up the generated power from 34.5-kV collection voltage to 230-kV for transmission via the Gen-Tie Line to be constructed in conjunction with the Aquamarine Solar Project located 0.5 miles to the north. The Gen-Tie Line will convey the solar power generated at the Chestnut Solar facility for a distance of 14.5 miles to the Gates Substation located on Jayne Avenue in Fresno County.

Vehicular access to the project site will be provided by a new all-weather gravel driveway extending south for a distance of one mile to Nevada Avenue. The driveway will be constructed within an access easement adjacent to the Gen-Tie easement running along the east side of the 25th Avenue alignment.


Site Location Map
Lemoore
198
Huron
Marmon Ave
Palmer Ave
Tornado Ave
Gale Ave
Tractor Ave
Phelps Ave
Bishop Ave
Jameson Ave
Dickenson Ave
Westlawn Ave
Enterprise Ave
WESTLANDS
SOLAR
PARK
27th
26th
23rd
Ave
KINGS
RIVER
LAUREL AVE
Manteca Ave
Project Site
FRESNO COUNTY
KINGS COUNTY
W JAYNE AVE
AVENAL CUTOFF RD
Newton Ave
Orange Ave
Oxford
Omaha Ave
Pueblo Ave
Plymouth Ave
Paris Ave
Quebec Ave
Avenal
269
41
5
5 mi
0
5 miles
approximate scale
Vicinity Map
San Francisco
San Jose
Monterey
Merced
Madera
Fresno
Visalia
Hanford
Tulare
Corcoran
Coalinga
99
Project Location
Not to scale
Regional Map
See Vicinity Map (left)
N
Live Oak Associates, Inc.
Chestnut Solar
Site / Vicinity Map
Date
5/23/2019
Project #
2349-01
Figure #
1

1.2 REPORT OBJECTIVES

The development of land can damage or modify biotic habitats used by sensitive plant and wildlife species. In such cases, site development may be regulated by state or federal agencies, subject to provisions of the California Environmental Quality Act (CEQA), and/or covered by policies and ordinances of Kings County and Fresno County. This report addresses issues related to: 1) sensitive biotic resources occurring within the Chestnut Solar Project Site and Project Access Corridor; 2) the federal, state, and local laws regulating such resources, and 3) mitigation measures which may be required to reduce the magnitude of anticipated impacts and/or comply with permit requirements of state and federal resource agencies, and the requirements of the California Environmental Quality Act (CEQA). As such, the objectives of this report are to:

- Summarize all site-specific information related to existing biological resources, based on a review of the literature, a search of species databases, and field surveys conducted by LOA over the entire Project Site;
- In addition to species observed to be present within the Project Site, make reasonable inferences about the other biological resources that could occur onsite based on habitat suitability and the proximity of the Project Site to a species' known range;
- Summarize all state and federal natural resource protection laws that may be relevant to development of Solar project within the Project Site;
- Identify and discuss project impacts to biological resources likely to occur within the Project Site within the context of CEQA or any state or federal laws; and
- Identify avoidance and mitigation measures that would reduce impacts to a less-than-significant impact (as identified by CEQA) and are generally consistent with recommendations of the resource agencies for affected biological resources.

1.3 STUDY METHODOLOGY

The analysis of impacts, as discussed in Section 3.0 of this report, is based on the known and potential biotic resources of the Project Site discussed in Section 2.0. Sources of information used in the preparation of this analysis included: (1) the *California Natural Diversity Data Base* (CDFW 2019), (2) the *Online Inventory of Rare and Endangered Vascular Plants of California*

(CNPS 2019), and (3) manuals, reports, and references related to plants and animals of the San Joaquin Valley region. Field survey of the Project Site was conducted on April 10 and May 28, 2018 by LOA ecologists Katrina Krakow and Robert Shields and again on April 11, 2019 by Ms. Krakow. During these site visits, the principal land uses of the site were identified and the constituent plants and animals were noted.

Detailed surveys for sensitive biological resources were not conducted during the site visit, however a Swainson's hawk nest survey was conducted for the larger Westlands Solar Park study area on April 27 and May 3 and 4, 2012 which included the Project Site within the larger Wetlands Solar Park study area, and a 10-mile buffer of the Westlands Solar Park study area, with nest sites being revisited in 2017 and 2018 (Appendix C).

It is noted that this Biological Assessment was prepared for the Mitigated Negative Declaration (MND) on the Chestnut Solar project. The potential biological impacts associated with this solar development construction were previously addressed in the Westlands Solar Park Master Plan and Gen-Tie Corridors Program EIR, which was certified by the Westlands Water District (WWD) Board of Directors on January 16, 2018. The Program EIR (PEIR) provides plan-level environmental review for the Chestnut Solar project. As such, the MND (and this biological report) constitute second tier environmental documents under CEQA. As provided in the CEQA Guidelines, the previous biological report and analysis prepared for the PEIR are hereby incorporated by reference into this project-specific biological report on the Chestnut Solar project. The PEIR can be accessed with the following web link:

https://wwd.ca.gov/news-and-reports/environmental-docs/

2 EXISTING CONDITIONS

2.1 REGIONAL SETTING

Like most of California, the Central San Joaquin Valley (and the Project Site) experiences a Mediterranean climate. Warm dry summers are followed by cool moist winters. Summer temperatures commonly exceed 90 degrees Fahrenheit, and the relative humidity is generally very low. Winter temperatures rarely rise much above 70 degrees Fahrenheit, with daytime highs often below 60 degrees Fahrenheit. Annual precipitation within the Project Site is about 10 inches, almost 85% of which falls between the months of October and March. Nearly all precipitation falls in the form of rain.

The Kings County area of the Central San Joaquin Valley receives water from the Kings River, which is located approximately 1.5 miles east of the Project Site. The Kings River historically drained into the Tulare Lake Basin which contained the vast Tulare Lake, which encompassed a large area of Kings County and at times extended to the eastern edge of the Project Site. The Kings River and Tulare Lake contained large areas of riparian, wetland, and aquatic ecosystems that supported large populations of diverse native plants and animals. Under present conditions, the Kings River supports only a fraction of the riparian habitat it once supported and the aquatic habitat has been greatly degraded from agricultural runoff and irregular flows. In essence, the river currently provides water to a series of distributary channels supplying water to farmland in the region. Tulare Lake has long been drained and converted to farmland and urban uses.

Native upland biotic habitats of the Central San Joaquin Valley once consisted of grassland and shrubland, nearly all of which have been converted to farmland or urban use within the last 50 years or more. Native plant and animal species once abundant in the valley have become locally extirpated or have experienced large reductions in their populations. The native habitat that remains in the region is particularly valuable to native wildlife species including special status species that still persist in the region.

The lands surrounding the Project Site consist of agricultural land. The nearest natural habitats to the Project Site are the Kettleman Hills approximately 10 miles to the southwest and the Kings River drainage approximately 1.5 miles to the east of the Project Site.

2.2 PROJECT SITE

Chestnut Solar Project

The approximately 1,040-acre Chestnut Solar Project site located to the northwest of State Route 41, south of Laurel Avenue, and west of 22nd Avenue. The site is bounded on the north by the unimproved Madison Avenue alignment, and on the west by the unimproved 25th Avenue alignment. The nearest improved County road is Nevada Avenue located one mile south of the project site. The Chestnut Solar project site is virtually level with elevations ranging from a high of 220 feet above mean sea level (amsl) at the southwest corner of the site to a low of 195 feet amsl at the southeast corner. The project site is located in the Westhaven U.S. Geological Survey (USGS) quadrangle. Most of the site is currently used for the cultivation of winter wheat during the wet season and is typically left fallow during the dry season. Several agricultural canals run through and along the site. The Empire Westside Main Canal runs north-south along the eastern portion of the project site, and another large canal runs in a north-south direction along the western portion of the project site along the 25th Avenue alignment, and two smaller irrigation canals and ditches run through the project site in a north-south direction.

The Chestnut Solar Project is planned to generate at total of 150 MW (AC) of electrical output from solar photovoltaic (PV) modules. The project is planned to be constructed over a 12-month period commencing in 2020.

Five soil types: 1) Houser clay, partially drained, 2) Lethent clay loam, and 3) Westcamp Loam, partially drained were identified on the Chestnut Solar site (NRCS Web Soil Survey 2019). All soil types are considered hydric. Hydric soils are soils are defined as saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions such that under sufficiently wet conditions they support hydrophytic vegetation. Due to ongoing agricultural disturbance; however, no hydric vegetation was observed on the site except within canals, which the project will avoid.

Project Access Corridor

The Chestnut Solar project includes a 20-foot wide vehicular Access Corridor (driveway) extending south from the project and running parallel to the 25th Avenue alignment for a distance of 1 mile to Nevada Avenue. One soil type was identified on the Access Corridor: Lethent clay loam, which is hydric. Hydric soils are soils are defined as saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions such that under sufficiently wet

conditions they support hydrophytic vegetation. Due to ongoing agricultural disturbance; however, no hydric vegetation was observed on the site except for within canals, which the project will avoid.

2.3 BIOTIC HABITATS/LAND USES

The entire Chestnut Solar Project Site, including the Project Access Corridor, consists of agricultural lands with canals running through them (Figure 2). A list of the terrestrial vertebrates observed to be using, or potentially using, the habitats of the site is provided in Appendix A.

2.3.1 Agricultural

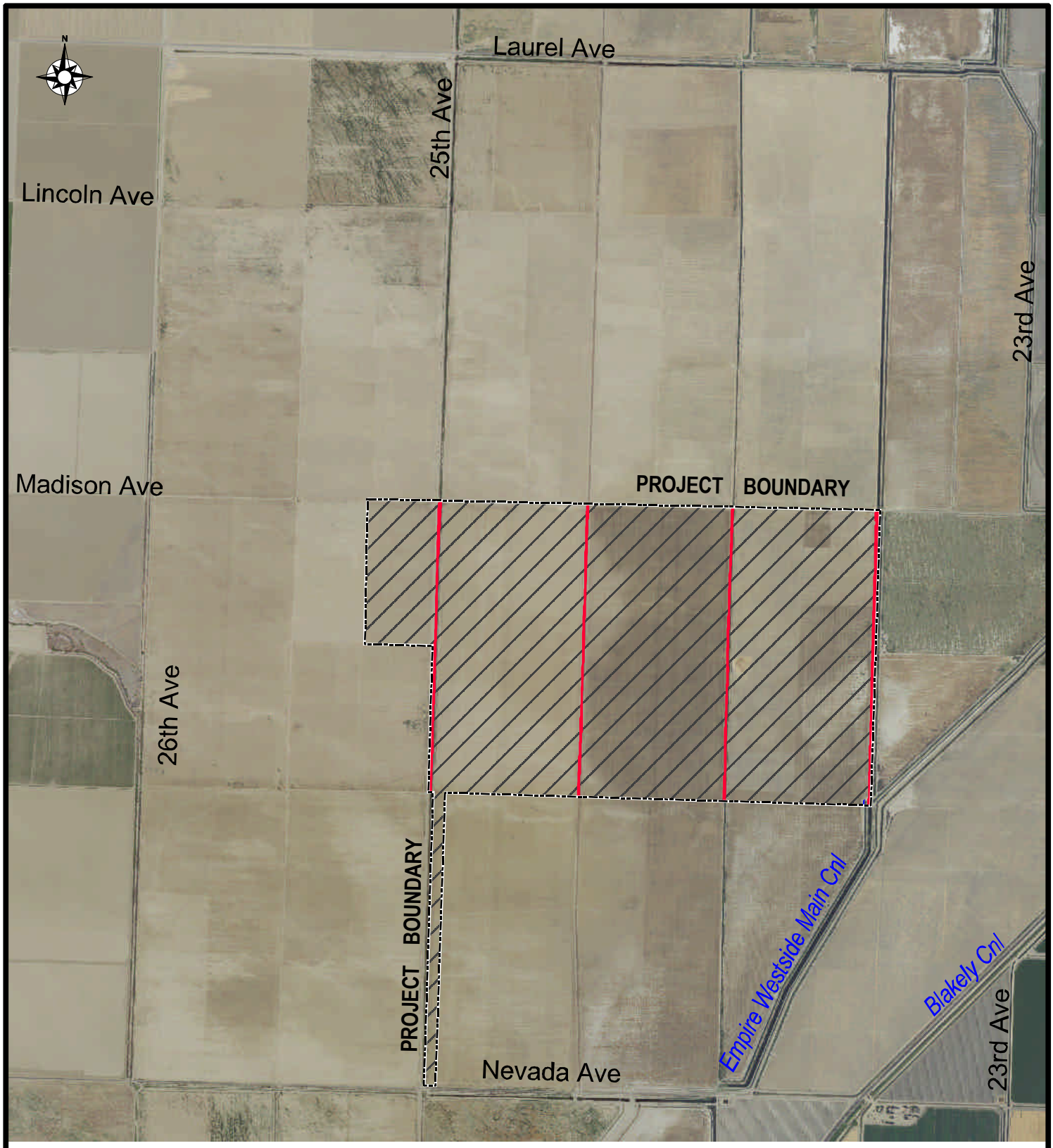
Chestnut Solar Project

Regular agricultural activities on the site create unsuitable habitat for most native amphibian, reptile, bird, and mammal species. Nonetheless, a number of animal species are expected to use the disked field, especially in times where disking is not recent. The majority of the site supports winter wheat or fallowed fields. Canals occur within and along the agricultural areas of the site in a north-south direction. A large off-site canal also occurs 1.5 miles north of the project site south of Laurel Avenue, which provides the best habitat for burrowing owls in the local vicinity. Onsite canals are fairly small with the exception of the Empire Westside Main Canal, which runs through the eastern portion of the site, and another large canal which runs along the western portion of the project site along the unimproved 25th Avenue alignment. These two canals support water and hydric species such as cattail (*Typha sp.*), and in the case of 25th Avenue, one small cottonwood tree (*Populus sp.*). The Empire Westside Main Canal was being actively managed during the April 11, 2019 site visit.

Pacific chorus frogs (*Pseudacris regilla*) and western toads (*Bufo boreas*) may use the irrigation canals for breeding and may also disperse through the adjacent fields during the winter and spring or when the fields are not regularly disked. Reptile species that may forage in this habitat include lizards such as the side-blotched lizard (*Uta stansburiana*) and western whiptail (*Cnemidophorus tigris*), and snakes such as the gopher snake (*Pituophis melanoleucus*), common kingsnake (*Lampropeltis getulus*), coachwhip (*Masticophus flagellum*), and glossy snake (*Arizona elegans*).

Resident bird species expected to use this habitat would include Brewer's blackbirds (*Euphagus cyanocephalus*), brown-headed cowbirds (*Molothrus ater*), and European starlings (*Sturnus*

vulgaris), among others. Wintering birds that may utilize the disked fallow fields would be the savannah sparrow (*Passerella sandwichensis*), American pipit (*Anthus rubescens*), and Say's phoebe (*Sayornis saya*), among others. Summer migrants such as the barn swallow (*Hirundo rustica*) may forage on the site.



LEGEND

Agricultural Land Use

Canals

5,000' 0 2,500' 5,000 feet

approximate scale

Source:
U.S. Dept. of Agriculture, Natural Resources Conservation Service
USDA FSA Aerial Photography Field Office 2016

Live Oak Associates, Inc.

Chestnut Solar
Biotic Habitats / Land Uses

Date	Project #	Figure #
5/23/2019	2349-01	2

Burrowing rodent activity in the fields is expected to be minimal due to the ground disturbance regime. Botta's pocket gopher (*Thomomys bottae*) burrows may occur within the site, and California ground squirrel (*Otospermophilus beecheyi*) burrows may occur along the agricultural field perimeters.

The site offers limited foraging opportunities for mammalian and avian predators. Raptors such as red-tailed hawks (*Buteo jamaicensis*), Swainson's hawks (*Buteo swainsoni*), great horned owls (*Bubo virginianus*), burrowing owls (*Athene cunicularia*) and barn owls (*Tyto alba*) may occasionally forage on the site, and burrowing owls are known to breed in the larger managed canal located 1.5 miles north along Laurel Avenue. Disturbance-tolerant mammalian predators such as raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), coyotes (*Canis latrans*), and red foxes (*Vulpes vulpes*) may occasionally forage on or pass through the site.

Project Access Corridor

The Access Corridor consists of agricultural lands similar to the agricultural lands of the Chestnut Solar site. The Access Corridor would be expected to support the same species as the Chestnut Solar site.

2.4 WILDLIFE MOVEMENT CORRIDORS

Wildlife movement corridors are areas where regional wildlife populations regularly and predictably move during dispersal or migration. Movement corridors in California are typically associated with valleys, rivers and creeks supporting riparian vegetation, and ridgelines. In the San Joaquin Valley, which lacks many of the more pronounced topographic features found in the surrounding foothills, wildlife will often move across ill-defined undeveloped habitat patches, or regional movement is facilitated along existing linear features such as ditches, canals, farm roads, and creeks. In areas of intense farming, these existing linear features tend to be used disproportionately for movement when compared to the adjacent, intensely farmed lands. While actively farmed fields are not barriers in themselves, they are used less often than the linear features that cut through them.

The intense farming throughout the San Joaquin Valley over the last century has long altered the more traditional regional movement patterns of wildlife. While regionally-occurring wildlife do, in fact, move across the broad range of the Valley, they do so less effectively than they once did, relying more extensively on various linear features such as canals, ditches and creeks. Regionally,

the nearest areas believed to provide for regional wildlife movement include areas in the surrounding Sierra and inner coast range foothills that have not been substantially altered.

The Project Site consists of agricultural fields adjacent to canal habitat. Canals and ditches within the Project Site can function as movement corridors for the regular home range or dispersal movements of native wildlife, including special status species. The USFWS' *Recovery Plan for Upland Species of the San Joaquin Valley* (Recovery Plan) does not show movement corridors within or near the Project Site. The Recovery Plan shows the foothills to the west as a north-south movement corridor (USFWS 1998). The nearest significant riparian corridor that likely facilitates regional movement of wildlife is the Kings River to the northeast of the site. This riparian area is located approximately 1.5 miles to the east of the Project Site at its nearest point.

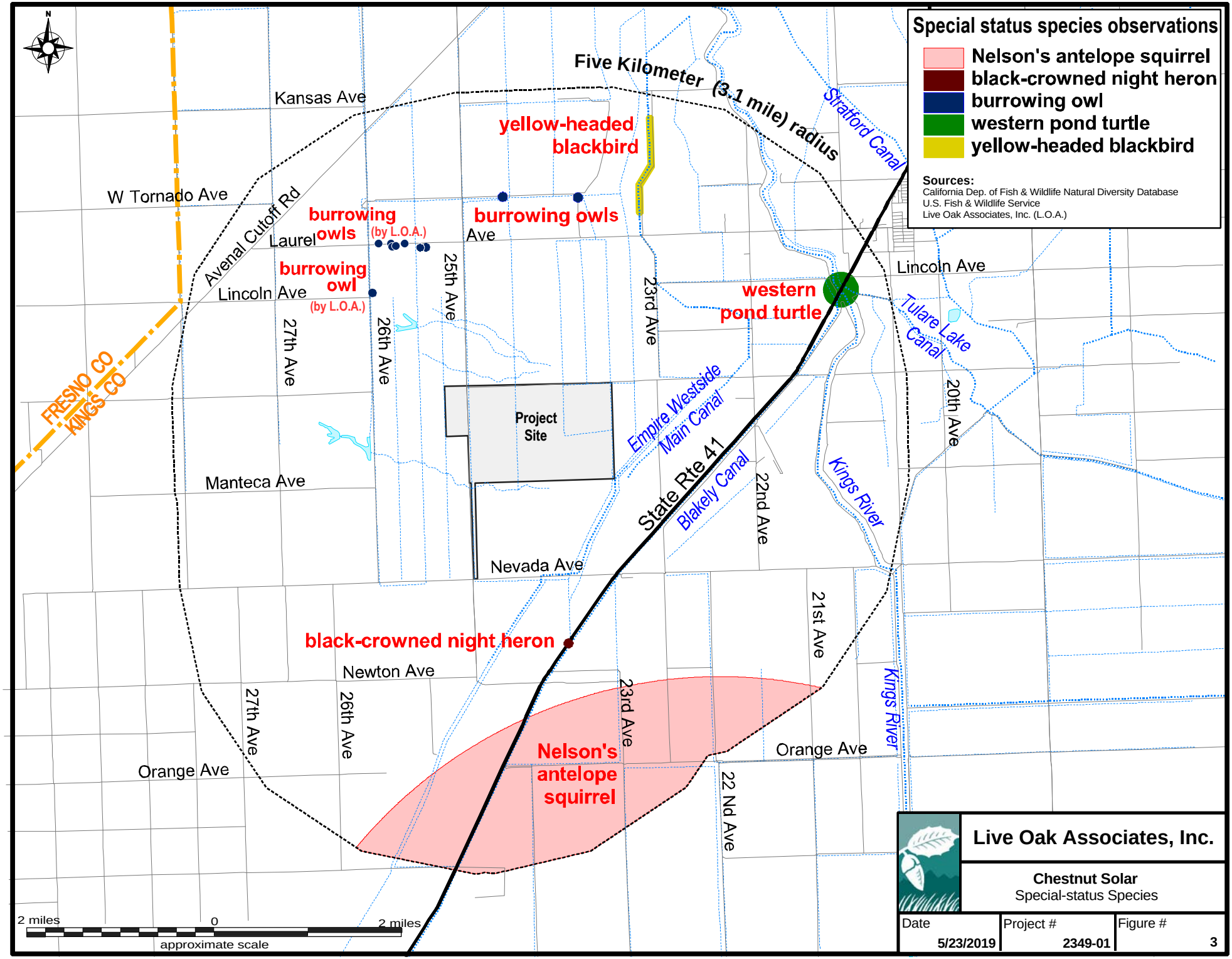
2.5 SPECIAL STATUS PLANTS AND ANIMALS

Several species of plants and animals within the state of California have low populations and/or limited distributions. Such species may be considered "rare" and are vulnerable to extirpation as the state's human population grows and the habitats these species occupy are converted to agricultural and urban uses. As described more fully in Section 3.2, state and federal laws have provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. A sizable number of native plants and animals have been formally designated as "threatened" or "endangered" under state and federal endangered species legislation. Others have been designated as candidates for such listing. Still others have been designated as "species of special concern" by the CDFW. The California Native Plant Society (CNPS) has developed its own set of lists of native plants considered rare, threatened, or endangered (CNPS 2019). Collectively, these plants and animals are referred to as "special status species".

A number of special status plants and animals occur in the vicinity of the Project Site (Figures 3 and 4). These species, and their potential to occur in the Project Site, are listed in Table 2 in the following pages. Sources of information for this table included *California Amphibian and Reptile Species of Special Concern* (Thomson et.al. 2016), *California Bird Species of Special Concern* (Shuford and Gardall 2008), *California Natural Diversity Data Base* (CDFW 2019), *Endangered and Threatened Wildlife and Plants* (USFWS 2019), *Annual Report on the Status of California*

State Listed Threatened and Endangered Animals and Plants (CDFW 2019), and *The California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2019). This information was used to evaluate the potential for special status plant and animal species to occur within the Project Site. It is important to note that the California Natural Diversity Data Base (CNDDB) is a volunteer database.

A search of published accounts for all of the relevant special status plant and animal species was conducted for the Westhaven USGS 7.5-minute quadrangle within which the Project Site is located, and for the eight surrounding quadrangles (Calflax, Vanguard, Lemoore, Huron, Stratford, La Cima, Kettleman City, and Stratford SE) using the California Natural Diversity Data Base Rarefind 5 (2019).


Special status species observations
Nelson's antelope squirrel
black-crowned night heron
burrowing owl
western pond turtle
yellow-headed blackbird
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
U.S. Fish & Wildlife Service
Live Oak Associates, Inc. (L.O.A.)
Five Kilometer (3.1 mile) radius
yellow-headed blackbird
burrowing owls
burrowing owls (by L.O.A.)
burrowing owl (by L.O.A.)
western pond turtle
black-crowned night heron
Nelson's antelope squirrel
Project Site
Kansas Ave
W Tornado Ave
Laurel Ave
Lincoln Ave
Manteca Ave
Newton Ave
Nevada Ave
Orange Ave
Avenal Cutoff Rd
25th Ave
26th Ave
27th Ave
23rd Ave
22nd Ave
22 Nd Ave
21st Ave
20th Ave
State Rte 41
Stratford Canal
Tulare Lake Canal
Empire Westside Main Canal
Blakely Canal
Kings River
FRESNO CO
KINGS CO
2 miles
0
2 miles
approximate scale
Live Oak Associates, Inc.
Chestnut Solar
Special-status Species
Date 5/23/2019
Project # 2349-01
Figure # 3

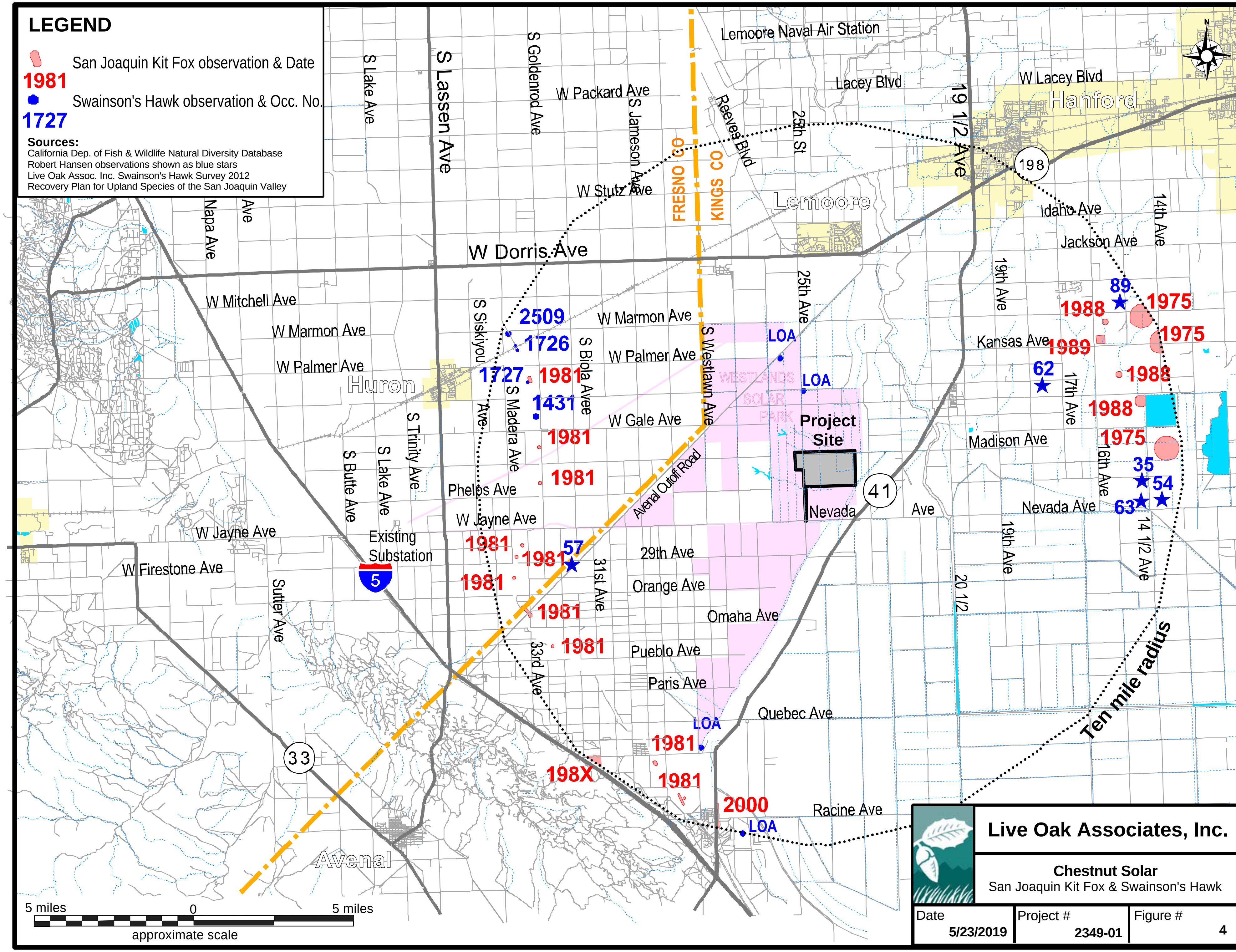

LEGEND
San Joaquin Kit Fox observation & Date
1981
Swainson's Hawk observation & Occ. No.
1727
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
Robert Hansen observations shown as blue stars
Live Oak Assoc. Inc. Swainson's Hawk Survey 2012
Recovery Plan for Upland Species of the San Joaquin Valley
Lemoore Naval Air Station
Lacey Blvd
W Lacey Blvd
Hanford
W Packard Ave
W Stutz Ave
FRESNO CO
KINGS CO
Reeves Blvd
25th St
19 1/2 Ave
198
Lemoore
Idaho Ave
Jackson Ave
14th Ave
S Lake Ave
S Lassen Ave
S Goldenrod Ave
S Jameson Ave
Napa Ave
W Dorris Ave
W Mitchell Ave
W Marmon Ave
W Palmer Ave
Huron
S Siskiyou Ave
S Madera Ave
S Biola Avee
S Westlawn Ave
25th Ave
19th Ave
Kansas Ave
WESTLANDS SOLAR PARK
LOA
Project Site
W Gale Ave
Madison Ave
17th Ave
16th Ave
S Trinity Ave
S Lake Ave
S Butte Ave
Phelps Ave
W Jayne Ave
Avenal Cutoff Road
41
Nevada
Ave
Nevada Ave
19th Ave
14 1/2 Ave
W Jayne Ave
Existing Substation
W Firestone Ave
5
29th Ave
Orange Ave
Omaha Ave
31st Ave
20 1/2
Sutter Ave
Pueblo Ave
Paris Ave
33rd Ave
Quebec Ave
Ten mile radius
33
Racine Ave
Avenal
2509
1726
1727
1431
57
89
62
35
54
63
1981
198X
2000
1975
1988
1989
5 miles
0
5 miles
approximate scale
Live Oak Associates, Inc.
Chestnut Solar
San Joaquin Kit Fox & Swainson's Hawk
Date
5/23/2019
Project #
2349-01
Figure #
4

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE VICINITY OF THE CHESTNUT SOLAR PROJECT SITE

PLANTS (adapted from CDFW 2019 and CNPS 2019)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence in the Project Site
California jewelflower (*Caulanthus californicus*)	FE, CE, CRPR 1B.1	Habitat Chenopod scrub, valley and foothill grassland, pinyon-juniper woodland. Elevation: 61-1000 meters. Blooms: February–May.	**Absent.** Suitable habitat for this species is absent from the Project Site and Access Corridor. Any suitable habitat that may have once been present has been highly modified for human use.
Kern mallow (*Eremalche parry* ssp.*kernensis*)	FE, CRPR 1B.2	Habitat On dry, open sandy to clay soils; often at edge of balds in Chenopod scrub, Pinyon and juniper woodland, Valley and foothill grassland. Elevation: 70 – 1290 meters. Blooms: January - May.	**Absent.** Suitable habitat for this species is absent from the Project Site and Access Corridor. Any suitable habitat that may have once been present has been highly modified for human use.
San Joaquin woolythreads (*Monolopia congdonii*)	FE, CRPR 1B.2	Habitat: Chenopod scrub, valley and foothill grassland. Elevation: 60-800 meters. Blooms: February-May.	**Absent.** Suitable habitat for this species is absent from the Project Site and Access Corridor. Any suitable habitat that may have once been present has been highly modified for human use.

ANIMALS (adapted from CDFW 2019 and USFWS 2019)

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence in the Project Site
Vernal pool fairy shrimp *(Branchinecta lynchi)*	FT	Occurs in vernal pools of California.	**Absent.** Suitable habitat in the form of vernal pools is absent from the Project Site and Access Corridor.
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus)*	FT	Lives in mature elderberry shrubs of California's Central Valley and Sierra Foothills.	**Absent.** Suitable habitat in the form of elderberry shrubs is absent from the Project Site and Access Corridor.
California tiger salamander *(Ambystoma californiense)*	FT, CT	Breeds in vernal pools and stock ponds of central California; adults aestivate in grassland habitats adjacent to the breeding sites.	**Absent.** No historic or current records of this species are known within the region. Intensively cultivated lands provide unsuitable habitat for this species.
Giant garter snake *(Thamnophis gigas)*	FT, CT	Habitat requirements consist of (1) adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) grassy banks and openings in waterside vegetation for basking; and (4) higher elevation uplands for cover and refuge from flood waters during the snake's dormant season in the winter.	**Unlikely.** Marginal breeding and overwintering habitat is available along the irrigation canals within the Project Site. The nearest recorded observation is more than 3 miles from the site (CNDDB 2019).

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE VICINITY OF THE CHESTNUT SOLAR PROJECT SITE

ANIMALS – cont'd.

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence in the Project Site
Blunt-nosed leopard lizard *(Gambelia silus)*	FE, CE, CP	Frequents grasslands, alkali meadows and chenopod scrub of the San Joaquin Valley from Merced south to Kern County.	**Absent.** Habitats required by this species are absent from the project site, and Access Corridor and vicinity.
Swainson's hawk *(Buteo swainsoni)*	CT	Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah. Requires adjacent suitable foraging areas such as grasslands or alfalfa fields supporting rodent populations.	**Present.** Foraging habitat is available throughout the project area. Potential breeding habitat is present at the off-site tailwater pond approximately 0.75 miles to the west of the site, which is outside the typical construction-free buffer required around an active nest. Swainson's hawks were observed flying over the site during the April 10 and May 28, 2018 and April 11, 2019 site visits; they are known to occur over and near the site, per previous surveys conducted by LOA as well.
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FC, CE	Breed in large blocks of riparian habitats, particularly cottonwoods and willows.	**Absent.** Dense riparian habitat required by this species is absent from the Project Site and Access Corridor.
Western snowy plover *(Charadrius alexandrines nivosus)*	FT, CSC	Uses human-made agricultural wastewater ponds and reservoir margins. Breeds on barren to sparsely vegetated ground at alkaline or saline lakes, reservoirs, ponds, and riverine sand bars.	**Possible.** Breeding and foraging habitat is available along agricultural canals within the Project Site and the canal adjacent to the Access Corridor.
Tricolored Blackbird (*Agelaius tricolor*)	CC, CSC	Breeds near fresh water, primarily emergent wetlands, with tall thickets. Forages in grassland and cropland habitats.	**Possible.** Foraging habitat for this species is present within the Project Site in the form of cattails in the canals of the site and within the off-site canal located 1.5 miles north along Laurel Avenue, however presence of breeding habitat on the site itself would depend on the type of crop planted from season to season. The Chestnut Solar site has typically been cultivated for winter wheat in the wet season and left fallow during the dry season. Tricolored blackbirds are known to nest in wheat fields.
Nelson's antelope squirrel *(Ammospermophilus nelsoni)*	CT	Frequents open shrublands and annual grassland habitats.	**Absent.** Habitats required by this species are absent from the Project Site, the Access Corridor, and surrounding agricultural lands due to intensive agricultural use.
Giant kangaroo rat *(Dipodomys ingens)*	FE, CE	Inhabits grasslands on gentle slopes generally less than 10°, with friable, sandy-loam soils.	**Absent**. Habitats required by this species are absent from the Project Site, the Access Corridor, and surrounding agricultural lands due to intensive agricultural use.

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE VICINITY OF THE CHESTNUT SOLAR PROJECT SITE

ANIMALS – cont'd.

Species Listed as Threatened or Endangered under the State and/or Federal Endangered Species Act

Species	Status	Habitat	*Occurrence in the Project Site
Fresno kangaroo rat *(Dipodomys nitratoides exilis)*	FE, CE	Inhabits grassland on gentle slopes generally less than 10°, with friable, sandy-loam soils.	**Absent.** Habitats required by this species are absent from the Project Site, the Access Corridor, and surrounding agricultural lands due to intensive agricultural use.
Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*)	FE, CE	Inhabits arid land with grassland or salt scrub on level or near-level terrain on the San Joaquin Valley floor with alluvial fan and floodplain soils.	**Absent.** Habitats required by this species are absent from the Project site, the Access Corridor, and vicinity.
San Joaquin kit fox *(Vulpes macrotis mutica)*	FE, CT	Frequents desert alkali scrub and annual grasslands and may forage in adjacent agricultural habitats. Utilizes enlarged (4 to 10 inches in diameter) ground squirrel burrows as denning habitat.	**Unlikely.** Some burrows observed in the surrounding area were of suitable size for the kit fox. However, nearly all these burrows were within the vicinity of California ground squirrels or actively used by ground squirrels. The Project Site, the Access Corridor and the surrounding area have been highly modified for agricultural use and, as a result, provide only marginal foraging and breeding habitat for the kit fox. There are no documented sightings of this species on the Project Site, the Access Corridor, or in the surrounding area, but there have been numerous documented sightings within a ten-mile radius of the Project Site and Access Corridor (see Figure 4), between 1975 and 2000 (CNDDB 2019). Therefore, kit foxes are unlikely to breed within the Project Site or Access Corridor, but may rarely forage within the Project Site, and may rarely pass through the Project Site and Access Corridor for dispersal movements.

ANIMALS (adapted from CDFW 2019 and USFWS 2019)

State Species of Special Concern

Western spadefoot *(Scaphiopus hammondii)*	CSC	Primarily occurs in grasslands, but also occurs in valley and foothill hardwood woodlands. Requires vernal pools or other temporary wetlands for breeding.	**Absent.** Vernal pools required for breeding are absent from the Project Site and Access Corridor. Terrestrial habitat required for estivation is absent from cultivated fields.
Western pond turtle *(Actinemys marmorata)*	CSC	Intermittent and permanent waterways including streams, marshes, rivers, ponds and lakes.	**Unlikely.** While marginal habitat, in the form of the canals, exists within the Project Site, estivation and breeding habitat is absent from the Project Site and Access Corridor.

TABLE 2. LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE VICINITY OF THE CHESTNUT SOLAR PROJECT SITE

ANIMALS – cont'd.

State Species of Special Concern

Species	Status	Habitat	*Occurrence in the Project Site
Temblor Legless Lizard (*Anniella alexanderae*)	SCS	The Temblor legless lizard (previously called silvery legless lizard) occurs mostly underground in warm moist areas with loose soil and substrate and is known only from two sites west of Highway 33 at the base of the Temblor Range between McKittrick and Taft in Kern County.	**Absent.** The Project Site is outside of this species' range.
Coast horned lizard *(Phrynosoma blainvillii)*	CSC	Grasslands, scrublands, oak woodlands, etc. of central California. Common in sandy washes with scattered shrubs.	**Absent.** Habitats required by this species are absent because they have been heavily modified for human use. The nearest documented observation of this species is more than 27 miles to the northwest of the Project Site and Access Corridor (CNDDB 2019).
California glossy snake (*Arizona elegans occidentallis*)	CSC	Occurs in arid areas with grassland, scrub, chaparral, and rocky washes. This species is nocturnal and spends the day in burrows.	**Absent.** Habitats required by this species are absent from the Project Site, the Access Corridor, and vicinity.
San Joaquin whipsnake *(Masticophis flagellum ruddocki)*	CSC	Open, dry habitats with little or no tree cover. Found in valley grasslands and saltbush scrub in the San Joaquin Valley.	**Absent.** Habitats required by this species are absent from the Project Site, the Access Corridor, and vicinity.
American white pelican (nesting) *(Pelecanus erythrorhynchos)*	CSC	Nests on islands in large lakes or on ephemeral islands in shallower wetlands.	**Unlikely.** Nesting habitat is absent from the Project Site and Access Corridor. This species has observed flying in the general area in previous years; however, the species is unlikely to stop and nest within the Project Site or Access Corridor.
White-faced ibis *(Plegadis chihi)*	CSC	Salt and freshwater marsh as well as grain and alfalfa fields.	**Possible.** Foraging habitat required for this species is present in the form of the agricultural fields within the Project Site and Access Corridor. Breeding habitat is absent.
Northern harrier *(Circus cyaneus)*	CSC	Frequents meadows, grasslands, open rangelands, freshwater emergent wetlands; uncommon in wooded habitats.	**Possible.** Harriers were observed foraging over agricultural fields within the general area during previous surveys, and foraging habitat exists on the Project Site and Access Corridor. However, breeding habitat is absent.
White-tailed kite *(Elanus leucurus)*	CP	Open grasslands and agricultural areas throughout central California.	**Possible.** Suitable foraging habitat occurs for this species within the Project Site and Access Corridor; however, breeding habitat is absent.

TABLE 2: LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE VICINITY OF THE CHESTNUT SOLAR PROJECT SITE

ANIMALS – cont'd.

State Species of Special Concern

Species	Status	Habitat	*Occurrence in the Project Site
Mountain plover *(Charadrius montanus)*	CSC	Forages in short grasslands and freshly plowed fields of the Central Valley.	**Possible.** The Project Site and Access Corridor provide potential winter foraging habitat for this species; however, the species does not breed in this region.
Burrowing owl *(Athene cunicularia)*	CSC	Frequents open, dry annual or perennial grasslands, deserts, and scrublands characterized by low growing vegetation. Dependent upon burrowing mammals, most notably the California ground squirrel, for nest burrows.	**Possible.** The site visits in April and May of 2018 and April of 2019 identified burrowing owls in the canal south of Laurel Avenue located 1.5 miles north of the site to the site and in burrows and pipes within the vicinity of the site. Currently, suitable habitat onsite consists mainly of man-made 'burrows', such as pipes and some ground squirrel burrows. As burrowing owls are known to be in the area, it is possible they may occur along portions of the Access Corridor.
Long-eared owl (nesting) (*Asio otus*)	CSC	Occur on edge habitats including in clumps of trees or edges of open forests that are adjacent to grasslands, shrublands, wetlands, marshes, and farmlands. Need stick nests built by other birds in trees.	**Possible.** Although the Project Site does not support suitable nesting habitat for this species except for the potential for nesting to occur on utility poles, small clumps of suitable trees do exist in the vicinity of the site at the off-site tailwater pond located 1.0 miles west of the site; therefore, long-eared owls may use the Project Site and Access Corridor as foraging area.
Black swift (Cypseloides niger)	CSC	Migrants found in many habitats of state; in Sierra nests are often associated with waterfalls.	**Absent.** The Project Site and Access Corridor do not provide suitable breeding or foraging habitat for this species.
Vaux's swift *(Chaetura vauxi)*	CSC	Migrants move through the foothills of the western Sierra in spring and late summer. Some individuals breed in the region.	**Absent.** The Project Site and Access Corridor do not provide suitable breeding or foraging habitat for this species.
Loggerhead shrike *(Lanius ludovicianus)*	CSC	Frequents open habitats with sparse shrubs and trees, other suitable perches, bare ground, and low herbaceous cover. Can often be found in cropland.	**Present.** This species was observed on the Project Site during the April 2019 site visits. The Chestnut Solar site may support marginal nesting habitat within vegetated canals of the site, and shrubs along the Access Corridor would also support suitable nesting habitat.
Yellow-headed blackbird (*Xanthocephalus xanthocephalus*)	CSC	Occurs in freshwater marshes with cattails, tule, and bulrush during the summer and open, cultivated fields and pastures in the winter.	**Possible.** The larger canals of the site support potential breeding and foraging habitat for this species and the smaller canals of the site support foraging habitat for this species.

TABLE 2: LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE VICINITY OF THE CHESTNUT SOLAR PROJECT SITE

ANIMALS – cont'd.

State Species of Special Concern

Species	Status	Habitat	*Occurrence in the Project Site
Tulare grasshopper mouse *(Onychomys torridus)*	CSC	Arid shrubland communities in hot, arid grassland and scrub desert associations. These include blue oak woodlands at 450 m (1476 feet); upper Sonoran subshrub scrub community; alkali sink and mesquite associations on the valley floor; and grasslands associations on the sloping margins of the San Joaquin Valley and Carrizo Plain region.	**Absent.** Suitable shrubland habitat is not present within the Project Site or the Access Corridor.
Short-nosed kangaroo rat (*Dipodomys nitratoids brevinasus*)	CSC	Occur in lighter, powdery soils such as the sandy bottoms and banks of arroyos and other sandy areas with slightly to highly saline soils on gently sloping and rolling low hill-tops with shrubs.	**Absent**. Habitats required by short-nosed kangaroo rats are absent from the Project Site and surrounding agricultural lands due to intensive agricultural use.
Townsend's Big-eared bat *(Corynorhinus townsendii)*	CSC	Primarily a cave-dwelling bat that may also roost in buildings. Occurs in a variety of habitats.	**Possible.** Suitable foraging habitat for this species is present within the Project Site and Access Corridor; however, roosting habitat is absent.
Pallid bat *(Antrozous pallidus)*	CSC	Roosts in rocky outcrops, cliffs, and crevices with access to open habitats for foraging. May also roost in caves, mines, hollow trees and buildings.	**Possible.** Although suitable roosting habitat for the pallid bat is absent from the Project Site, the entire site supports suitable foraging habitat for this species.
California mastiff bat *(Eumops perotis ssp.* californicus)	CSC	Frequents open, semi-arid to arid habitats, including conifer, and deciduous woodlands, coastal scrub, grasslands, palm oasis, chaparral and urban. Roosts in cliff faces, high buildings, trees and tunnels.	**Possible.** Although suitable roosting habitat for the California mastiff bat is absent from the Project Site, the entire site supports suitable foraging habitat for this species.
American badger *(Taxidea taxus)*	CSC	Found in drier open stages of most shrub, forest and herbaceous habitats with friable soils.	**Unlikely.** No burrows of the size and shape suitable for this species were observed on the Project Site or the Access Corridor. It is possible this species may establish burrows within the Project Site; however, it is unlikely that badgers would breed onsite or within the site's vicinity.

TABLE 2: LIST OF SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE VICINITY OF THE CHESTNUT SOLAR PROJECT SITE

ANIMALS – cont'd.

State Species of Special Concern

Species	Status	Habitat	*Occurrence in the Project Site
Ringtail *(Bassariscus astutus)*	CP	Riparian and heavily wooded habitats near water.	**Absent.** Habitat for this species is absent from the Project Site and Access Corridor.

***Explanation of Occurrence Designations and Status Codes**

Present: Species observed within the Project Site at time of field surveys or during recent past.
Likely: Species not observed within the Project Site, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed within the Project Site, but it could occur there from time to time.
Unlikely: Species not observed within the Project Site, and would not be expected to occur there except, perhaps, as a transient.
Absent: Species not observed within the Project Site, and precluded from occurring there because habitat requirements not met.

STATUS CODES

FE	Federally Endangered
FT	Federally Threatened
FPE	Federally Endangered (Proposed)
FC	Federal Candidate

CE	California Endangered
CT	California Threatened
CR	California Rare
CP	California Fully Protected
CSC	California Species of Special Concern
CC	California Candidate

CNPS California Native Plant Society Listing

1A	Plants Presumed Extinct in California
1B	Plants Rare, Threatened, or Endangered in California and elsewhere
2	Plants Rare, Threatened, or Endangered in California, but more common elsewhere
3	Plants about which we need more information – a review list
4	Plants of limited distribution – a watch list

2.6 ENDANGERED, THREATENED, OR SPECIAL STATUS ANIMAL SPECIES MERITING FURTHER DISCUSSION

2.6.1 Swainson's Hawk (*Buteo swainsoni*).

Federal Listing Status: None; State Listing Status: Threatened.

The Swainson's hawk is designated as a California Threatened species. The loss of agricultural lands (i.e., foraging habitat) to urban development and additional threats such as riverbank protection projects have contributed to its decline.

Life history and ecology. Swainson's hawks are large, broad-winged, broad-tailed hawks. Male and female Swainson's hawks have similar body types, with a length generally between 17 and 22 inches and a wingspan between 47 and 57 inches. They weigh up to 2.5 pounds.

Swainson's hawks have a high degree of mate and territorial fidelity. They arrive at their nesting sites in March or April, and their nests, measuring three to four feet in diameter, can take up to two weeks to complete. The nest is likely to be a stick nest constructed in a tree. In the Central Valley, Swainson's hawks typically nest in large trees in or peripherally to riparian systems adjacent to suitable foraging habitats. The female will lay and incubate two to four eggs for approximately 28 to 35 days. The male helps with incubation when the female leaves the nest to feed. The young hatch sometime between March and July and do not leave the nest until some 4 to 6 weeks later. Other suitable nest sites include lone trees, groves of trees such as oaks, other trees in agricultural fields, and mature roadside trees. Swainson's hawks forage in large, open fields with abundant prey, including grasslands or lightly grazed pastures, alfalfa and other hay crops, and certain grain and row croplands.

Swainson's hawk survey history on the larger WSP study area: On June 21, 2010 LOA biologists Jeff Gurule and Geoff Cline observed a pair of Swainson's hawks soaring above and around the off-site tailwater pond located 1.0 miles west of the Project Site. The two hawks vocalized an alarm call when first encountered flying low over the pond and then soared high into the air. The hawks were encountered again within 30 minutes flying low over the off-site tailwater pond. Although approximately 30 minutes was spent in a thorough search for a nest, no Swainson's hawk nest was observed in the trees associated with the off-site tailwater pond. An active barn owl nest was found however. Although the behavior of the Swainson's hawks observed indicated the possibility that a nest may occur in the trees associated with the off-site tailwater pond.

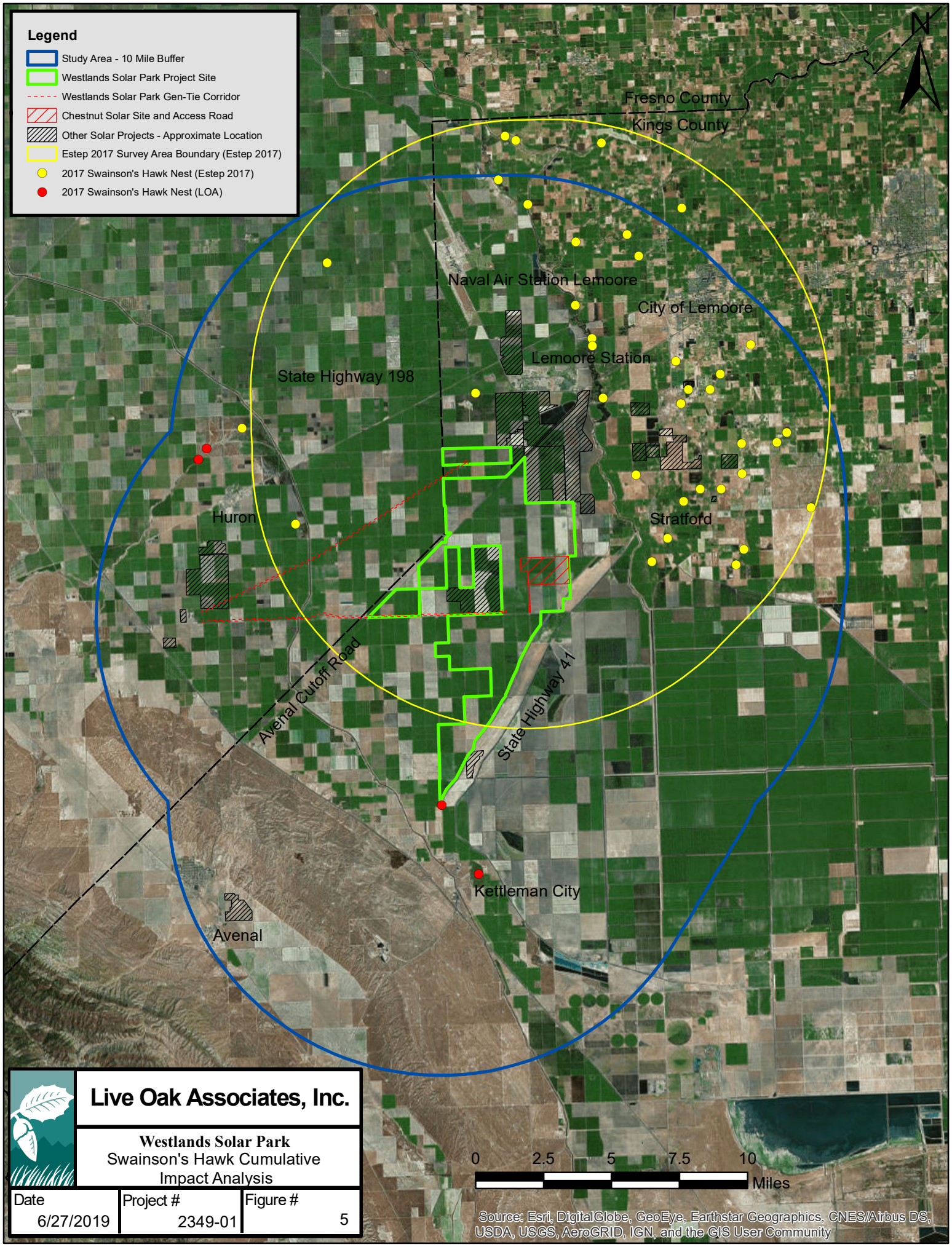
In 2011, surveys for Swainson's hawks were made on March 21 and April 5 by LOA ecologists Katrina Krakow and Nathan Hale, April 12 and 13 by Katrina Krakow, April 19 and 20 by Katrina Krakow and biologist Robert Shields, and May 3, and 17 by Katrina Krakow. The majority of surveys focused on the off-site tailwater pond which has a row of riparian trees along its margins. Shorter surveys were made near the King's River along Jackson Road, approximately 6.5 miles northeast of the Project Site, where Swainson's hawks have been observed in previous years. A pair of Swainson's hawks were observed off of Jackson Road near the Kings River on 21 March, and 5, 12, and 13 April 2011. Only one individual was observed at a time (both individuals were observed separately) starting on April 19th, which may indicate the beginning of nesting, although no nest was located. On 3 May 2011, a Swainson's hawk was observed over the housing of the Lemoore Air Base along Highway 198, approximately 6.5 miles north of the Project Site. A pair of Swainson's hawks were observed over the off-site tailwater pond beginning on 19 April 2011 by LOA ecologist Katrina Krakow and biologist Robert Shields, and only one individual was observed at a time (both individuals were observed separately) starting on 3 May by LOA ecologist Katrina Krakow, which may indicate the beginning of nesting for this pair. These individuals were observed interacting with a pair of red-tailed hawks, which were also observed only singularly near the pond. Two great horned owl nests were observed in trees along the south side of the pond, on 19 April, one owlet was observed in one nest and two owlets were observed in the other nest. However, as at least two pair of Swainson's hawks were observed either over or in the vicinity of the Westlands Solar Park (WSP) study area, both observed pairs of this species most likely forage onsite, although, due to lack of suitable nest trees, they are not expected to nest onsite, however, potentially suitable nesting habitat occurs at the off-site tailwater pond located 1.0 miles west of the Chestnut Solar Project Site.

Further multi-year surveys of the off-site tailwater pond area were conducted by LOA biologists during subsequent breeding seasons 2012-2015. Although Swainson's hawks were reliably observed flying over the off-site tailwater pond in each of these years, these surveys likewise failed to detect the presence of a Swainson's hawk nest within the trees surrounding the off-site tailwater pond. The April 15, 2015 survey was the only survey that LOA biologists observed Swainson's hawks land in a tree at the off-site tailwater pond. All other observations were of Swainson's hawks flying overhead.

In the spring of 2012, LOA conducted a Swainson's hawk nest survey of the Westlands Solar Park (WSP) in conjunction with the biological report prepared for the WSP Master Plan and Gen-Tie Corridors Program EIR. The study area included the Project Site as well as accessible lands within a buffer of 10 miles from the WSP Master Plan area. These surveys took place on April 27 by Ms. Krakow and Ms. Jensen; May 3 by Ms. Krakow; and May 4 by Ms. Krakow and Mr. Cline. Accessible lands within the 10-mile radius were surveyed completely except for those lands previously surveyed by ESTEP Ecological Consulting (2011 and 2012). Four active Swainson's nests were observed, all occurring off-site. Active nests were revisited on May 24 by Ms. Krakow and Mr. Cline. Two nests were located approximately 10 miles to the northwest of the site in trees bordering a drainage located northwest of the Town of Huron, and one nest was located 10 miles south of the site just east of Kettleman City in a stand of eucalyptus trees, and one nest was located 9 miles south of the site in a cottonwood tree located south of the southern limit of the WSP Master Plan area just off-site on the eastern side of the canal adjacent to the site near Quail Avenue. During the 2013-2015 spring surveys, this nest was observed to be in active use by a pair of breeding Swainson's hawks. This pair likely uses the WSP study area for foraging, but nesting on the Chestnut Solar site is unlikely due to absence of suitable nest trees. Although no known historic nests are along or within a half-mile of the Access Corridor, suitable nest trees do exist 1.0 miles west of the route at the tailwater pond.

The four nests observed by LOA in 2012 were revisited on September 25, 2017 and April 9 and 10, 2018 (including a visit to nest #11 of the Estep report from 2017 on April 9, 10, and May 28, 2018). By September of 2017, nesting activity for the 2017 nesting season could not be confirmed, however, one nest was missing and presumed inactive for 2017. The 2018 nesting season appeared to be late, with surveys in April showing adults near known nesting areas, but not yet engaging in nesting activity. Active migration was observed on April 9, 2018 when over 100 Swainson's hawks were observed off-site south of Nevada Avenue. On May 28, 2018, when the nest locations were revisited, only one of the five nest locations (one of which was previously missing) surveyed was an active nest, near Racine Avenue. These nest locations were checked again on May 29, 2019, where two nests were determined to be active in 2019, the one near Quail Avenue and the one near Racine Avenue. The western nest tree along Los Gatos Creek near Huron did not have a nest in the tree and the eastern nest tree had been removed as a part of a presumed creek flood

protection project. Nest #11 from Estep's survey supported nesting ravens in 2019. Figure 5 illustrates known Swainson's hawk nest locations within the project vicinity.



Live Oak Associates, Inc.

Westlands Solar Park
Swainson's Hawk Cumulative Impact Analysis

Date	Project #	Figure #
6/27/2019	2349-01	5

Potential to occur within the Project Site and Access Corridor. Swainson's hawks are known to forage in areas surrounding the Project Site and Access Corridor. Groupings of trees and trees along the Kings River to the east, provide suitable nesting and perching habitat, and the fallow and agricultural lands within the Project Site provide suitable foraging habitat. The nearest previously observed Swainson's hawk nest is located approximately 3.0 miles east of the Project Site. Potentially suitable nesting habitat occurs at the off-site tailwater pond approximately 1.0 miles to the west of the Chestnut Solar Project Site.

LOA had several observations of Swainson's hawks flying or foraging on the ground near the Project Site, including groups as large as 45 individuals. Therefore, Swainson's hawks are present within the Project Site and likely forage onsite throughout the months of March through September; however, breeding habitat is likely absent onsite.

Nesting on the Chestnut Solar site or the Access Corridor is unlikely due to absence of suitable nest trees. Although no known historic nests are along or within a half-mile of the project site or Access Corridor, suitable nest trees do exist approximately 1.0 miles to the west of the project site at the site of the former tailwater pond. Therefore, Swainson's hawks may nest in suitable trees located within 1.0 miles of the project site (which is more than the typical setback distance for active nest sites).

For a detailed cumulative analysis of impacts to Swainson's hawks, see Appendix C of this report.

2.6.2 Burrowing Owl (*Athene cunicularia*).

Federal Listing Status: None; State Listing Status: Species of Special Concern.

The burrowing owl is designated as a California Species of Special Concern. This designation was based on the species' declining population within the state over the past 40 years. The population decline is mainly due to habitat destruction resulting from development and agricultural practices.

Life history and ecology. The burrowing owl is a small, long-legged bird that averages a height of 9.5 inches, has an average wingspan of 23 inches, and weighs an average of 5.25 ounces. Burrowing owls are unique in that they are the only owl that regularly lives and breeds in underground nests. In California, these birds typically occur in the Central and Imperial Valleys, primarily utilizing ground squirrel burrows (or the burrows of other animals, e.g., badgers, prairie dogs and kangaroo rats) found in grasslands, open shrub lands, deserts, and, to a lesser extent,

grazed and agricultural lands. Burrowing owls in this region are typically found at elevations below 250 ft. and exhibit strong site fidelity. Pairs have been known to return to the same area year after year, and some pairs are known to utilize the same burrow as the previous year. Burrowing owls are colonially nesting raptors, and colony size is indicative of habitat quality. It is not uncommon to find burrowing owls in developed and cultivated areas where California ground squirrels are active.

Burrowing owls feed on various small mammals including deer mice, voles, and rats. They also prey on various invertebrates including crickets, beetles, grasshoppers, spiders, centipedes, scorpions and crayfish. Peak hunting periods occur around dusk and dawn.

Burrowing Owl history on the larger WSP study area: Burrowing owls were observed utilizing existing burrows along canals located north and south of the Project Site. The Project Site provides suitable habitat for this species in the form of California ground squirrel burrows present in fallow fields and canal banks. Field surveys did not consist of 100% coverage surveys and were conducted mainly as driving surveys on public roads, farm roads, and canal levees with short walking surveys when animals of plants of particular biological note were observed. Many of these owls were paired and presumably nesting with a minimum of 8 pair in 2011, a minimum of 12 pair in 2012, a minimum of 8 pair in 2014, and a minimum of 6 pair in 2018. Suitable nesting habitat for burrowing owls was present in the fallow fields and along the canal banks in the form of California ground squirrel burrows. As 100% coverage surveys were not conducted, the precise extent of burrowing owls within the WSP study area is unknown, however, LOA has identified 79.60% of the WSP study area to be either year-round suitable habitat (3,255.8 acres) or seasonably suitable habitat (13,245 acres) (see Appendix D of this report for details).

Potential to occur within the Project Site and Access Corridor. The site was evaluated on April 10 and May 28, 2018 and April 11, 2019 for the potential for the site to support burrowing owls. During 2018 surveys, three pair of burrowing owls and one single burrowing owl were observed along the canal south of and paralleling Laurel Avenue (1.5 miles north of the project site) with one burrowing owl observed approximately 1 mile to the northwest of the northwest corner of the Project Site; on April 11, 2019, no burrowing owls were observed on or near the project site. No burrowing owls were observed along the Access Corridor on either date; however, they could occur along the Corridor in the future. Currently, suitable habitat onsite consists mainly of man-

made 'burrows', such as pipes as well as ground squirrel burrows within and along the canals onsite. The site provides suitable nesting/denning habitat in the form of California ground squirrel burrows along the edges of the agricultural fields and in and along the canals, and in the form of pipes in or on the ground, as well as foraging habitat within the agricultural fields for burrowing owls. Canal maintenance activities have the potential to impact locations of burrowing owls, as many large canals support burrowing owls, such as the canal south of Laurel Avenue, where several burrowing owls were identified in previous surveys in the area. In between maintenance activities and recolonization, the burrowing owls would take up temporary residence elsewhere.

The Access Corridor supports suitable burrow habitat for burrowing owls, and therefore, can be expected to occur in the future along the Access Corridor.

2.6.3 San Joaquin Kit Fox (*Vulpes macrotus mutica*).

Federal Listing Status: Endangered; State Listing Status: Threatened.

By the time the U.S. Fish and Wildlife Service listed it as an endangered species under the authority of the Federal Endangered Species Act on 11 March 1967, the San Joaquin kit fox had been extirpated from much of its historic range. In 1998, the USFWS adopted a final recovery plan for the San Joaquin kit fox. On 27 June 1971, the State of California listed the kit fox as a threatened species.

Life history and ecology. The San Joaquin kit fox, the smallest North American member of the dog family (Canidae), historically occupied the dry plains of the San Joaquin Valley, from San Joaquin County to southern Kern County (Grinnell et al. 1937). Critical habitat has yet to be established for the San Joaquin kit fox. Local surveys, research projects, and incidental sightings indicate that kit foxes currently occupy available habitat on the San Joaquin Valley floor and in the surrounding foothills.

Kit foxes prefer habitats of open or low vegetation with loose soils. In the northern portion of their range, they occupy grazed grasslands and, to a lesser extent, valley oak woodlands. In the southern and central portion of the Central Valley, kit foxes are found in valley sink scrub, valley saltbrush scrub, upper Sonoran subshrub scrub, and annual grassland (USFWS 1998). Kit foxes may also be found in grazed grasslands, urban settings, and in areas adjacent to tilled or fallow fields (USFWS 1998).

Kit fox diets vary geographically, seasonally, and annually. In the central portion of their range, which includes lands around the Project Site, known prey includes white-footed mice, insects, California ground squirrels, black-tailed hares, San Joaquin antelope squirrels, kangaroo rats, desert cottontails, and ground-nesting birds (Archon 1992; Jensen 1972).

The kit fox requires underground dens to raise pups, regulate body temperature, and avoid predators and other adverse environmental conditions (Golightly and Ohmart 1984). In the central portion of their range, they usually occupy burrows excavated by small mammals, such as ground squirrels. Denning habitat consists of ground squirrel complexes in which some burrows have been enlarged to 4 to 6 inches in diameter for the length of a human arm (approximately 2 ft.).

Potential to occur within the Project Site and Access Corridor. Lands surrounding the Project Site consist of cultivated and fallow agricultural fields as well as undeveloped rangeland further out to the south and southwest in the Kettleman Hills. The Project Site itself has been heavily managed for agricultural uses for decades. Agricultural lands are not generally suitable for the San Joaquin kit fox.

A few burrows were observed that were of suitable dimensions for kit fox, but most of these burrows were or appeared to be occupied by California ground squirrels or were pipes either installed in the ground or laying on top of the ground; however, protocol-level surveys consisting of 100% visual coverage were not conducted for the Project Site. Having been modified for agricultural use, the Project Site provides a limited prey base especially in the cultivated fields and, therefore, constitutes poor foraging habitats for kit fox. No kit fox, or their sign, was observed during any of the site visits by LOA ecologists between 2011 and 2019.

Of primary interest for this assessment are kit fox records from the vicinity of the project site. According to the CNDDB there have been a total of 19 historical (1975-2000) sightings within the ten miles of the site (Figure 4) (CDFW 2019). All of these sightings occur near the border of the 10-mile radius. Based on the site's location and the distribution of kit fox occurrences in its vicinity, the site may only occasionally be used for regional movements of individual kit fox. These sightings occurred to the east, west, south, and north of the Project Site. Multiple large irrigation canals and drainage ditches run through the Project Site and vicinity which may act as movement corridors; however, should a kit fox utilize these corridors, the fox would have to travel

through miles of marginal to poor habitat before reaching the Project Site, which itself holds little habitat value.

In summary, the Project Site offers marginal habitat primarily in fallowed fields; the surrounding lands provide similar habitat; and 19 historical kit fox sightings occur within ten miles of the Project Site, but not within the Project Site itself. Considering the highly disturbed condition of the Project Site and Access Corridor, their isolation from extant kit fox populations, and their marginal to poor suitability as foraging or denning habitat, it is unlikely any kit fox have taken up residence within the Project Site or Access Corridor, and they are not expected to occur onsite. The Project Site may at most be used on rare occasion for dispersing kit foxes. The Chestnut Solar facility is planned to include the installation of wildlife friendly fencing in order to allow kit fox to move unimpeded through the solar facility. All existing irrigation canals and drainage ditches will be avoided by the solar facilities and are planned to continue operations as they currently do. Therefore, any kit foxes would not be prevented from moving through the Project Site after completion of the solar facilities.

2.6.4 Other Migratory Birds and their Nests. Federal Listing Status: Protected; State Listing Status: Protected.

Other migratory birds include most bird species with the exception of house sparrow (*Passer domesticus*) and European starling, among a few other non-native birds. Migratory birds and their nests are protected under the Federal Migratory Bird Treaty Act of 1918 and California Fish and Game Code (Sections 3503 and 3513). Between approximately February 1 and August 31, migratory birds nest throughout California and the Central Valley on the ground and in grasses, shrubs, and trees.

Potential to occur onsite. Ground nesting birds such as burrowing owl (see Section 3.3.7) and killdeer (*Charadrius vociferous*), among other disturbance-tolerating birds, may utilize the ground and agricultural vegetation of the site for nesting.

2.7 JURISDICTIONAL WATERS

Jurisdictional waters include rivers, creeks, and drainages that have a defined bed and bank and which, at the very least, carry ephemeral flows. Jurisdictional waters also include lakes, ponds, reservoirs, and wetlands. Such waters may be subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Wildlife (CDFW), and the

California Regional Water Quality Control Board (RWQCB). See Section 3.2.4 of this report for additional discussion of these agencies' roles and responsibilities.

The nearest known Water of the U.S. is the Kings River to the north and east of the Project Site. Two large irrigation canals run along the eastern and western sides of the site, with two smaller canals running though the site; however, these canals do not receive water from the Kings River, which is at a lower elevation than the Project Site. Artificial waterways such as canals are typically not claimed by the agencies unless they receive water from a Known Water of the U.S., and then return water to a Known Water of the U.S. Thus, even if the canals on the Project Site received water from a Known Water of the U.S., the Kings River, those waters do not return to the Kings River. Therefore, it is unlikely that canals and ditches would fall under the jurisdiction of the USACE. However, only the USACE can make a jurisdictional determination of waters. Furthermore, waters, while likely not regulated by the USACE may be claimed as jurisdictional by the RWQCB or CDFW under the broader definition of Waters of the State under the Porter-Cologne Water Quality Act, which encompasses any surface or groundwater within the boundaries of the state. Thus, although the canals may not fall under federal jurisdiction, the RWQCB may assert jurisdiction over those portions of the canal that function as wetlands. The CDFW typically only asserts jurisdiction over ponds, lakes, and natural drainages or manmade features that replace natural drainages and, therefore, is unlikely to regulate alterations to the manmade canals mentioned above.

To summarize, regulated waters do not occur onsite. The canals and drainage features on the Project Site and alongside the Access Corridor are unlikely to be regulated by the USACE; however, the RWQCB and CDFW may assert jurisdiction over some of these features. Jurisdiction would need to be evaluated on a case-by-case basis.

3 IMPACTS AND MITIGATIONS

3.1 SIGNIFICANCE CRITERIA

Approval of general plans, area plans, and specific projects is subject to the provisions of the California Environmental Quality Act (CEQA). The purpose of CEQA is to assess the impacts of proposed projects on the environment before they are carried out. CEQA is concerned with the significance of a proposed project's impacts. For example, a proposed development project may require the removal of some or all of a Project Site's existing vegetation. Animals associated with this vegetation could be destroyed or displaced. Animals adapted to humans, roads, buildings, pets, etc., may replace those species formerly occurring on the Project Site. Plants and animals that are state and/or federally listed as threatened or endangered may be destroyed or displaced. Sensitive habitats such as wetlands and riparian woodlands may be altered or destroyed.

Whenever possible, public agencies are required to avoid or minimize environmental impacts by implementing practical alternatives or mitigation measures. According to Section 15382 of the CEQA Guidelines, a significant effect on the environment means a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest."

Specific project impacts to biological resources may be considered "significant" if they would:

- 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 the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- 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 California Department of Fish and Game or US Fish and Wildlife Service;

- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, 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; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Furthermore, CEQA Guidelines Section 15065(a) states that a project may trigger the requirement to make a "mandatory findings of significance" if the project has the potential to:

"Substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare or threatened species, or eliminate important examples of the major periods of California history or prehistory."

3.2 RELEVANT GOALS, POLICIES, AND LAWS

3.2.1 Threatened and Endangered Species

State and federal "endangered species" legislation has provided the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. Species listed as threatened or endangered under provisions of the state and federal endangered species acts, candidate species for such listing, state species of special concern, and some plants listed as endangered by the California Native Plant Society are collectively referred to as "species of special status." Permits may be required from both the CDFW and USFWS if activities associated with a proposed project will result in the "take" of a listed species. "Take" is

defined by the state of California as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (California Fish and Game Code, Section 86). "Take" is more broadly defined by the federal Endangered Species Act to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3). Furthermore, as "responsible agencies" under CEQA, the CDFG and the USFWS both review CEQA documents involving projects which may have an impact on state- and/or federally-protected species in order to determine the adequacy of their treatment of protected species issues and to make project-specific recommendations for their conservation.

3.2.2 Migratory Birds

State and federal laws also protect most birds. The Federal Migratory Bird Treaty Act (16 U.S.C., sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

3.2.3 Birds of Prey

Birds of prey are also protected in California under provisions of the State Fish and Game Code, Section 3503.5, which states that 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." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by the CDFW.

3.2.4 Wetlands and Other Jurisdictional Waters

The USACE regulates the filling or grading of Waters of the U.S. under the authority of Section 404 of the Clean Water Act. Natural drainage channels and adjacent wetlands may be considered "Waters of the United States" or "jurisdictional waters" subject to the jurisdiction of the USACE. The extent of jurisdiction has been defined in the Code of Federal Regulations and clarified in federal courts.

On June 29, 2015, the Environmental Protection Agency and USACE jointly issued the Clean Water Rule as a synthesis of statute, science, and U.S. Supreme Court decisions. The Clean Water Rule defines Waters of the U.S. to include the following:

1. All waters used in interstate or foreign commerce (also known as traditional navigable waters), including all waters subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. The territorial seas;
4. All impoundments of Waters of the U.S.;
5. All tributaries of waters defined in Nos. 1 through 4 above, where "tributary" refers to a water (natural or constructed) that contributes flow to another water and is characterized by the physical indicators of a bed and bank and an ordinary high water (OHW) mark;
6. Adjacent waters, defined as either (a) located in whole or in part within 100 feet of the OHW mark of waters defined in Nos. 1 through 5 above, or (b) located in whole or in part within the 100-year floodplain and within 1,500 feet of the OHW mark of waters defined in Nos. 1 through 5 above;
7. Western vernal pools, prairie potholes, Carolina bays and Delmarva bays, pocosins, and Texas coastal prairie wetlands, if determined on a case-specific basis to have a significant nexus to waters defined in Nos. 1 through 3 above;
8. Waters that do not meet the definition of adjacency, but are determined on a case-specific basis to have a significant nexus to waters defined in Nos. 1 through 3 above, and are either (a) located in whole or in part within the 100-year floodplain of waters defined in Nos. 1 through 3 above, or (b) located within 4,000 feet of the OHW mark of waters defined in Nos. 1 through 5 above.

The 2015 rule also redefines exclusions from jurisdiction, which include:

1. Waste treatment systems;
2. Prior converted cropland;
3. Artificially irrigated areas that would revert to dry land should application of irrigation water to the area cease;
4. Groundwater;
5. Stormwater control features constructed to convey treat or store stormwater created in dry land; and
6. Three types of ditches: (a) ditches with ephemeral flow that are not a relocated or excavated tributary, (b) ditches with intermittent flow that are not a relocated or excavated

tributary or that do not drain wetlands, and (c) ditches that do not flow, either directly or through another water, to a traditional navigable water.

A ditch may be a water of the U.S. only it if meets the definition of "tributary" and is not otherwise excluded under the provision.

All activities that involve the discharge of dredge or fill material into Waters of the U.S. are subject to the permit requirements of the USACE. Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued until the RWQCB issues a Section 401 Water Quality Certification (or waiver of such certification) verifying that the proposed activity will meet state water quality standards.

Under the Porter-Cologne Water Quality Control Act of 1969, the State Water Resources Control Board has regulatory authority to protect the water quality of all surface water and groundwater in the State of California ("Waters of the State"). Nine RWQCBs oversee water quality at the local and regional level. The RWQCB for a given region regulates discharges of fill or pollutants into Waters of the State through the issuance of various permits and orders. Discharges into Waters of the State that are also Waters of the U.S. require a Section 401 Water Quality Certification from the RWQCB as a prerequisite to obtaining certain federal permits, such as a Section 404 Clean Water Act permit. Discharges into all Waters of the State, even those that are not also Waters of the U.S., require Waste Discharge Requirements (WDRs), or waivers of WDRs, from the RWQCB.

The RWQCB also administers the Construction Stormwater Program and the federal National Pollution Discharge Elimination System (NPDES) program. Projects that disturb one or more acres of soil must obtain a Construction General Permit under the Construction Stormwater Program. A prerequisite for this permit is the development of a Stormwater Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Projects that discharge wastewater, stormwater, or other pollutants into a Water of the U.S. may require a NPDES permit.

CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1601 and 1602 of the California Fish and Game Code. Activities that may substantially modify such waters through the diversion or obstruction of their natural flow, change

or use of any material from their bed or bank, or the deposition of debris require a Notification of Lake or Streambed Alteration. If CDFW determines that the activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of the lake or drainage in question.

3.2.5 Local Policies or Habitat Conservation Plans

The Resource Conservation Elements of the 2035 Kings County General Plan contains a number of goals and policies on biological resources. These County policies are outlined below.

Wetland and Riparian Areas. The County's goal is to conserve the functions and values of wetland communities and riparian areas while allowing compatible uses where appropriate.

Fish and Wildlife Habitat. The County's goal is to protect, restore, and enhance habitats in Kings County that support fish and wildlife species so that populations are maintained at viable levels.

Vegetation. The County's goal is to protect the valuable vegetation resources of each County. The Open Space and Conservation Element of the Fresno County General Plan contains a number of policies related to Natural Resources. These policies are directed specifically to the protection of special habitat areas such as wetlands and riparian areas, as well as fish and wildlife habitat.

3.3 POTENTIALLY SIGNIFICANT PROJECT IMPACTS/MITIGATION

The Chestnut Solar project involves the conversion of approximately 1,040 acres of agricultural fields to solar generation facilities and the following sections assume that the entire project site will be affected by the project.

Potentially significant project impacts to biological resources and mitigations are discussed below.

3.3.1 Loss of Habitat for Special Status Plants

Potential Impacts. Three special-status vascular plant species are known to occur in the vicinity of the Project Site: California jewelflower (*Caulanthus californicus*), Kern mallow (*Eremalche parry* ssp. *kernensis*), and San Joaquin woolly threads (*Monolopia congdonii*) (see Table 1). Due to the many decades of agricultural disturbance of the Project Site and Access Corridor, habitat for these three plant species is absent. Therefore, the planned solar project and access corridor would

not affect regional populations of these species and potential impacts would be less-than-significant.

Mitigation. Mitigation measures are not warranted.

3.3.2 Loss of Habitat for Special Status Animals

Potential Impacts. Of the 38 special-status animal species potentially occurring in the region, 24 species would be absent or unlikely to occur within the Project Site or Access Corridor due to unsuitable habitat conditions. These include the vernal pool fairy shrimp, valley elderberry longhorn beetle, California tiger salamander, western spadefoot, western pond turtle, Temblor legless lizard, coast horned lizard, blunt-nosed leopard lizard, giant garter snake, California glossy snake, San Joaquin whipsnake, American white pelican (nesting), black swift, Vaux's swift, western yellow-billed cuckoo, Nelson's antelope squirrel, giant kangaroo rat, Fresno kangaroo rat, Tipton kangaroo rat, short-nosed kangaroo rat, Tulare grasshopper mouse, American badger, San Joaquin kit fox, and ringtail. Construction of the Chestnut Solar project and access corridor would have no effect on loss of habitat for these species because there is little or no likelihood that they are present.

An additional 14 species may regularly or occasionally utilize the Project Site and Access Corridor for foraging, including the western snowy plover, mountain plover, white-faced ibis, Swainson's hawk, northern harrier, white-tailed kite, western burrowing owl, long-eared owl, loggerhead shrike, yellow-headed blackbird, tricolored blackbird, Townsend's big-eared bat, pallid bat, and California mastiff bat. The Project Site does not provide regionally important foraging habitat for these species. Migrant species such as the mountain plover pass through or over many types of habitats en route to breeding or wintering habitat. White-faced ibis may possibly forage in agricultural fields of the Project Site from time to time. Considerable habitat suitable for migratory movements and winter foraging would continue to be available for these species on other lands within the region following development. Therefore, development of the solar project would result in a less-than-significant impact on these species.

The three bat species listed above, including the Townsend's big-eared bat, pallid bat, and California mastiff bat may forage over the site; however, roosting habitat is absent from the site for these species.

Mitigation. No mitigations are warranted for loss of habitat for special status animals.

For species that are subject to potentially significant impacts due to construction of the Chestnut Solar project and Access Corridor, as discussed below, mitigation measures are identified below for each as follows: raptors and migratory birds (Mitigation 3.3.3); San Joaquin kit fox (Mitigation 3.3.4); American badger (Mitigation 3.3.5); Swainson's hawk (Mitigation 3.3.6) and; burrowing owl (Mitigation 3.3.7).

3.3.3 Disturbance to Active Raptor and Migratory Bird Nests

Potential Impacts. In addition to the Swainson's hawk and burrowing owl (discussed below in Sections 3.3.6, 3.3.7, and 3.3.8), several other raptor species such as the northern harrier, prairie falcon, peregrine falcon, and red-tailed hawk are known to forage near the site. Additionally, the Project Site and Access Corridor area provides nesting habitat for a number of migratory bird species, including, but not limited to, the snowy plover, black-necked stilt, great-horned owl, common raven, loggerhead shrike, house finch, Brewer's blackbird, and tricolored blackbird. Nearly all native bird species are protected by the federal Migratory Bird Treaty Act. The canal and ditch habitat, as well as power poles and barren ground on the Project Site and the Access Corridor, provide potential nesting habitat for these species. If birds were to nest in these areas in the future prior to construction, such project-related activities could result in the abandonment of active nests or direct mortality to these birds. Construction activities that adversely affect the nesting success of raptors or result in mortality of individual birds constitute a violation of state and federal laws (see Section 3.2.2 and 3.2.3) and would be considered a significant impact under CEQA.

Mitigation. In order to minimize construction disturbance to active raptor and other bird nests, the following measure(s) will be followed as informed by a 2014 early consultation letter form CDFW as necessary prior to the construction of the Chestnut Solar project and Access Corridor:

***Mitigation 3.3.3a* (*Pre-construction surveys*).** If tree removal, site preparation, grading, or construction is planned to occur within the breeding period (i.e., between February 1 and August 31), a qualified biologist will conduct pre-construction surveys for active nests of migratory birds within 10 days of the onset of these activities. If construction activity is planned to commence outside the breeding period, no pre-construction surveys are required for nesting birds and raptors.

***Mitigation 3.3.3b* (*Monitoring Active Nests*).** Should any active nests be discovered in or near proposed construction zones, a qualified biologist shall continuously monitor identified nests for the first 24 hours prior to any construction related activities to establish a behavioral baseline. Once work commences, continuously monitor all nests to detect any behavioral changes as a result of the Project. If behavioral changes are observed, stop the work causing that change and consult with the California Department of Fish and Wildlife for additional avoidance and minimization measures.

***Mitigation 3.3.3c* (*Establish Buffers*).** Alternatively, should any active nests be discovered in or near proposed construction zones, the biologist will establish a 250-foot construction-free buffer around the nest for non-listed birds, 500-foot buffer for unlisted raptors, and a half-mile for listed bird species. This buffer will be identified on the ground with flagging or fencing, and will be maintained until the biologist has determined that the young have fledged. Variance from these setback distances may be allowed if a qualified biologist provides compelling biological or ecological reason to do so and if CDFW is notified in advance of implementation of a no disturbance buffer variance.

***Mitigation 3.3.3d* (*Tailgate Training*).** All construction and operations workers on each solar project site shall be trained by a qualified biologist. The tailgate training shall include a description of the Migratory Bird Treaty Act, instructions on what to do if an active nest is located, and the importance of capping pipes and pipe-like structures standing upright in order to avoid birds falling into the pipes and getting stuck.

Implementation of the above measures would ensure that construction of the solar project and access corridor would have no impact on nesting raptors and migratory birds and that the project would be in compliance with state and federal laws protecting nesting birds.

3.3.4 Impacts to San Joaquin Kit Fox

Potential Impacts. The entire Project Site and Access Corridor consist of agricultural habitat. Of primary interest for this assessment are kit fox records from the vicinity of the project site. According to the CNDDB there have been a total of 19 historical (1975-2000) sightings within the ten miles of the site (Figure 4) (CDFW 2019). All of these sightings occur near the border of the 10-mile radius. Based on the site's location and the distribution of kit fox occurrences in its

vicinity, the Project Site and Access Corridor may only rarely, if at all, be used for regional movements of individual kit fox. These sightings occurred to the east, west, south, and north of the Project Site. Several irrigation canals run through and along the Project Site which may act as movement corridors; however, should a kit fox utilize these corridors, the fox would have to travel through miles of marginal to poor habitat before reaching the Project Site, which itself holds little habitat value. Although a few burrows were observed during the 2016-2018 surveys that were of suitable dimensions for kit fox, most of these burrows were or appeared to be occupied by California ground squirrels or open pipes (both installed in the ground and laying on top of the ground. As discussed in Section 2.6.3, a majority of the Project Site and Access Corridor provide poor habitat and fallow fields and canals offer marginal habitat for this species. While it is unlikely kit fox have, or would take up residence within the Project Site or Access Corridor under current site conditions, kit foxes from populations reported from the surrounding areas may pass through and possibly forage within the Project Site and Access Corridor from time to time during regular dispersal movements. To be prudent, the following measures are identified:

Mitigation. The following measures shall be implemented in conjunction with the construction of the project site.

Mitigation Measure 3.3.4a (Pre-construction surveys). Pre-construction surveys shall be conducted no less than 14 days and no more than 30 days prior to the beginning of ground disturbance, construction activities, and/or any project activity likely to impact the San Joaquin kit fox. These surveys shall be conducted in accordance with the USFWS Standard Recommendations. The primary objective is to identify kit fox habitat features (e.g., potential dens and refugia) on the solar project site and evaluate their use by kit foxes. If an active kit fox den is detected within or immediately adjacent to the area of work, the USFWS shall be contacted immediately to determine the best course of action.

Mitigation Measure 3.3.4b (Avoidance). Should kit fox be found to be using the Project Site or Access Corridor during preconstruction surveys, the construction activity shall avoid the habitat occupied by kit fox and the Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW shall be notified.

Mitigation Measure 3.3.4c (Tailgate Training). All workers on the Chestnut Solar project and Access Corridor shall attend a tailgate training that includes a description of the species, a brief summary of their biology, and minimization measures and instructions on what to do if a San Joaquin kit fox is observed on the solar project site or access corridor.

Mitigation Measure 3.3.4d (Minimization of Potential Disturbance to Kit Fox). Whether or not kit foxes are found to be present, all permanent and temporary construction activities and other types of project-related activities shall be carried out in a manner that minimizes potential disturbance to kit foxes. Minimization measures include, but are not limited to: restriction of project-related vehicle traffic to established roads, construction areas, and other designated areas; inspection and covering of structures (e.g., pipes), as well as installation of escape structures, to prevent the inadvertent entrapment of kit foxes; restriction of rodenticide and herbicide use; and proper disposal of food items and trash.

Mitigation Measure 3.3.4e (Mortality Reporting). The Sacramento Field Office of the USFWS and the Fresno Field Office of CDFW shall be notified in writing within three working days in case of the accidental death or injury to a San Joaquin kit fox during project-related activities. Notification must include the date, time, location of the incident or of the finding of a dead or injured animal, and any other pertinent information.

Mitigation Measure 3.3.4d (Wildlife-Friendly Fencing). The perimeter fencing surrounding each phase of the Chestnut Solar project shall consist of wildlife-friendly or permeable fencing that allows San Joaquin kit fox and other wildlife to move through the site unimpeded. The bottom of the perimeter fencing shall be 5 to 7 inches above the ground, as measured from the top of the ground to the lowest point of the fence. The bottom of the fence edges shall be knuckled (wrapped back to form a smooth edge) to allow wildlife to pass through safely. The fencing shall not be electrified.

Implementation of these measures would reduce impacts to the San Joaquin kit fox to a less-than-significant level and would minimize the risk that construction activities during the development of the Chestnut Solar project and Access Corridor would result in mortality to individual kit foxes. Should kit fox be found within the solar project site or access corridor, the applicant may wish to contact the USFWS for implementation of a Safe Harbor Agreement. If allowed, this agreement

will allow the applicant "assurances that additional land use restrictions as a result of their voluntary conservation actions would not be imposed by the USFWS" (USFWS, 1998).

3.3.5 Impacts to American Badgers

Potential Impacts. Given the observations of American badgers, a California Species of Special Concern, on nearby lands with similar habitats to those of the Project Site and Access Corridor, the potential exists that the American badger may reside within the Project Site and Access Corridor. No badgers or badger burrows were observed in the area during any of the surveys of the Project Site and Access Corridor conducted from 2011 through 2019. However, the surveys were conducted primarily through driving field edges with limited foot coverage of the Project Site and Access Corridor, and took place during the day when badgers are not typically active above ground. Potential badger habitat was found on the Project Site and Access Corridor in the form of fallow fields. While the occurrence of badgers is expected to be unlikely, it cannot be ruled out. Therefore, the project has the potential to result in a significant impact to American badgers.

Mitigations. Implementation of the following measures prior to the construction of the Chestnut Solar project and Access Corridor will reduce impacts to American badgers from direct mortality to a less-than-significant level.

Mitigation Measure 3.3.5a (Pre-construction Surveys). During the course of the preconstruction surveys for other species, a qualified biologist shall also determine the presence or absence of badgers prior to the start of construction. If badgers are found to be absent, a report shall be written to the applicant so stating and no other mitigations for the protection of badgers shall be warranted.

Mitigation Measure 3.3.5b (Avoidance and Monitoring). If an active badger den is identified during pre-construction surveys within or immediately adjacent to an area subject to construction, a construction-free buffer of up to 300 feet shall be established around the den. Once the biologist has determined that badger has vacated the burrow, the burrow can be collapsed or excavated, and ground disturbance can proceed. Should the burrow be determined to be a natal or reproductive den, and because badgers are known to use multiple burrows in a breeding burrow complex, a biological monitor shall be present onsite during construction activities in the vicinity of the burrows to ensure the buffer is adequate to avoid direct impact to individuals or natal/reproductive

den abandonment. The monitor will be required to be present until it is determined that young are of an independent age and construction activities would not harm individual badgers.

Mitigation Measure 3.3.5c (Tailgate Training). All workers on the solar project and access corridor shall attend a tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if an American badger is observed.

Implementation of the above measures would reduce potential impacts to the American badger to a less-than-significant level.

3.3.6 Impacts to Nesting and Foraging Habitat for Swainson's Hawk

Potential Impacts. Swainson's hawks are known to nest in the general vicinity of the Project Site and Access Corridor, with the nearest previously observed Swainson's hawk nests located approximately 3.0 miles east of the Project Site. Suitable nesting trees are not present within the Project Site, however, the off-site former tailwater pond approximately 1.0 miles west of the site does support potentially suitable nesting habitat, however, this is further than a half-mile of the site (which would be the typical construction-free buffer distance). Construction activities occurring near an active Swainson's hawk nest could adversely affect nesting success or result in mortality of individual birds constitute a violation of state and federal laws (see Section 3.2.2 and 3.2.3) and would be considered a significant impact under CEQA.

Swainson's hawks are known to forage in the vicinity of the Project Site and Access Corridor. As part of its biological assessment for the Program EIR on the Westlands Solar Park Master Plan and Gen-Tie Corridors Plan, conducted in 2017, LOA completed a comprehensive analysis of potential impacts to Swainson's hawk foraging habitat associated with development of the WSP Master Plan area and all other solar projects within a 10-mile radius of the WSP plan area. The analysis identified all known Swainson's hawk nests that were previously observed during surveys by LOA or others. In 2018 and 2019, LOA biologists conducted follow-up surveys to identify currently active nests. LOA biologists also reviewed and updated their detailed 2017 analysis of foraging habitat within a 10-mile radius of the WSP plan area and concluded that the abundant habitat that would remain after development of the WSP, and all other cumulative projects (including projects proposed since 2017) within this 10-mile radius, would be more than sufficient to support all of the

known Swainson's hawk nests within this radius, with surplus capacity to support additional nesting pairs. (The full analysis is contained in Appendix C of this report.)

Therefore, it was concluded that full buildout of the WSP plan area would not significantly impact Swainson's hawk foraging habitat. As discussed, this biological report constitutes a technical report for the MND on the Chestnut Solar project and Access Corridor. Since the MND is a subsequent CEQA document that is being tiered off the Program EIR for the WSP Master Plan and Gen-Tie Corridors Plan, the biological analysis in the PEIR applies to the MND and this biological report, and is incorporated into them by reference. As such, the conclusions of the Program EIR with respect to impacts to foraging habitat resulting from WSP development, as well as cumulative impacts associated with WSP development and other projects within a 10-mile radius of the WSP plan area, are fully applicable to the Chestnut Solar project and Access Corridor. Accordingly, the conclusions of less-than-significant impact and less-than-significant cumulative impact to Swainson's hawk foraging habitat from the WSP PEIR apply equally to this analysis. Therefore, the project-specific impacts and the cumulative impacts to Swainson's hawk foraging habitat resulting from construction of the Chestnut Solar project and the Access Corridor would be less than significant.

Implementation of the following mitigation will reduce impacts to nesting Swainson's hawks to a less-than-significant level.

Mitigation. The following measures shall be implemented.

Mitigation 3.3.6a (Pre-construction Surveys). During the nesting season prior to the construction on the Chestnut Solar project site within a half-mile of a potential nest tree, preconstruction surveys shall be conducted within the construction zones and adjacent lands to identify any nesting pairs of Swainson's hawks. These surveys will conform to the guidelines of CDFW as presented in *RECOMMENDED TIMING AND METHODOLOGY FOR SWAINSON'S HAWK NESTING SURVEYS IN CALIFORNIA'S CENTRAL VALLEY,* Swainson's Hawk Technical Advisory Committee, May 31, 2000. No preconstruction surveys are required for construction activity located farther than a half-mile from a potential nest tree.

Mitigation 3.3.6b (Establish Buffers). Should any active nests be discovered in or near proposed construction zones, the qualified biologist shall establish a suitable construction-free buffer around

the nest. This buffer shall be identified on the ground with flagging or fencing, and shall be maintained until the biologist has determined that the young have fledged.

Mitigation Measure 3.3.6c (Tailgate Training). All workers on the construction of the Project Site or Access Corridor shall attend tailgate training that includes a description of the species, a brief summary of its biology, and minimization measures and instructions on what to do if a Swainson's hawk is observed on or near the construction zone.

Implementation of the above measure would reduce impacts to nesting Swainson's hawks to a less-than-significant level.

3.3.7 Impacts to Burrowing Owls

Potential Impacts. The site was evaluated on April 10 and May 28, 2018 and April 11, 2019 for the potential for the site to support burrowing owls. During 2018 surveys, three pair of burrowing owls and one single burrowing owl were observed 1.5 miles north of the site in the canal south of and paralleling Laurel Avenue, with one burrowing owl being observed approximately 1 mile to the northwest of the northwestern edge of the site; on April 11, 2019, no burrowing owls were observed. No burrowing owls were observed along the Access Corridor on either date; however, they could occur along the Corridor in the future. Currently, suitable habitat onsite consists mainly of man-made 'burrows', such as pipes well as ground squirrel burrows within and along the canals onsite. The Access Corridor also supports some ground squirrel burrows. The site provides suitable nesting/denning habitat in the form of California ground squirrel burrows along the edges of the agricultural fields and in and along the canals, and in the form of pipes in or on the ground, as well as foraging habitat within the agricultural fields for burrowing owls. Canal maintenance activities have the potential to impact locations of burrowing owls, as many large canals support burrowing owls, such as the canal south of Laurel Avenue, where several burrowing owls were identified in previous surveys in the area. In between maintenance activities and recolonization, the burrowing owls would take up temporary residence elsewhere.

The Access Corridor supports suitable burrow habitat for burrowing owls, and therefore, can be expected to occur in the future along the Access Corridor.

The development of the Project Site and Access Corridor could result in the loss of foraging and breeding habitat for burrowing owls. Potential locations of burrowing owl burrows along the onsite

canals will be avoided, as the project will not be impacting the canals, and the canals will continue to be managed as they are currently managed, which will also benefit other species using the canal system to move through the area. Adequate suitable foraging habitat exists in the vicinity of the Chestnut Solar Project site to support these owls. For any burrowing owls potentially occurring elsewhere within the Project Site, both breeding and foraging habitat could be lost; this would constitute a significant impact to burrowing owl foraging and breeding habitat.

The Access Corridor would result in very little loss of foraging habitat and likely no loss of breeding habitat for burrowing owls, although Access Corridor construction could result in disturbance to any nesting burrowing owls in the vicinity.

Ground disturbance from project construction may also result in the mortality of burrowing owls, as they are known to retreat into their burrows ahead of approaching grading activity. These small raptors are protected under the federal Migratory Bird Treaty Act and the California Fish and Game Code. Mortality of individual birds would be a violation of state and federal law. The mortality of individual burrowing owls and the loss of a large area of known breeding and foraging habitat would constitute a significant environmental impact.

Mitigation. Prior to the construction of the Project and Access Corridor, the following measures shall be implemented which will reduce impacts to the burrowing owl to a less-than-significant level:

Mitigation Measure 3.3.7a (pre-construction surveys). Pre-construction surveys shall be conducted for burrowing owls by a qualified biologist no more than 10 days in advance of the on-set of ground-disturbing activity. These surveys shall be conducted according to methods described in the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012) or the most recent CDFW guidelines. The surveys shall cover all areas of suitable burrowing owl habitat within the construction zones.

Mitigation Measure 3.3.7b (Avoidance of active nests during breeding season). If pre-construction surveys are undertaken during the breeding season (February through August) and active nest burrows are located within or near construction zones, a construction-free buffer of 250 feet shall be established around all active owl nests. The buffer areas shall be enclosed with temporary fencing, and construction equipment and workers shall not be allowed to enter the

enclosed setback areas. Buffers shall remain in place for the duration of the breeding season. After the breeding season (i.e., once all young have left the nest), passive relocation of any remaining owls may take place, but only under the conditions described below.

Mitigation Measure 3.3.7c (Avoidance of occupied burrows during non-breeding season, and passive relocation of resident owls). During the non-breeding season (September through January), any burrows occupied by resident owls in areas planned for construction shall be protected by a construction-free buffer with a radius of 250 feet around each active burrow. Passive relocation of resident owls is not recommended by CDFW where it can be avoided. If passive relocation is not avoidable, resident owls may be passively relocated according to a relocation plan prepared by a qualified biologist.

Mitigation Measure 3.3.7d (Tailgate Training). All construction workers shall attend tailgate training that includes a description of the species, a brief summary of their biology, and minimization measures and instructions on what to do if a burrowing owl is observed within or near a construction zone.

Mitigation Measure 3.3.7e (Mitigation for Loss of Breeding and/or Foraging Habitat). If it is determined that burrowing owl nest(s) are located on or near the project site or access corridor, the biologist shall coordinate with the project applicant to determine whether these nests are to be impacted. If so, measure #1 below (off-site conservation easement) would apply. If the onsite or nearby nests are to remain in place, the biologist shall determine whether sufficient foraging habitat is available on adjacent or nearby lands, and if so, no further mitigation is required. (Approximately 200 acres of year-round foraging habitat within about 2 miles of the burrowing owl burrow is required to support a burrowing owl pair.) If it is determined that there is insufficient nearby foraging habitat, the biologist shall determine the amount of off-site foraging habitat that is required to sustain the burrowing owl nest. In this case, the potential impact to foraging habitat shall be either avoided through implementation of measure #2 below (onsite buffer zone), or compensated through implementation of measure #1 (conservation easement) or measure #3 (long-term agreement on adjacent lands) below:

1) Establishment of a conservation easement with a 1:1 ratio for foraging/breeding habitat preservation. These easements would include habitats determined to be suitable for foraging and/or breeding year-round and seasonal use.
2) Establishment of permanent buffer zones of adequate size around current burrowing owl locations. These buffer zones would require adequate management for the life of the project and buffer zones to ensure the buffer area remains suitable for burrowing owls. Annual monitoring of the suitability of management activities may be required by CDFW.
3) Short or long-term compensation for foraging habitat by providing farmers in adjacent lands incentives to plant particular crops known to be suitable forage habitat for burrowing owls (i.e., winter wheat, alfalfa, etc.) and to enact a farmer burrowing owl safety program where farmers are trained how to reduce burrowing owl mortalities on their lands and farm roads. A 1:1 ratio would be required to be in the program as long as the project is active.

Compliance with the above mitigation measures would reduce impacts to burrowing owls to a less-than-significant level.

3.3.8 Impacts to Wildlife Movement Corridors

Potential Impacts. It is likely that some species use the canal and ditches on and adjacent to the Project Site and access corridor as movement corridors, including San Joaquin kit fox. The Project Site and access corridor likely has some small value for the regional movements of some wildlife species, however, the canal and ditch system has greater value when placed in a regional context. Since the development of the Chestnut Solar project would not affect existing canals, which would continue to be operated and managed as they are under current conditions, it is expected that wildlife that currently uses the canals for movement will continue to use the canal system to move through the site at project build-out.

To allow for ground movement of wildlife through the Project Site, all fencing enclosing the Chestnut Solar facility is planned to consist of "wildlife friendly" fencing with a continuous 5- to 7-inch separation from the top of the ground to the lowest point of the bottom of the fence along the entire fence. Such fencing will not be electrified.

Therefore, wildlife currently using the Project Site and Access Corridor for movement is expected to continue to use the Project Site after buildout, as wildlife friendly fencing will be used and the

canal system will be retained within the Project Site in order to allow for wildlife movement through the Project Site.

Impacts to movement corridors for local wildlife are less-than-significant.

Mitigations. Mitigation for impacts to wildlife movements is not warranted.

3.3.9 Disturbance to Native Wildlife Nursery Sites

Potential Impacts. The aquatic habitat associated with the irrigation canals and ditches within and adjacent to the Project Site and the Access Corridor could provide nursery sites for native wildlife. Since these features would be avoided by the Chestnut Solar project and the Access Corridor, the potential impacts to wildlife nursery sites would be less-than-significant.

Mitigation. No mitigation is warranted.

3.3.10 Disturbance to Waters of the United States, Waters of the State, and Riparian Habitats

Potential Impacts. Onsite waters, as contained in irrigation canals within and near the Chestnut Solar project site and access corridor, appear not to meet the jurisdictional requirements of the USACE as Waters of the United States (see Section 2.7). However, only the USACE can make a jurisdictional determination. The construction of the Chestnut Solar project and access corridor is not planned or expected to encroach upon or physically alter any onsite or off-site canals. The project and access corridor will avoid all permanent canals.

However, should construction be planned to occur in areas that would result in the placement of fill in any canals, a wetland delineation would be required to determine the extent of USACE jurisdiction over such features. If the waters to be filled are determined to be Waters of the U.S. the following permits may be required 1) a Clean Water Act permit from the USACE, 2) a Water Quality Certification from the RWQCB, and/or 3) a Lake or Stream Alteration Agreement from the CDFW. These permits are usually issued on the condition that a mitigation plan be prepared and approved by the applicable state and federal regulatory agencies noted above. Because the solar project and access corridor are planned to avoid potential Waters of the U.S. and riparian areas, potential impacts to Waters of the U.S. and riparian habitat would constitute a less-than-significant adverse impact under CEQA.

Mitigation. Potential impacts to Waters of the U.S., waters of the State, and riparian habitat would be avoided; therefore, no mitigation is warranted.

3.3.11 Local Policies or Habitat Conservation Plans

Potential Impacts. The Chestnut Solar project and Access Corridor would be in compliance with the provisions of Kings County General Plan polices. In particular, the project's avoidance of onsite canals would assure that biological resources of concern to Kings County would be avoided and preserved.

The USFWS has adopted the *Recovery Plan for Upland Species of the San Joaquin Valley* (USFWS 1998) which covers 34 species of plants and animals that occur in the San Joaquin Valley. The majority of these species occur in arid grasslands and scrublands of the San Joaquin Valley and the adjacent foothills and valleys. The plan includes information on recovery criteria, habitat protection, umbrella and keystone species, monitoring and research program, adaptive management, and economic and social considerations. The only species addressed in the recovery plan that potentially occurs in the Project Site vicinity is the San Joaquin kit fox, although no sightings of this species have been recorded in the immediate vicinity of the Project Site or Access Corridor and no sightings have been recorded in the vicinity since 2000, as discussed above. The Recovery Plan does not identify the Project Site, Access Corridor, or any other lands in the vicinity as areas that should be protected as Specialty Reserve Areas, Wildlife-Compatible Farmland to be Maintained, or Areas Where Connectivity and Linkages Should be Promoted.

Neither the Project Site nor Access Corridor are covered by any existing Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP), or any other conservation plan adopted at the local, regional, state, or federal level.

Mitigation. No mitigations are warranted.

4 LITERATURE CITED

Archon, M. 1992. Ecology of the San Joaquin kit fox in western Merced County, California. M.A. Thesis, California State University, Fresno.

Babcock, K.W. 1995. Home Range and Habitat Use of Breeding Swainson's Hawks in the Sacramento Valley of California. Journal of Raptor Research 29: 193-197.

Boryan, C., Yang, Z., Mueller, R., Craig, M., 2011. Monitoring US agriculture: the US Department of Agriculture, National Agricultural Statistics Service, Cropland Data Layer Program. Geocarto International, 26(5), 341–358.

Bury, R. B. 1972. Habitats and home range of the Pacific pond turtle, Clemmys marmorata. PhD Dissertation, University of California, Berkeley, California.

California Department of Fish and Game. 1994. Staff report regarding mitigation for impacts to Swainson's hawks (Buteo swainsoni) in the Central Valley of California. Sacramento, CA.

_____. 1995. Draft report on Burrowing owl mitigation. The Resources Agency, Sacramento, CA.

_____. 2002. California fish and game code. Gould Publications. Binghamton, NY.

California Department of Fish and Wildlife. 2016. Annual report on the status of California state listed threatened and endangered animals and plants. The Resources Agency, Sacramento, CA.

_____. 2019. California natural diversity database. The Resources Agency, Sacramento, CA.

_____. 2019. California natural diversity database. Special Animals Report. November 2018.

California Native Plant Society. 2019. Inventory of Rare and Endangered Vascular Plants of California (online).

Estep, J. 1989. Biology, movements, and habitat relationships of the Swainson's hawk in the Central Valley of California, 1986-97. The Resources Agency, Department of Fish and Game.

Estep, J. 2012. The Distribution and Abundance of Nesting Swainson's Hawks in the Vicinity of the Proposed RE Mustang LLC, RE Orion LLC, and RE Kent South LLC Solar Generation Facilities.

Estep, J. 2017. Biological Resources Report American Kings Solar Project Site, Kings County, California.

Golightly, R. T. and R. D. Ohmart. 1984. Water economy of two desert canids: coyote and kit fox. Journal of Mammalogy 65:51–58.

Grinnell, J., J.S. Dixon and J.M. Linsdale. 1937. Fur-bearing mammals of California. Vol. 2. Univ. California Press, Berkeley.

Han, W., Yang, Z., Di, L., Mueller, R., 2012. CropScape: A Web service based application for exploring and disseminating US conterminous geospatial cropland data products for decision support. Computers and Electronics in Agriculture, 84, 111–123.

Jennings, M. R., and M. P. Hayes. 1994. Amphibian and reptile species of special concern in California. California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova.

Jensen, C. C. 1972. San Joaquin kit fox distribution. U.S. Fish and Wildlife Service Report, Sacramento, CA.

Natural Resource Conservation Service. 2006. Soil Survey of Fresno County, California, Western Part.

Natural Resource Conservation Service. 2009. Soil Survey of Kings County, California.

Shuford, W. David and Thomas Gardall eds. 2008. California Bird Species of Special Concern. Western Field Orinthologists and California Department of Fish and Game.

Swainson's Hawk Technical Advisory Committee. 2000. Recommended timing and methodology for Swainson's hawk nesting surveys in California's Central Valley. Swainson's Hawk Technical Advisory Committee, California.

Thomson, Robert C., Amber N. Wright, and H. Bradley Shaffer. 2016. California Amphibian and Reptile Species of Special Concern. California Department of Wildlife. University of California Press.

USDA National Agricultural Statistics Service Cropland Data Layer. 2018. Published crop-specific data layer (Online). Available at http://nassgeodata.gmu.edu/CropScape/. (accessed October 2018). USDA-NASS, Washington, DC.

U.S. Corps of Engineers. 1987. Corps of Engineers wetlands delineation manual. Department of the Army.

U. S. Fish and Wildlife Service. 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Region 1, Portland, Oregon.

_____. 1999. Draft Recovery Plan for the Giant Garter Snake (Thamnophis gigas). U.S. Fish and wildlife Service, Portland, Oregon. Ix+ 192 pp.

_____. 2011. Endangered and threatened wildlife and plants.

_____. 2007. Species account: giant garter snake (Thamnophis gigas). Sacramento, California.

Wetland Training Insitute, Inc. 1991. Federal Wetland Regulation Reference Manual. B.N. Goode and R.J. Pierce (eds.) WTI 90-1. 281pp.

Woodbridge, B. 1998. Swainson's Hawk (Buteo swainsoni). In The Riparian Bird Conservation Plan: a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. http://www.prbo.org/calpif/htmldocs/riparian_v-2.html

APPENDIX A: VASCULAR PLANTS OF THE PROJECT SITE

The plants species listed below were observed on the site during the field surveys conducted by Live Oak Associates on April 10 and May 28, 2018 and April 11, 2019. The U.S. Fish and Wildlife Service wetland indicator status of each plant has been shown following its common name.

OBL - Obligate
FACW - Facultative Wetland
FAC - Facultative
FACU - Facultative Upland
UPL - Upland
+/- - Higher/lower end of category
NR - No review
NA - No agreement
NI - No investigation

ASTERACEAE - Sunflower Family		
*Lactuca serriola**	Prickly lettuce	FAC
*Sonchus asper**	Prickly sowthistle	UPL
BORAGINACEAE – Borage Family		
Amsinckia sp.	Fiddleneck	UPL
BRASSICACEAE – Mustard Family		
*Brassica rapa**	Common mustard	UPL
CHENOPODIACEAE – Goosefoot Family		
*Salsola tragus**	Russian thistle	UPL
MALVACEAE – Mallow Family		
Malvella leprosa	Alkali mallow	FACU
POACEAE - Grass Family		
*Cynodon dactylon**	Bermuda grass	FAC
*Polypogon monspeliensis**	Rabbitsfoot grass	FACW
*Triticum aestivum**	Common wheat	UPL

* Introduced non-native species

APPENDIX B: TERRESTRIAL VERTEBRATE SPECIES THAT POTENTIALLY OCCUR ON THE PROJECT SITE

The species listed below are those that may reasonably be expected to use the habitats of the project site routinely from time to time. The list was not intended to include birds that are vagrants or occasional transients. Terrestrial vertebrate species observed in or adjacent to the project site during surveys conducted by LOA ecologists on April 10 and May 28, 2018 and April 11, 2019 have been noted with an asterisk.

CLASS: AMPHIBIA (Amphibians)
ORDER: SALIENTIA (Frogs and Toads)
FAMILY: BUFONIDAE (True Toads)
Western Toad (*Bufo boreas*)
FAMILY: HYLIDAE (Treefrogs and relatives)
Pacific Chorus Frog (*Pseudacris regilla*)
FAMILY: RANIDAE (True Frogs)
Bullfrog (*Rana catesbeiana*)

CLASS: REPTILIA (Reptiles)
ORDER: TESTUDINES (Turtles)
FAMILY: EMYDIDAE (Box and Water Turtles)
Pond Slider (*Trachemys scripta*)
ORDER: SQUAMATA (Lizards and Snakes)
SUBORDER: SAURIA (Lizards)
FAMILY: PHRYNOSOMATIDAE
*Side-blotched Lizard (*Uta stansburiana*)
FAMILY: TEIIDAE (Whiptails and relatives)
Western Whiptail (*Cnemidophorus tigris*)
SUBORDER: SERPENTES (Snakes)
FAMILY: COLUBRIDAE (Colubrids)
Coachwhip (*Masticophis flagellum*)
Glossy Snake (*Arizona elegans*)
Common Kingsnake (*Lampropeltis getulus*)
Long-nosed Snake (*Rhinocheilus lecontei*)
Common Garter Snake (*Thamnophis sirtalis*)
*Gophersnake (*Pituophis catenifer*)
FAMILY: VIPERIDAE (Vipers)
Western Rattlesnake (*Crotalus viridis*)

CLASS: AVES (Birds)
ORDER: CICONIIFORMES (Herons, Storks, Ibises and Relatives)
FAMILY: ARDEIDAE (Herons and Bitterns)
*Great Blue Heron (*Ardea herodias*)
Black-crowned Night Heron (*Nycticorox nycticorax*)

Cattle Egret (*Bubulcus ibis*)
Great Egret (*Ardea alba*)
Snowy Egret (*Egretta thula*)

FAMILY: CATHARTIDAE (American Vultures)

Turkey Vulture (*Cathartes aura*)

ORDER: ANSERIFORMES (Screamers, Ducks and Relatives)

FAMILY: ANATIDAE (Swnas, Geese and Ducks)

Ring-necked Duck (*Aythya collaris*)
Bufflehead (*Bucephala albeola*)
*Mallard (*Anas platyrhynchos*)
Northern Shoveler (*Anas clypeata*)
Cinnamon Teal (*Anas cyanoptera*)
Canvasback (*Aythya valisineria*)
Ruddy Duck (*Oxyura jamaicensis*)
Canada Goose (*Branta canadensis*)

ORDER: FALCONIFORMES (Vultures, Hawks, and Falcons)

FAMILY: ACCIPITRIDAE (Hawks, Old World Vultures, and Harriers)

White-tailed Kite (*Elanus leucurus*)
*Northern Harrier (*Circus cyaneus*)
Red-tailed Hawk (*Buteo jamaicensis*)
Ferruginous Hawk (*Buteo regalis*)
Sharp-Shinned Hawk (*Accipiter striatus*)
Cooper's Hawk (*Accipiter cooperii*)
*Swainson's Hawk (*Buteo swainsoni*)

FAMILY: FALCONIDAE (Caracaras and Falcons)

American Kestrel (*Falco sparverius*)
Merlin (*Falco columbarius*)

ORDER: GRUIFORMES (Cranes, Rails and Relatives)

FAMILY: RALLIDAE (Rails, Gallinules and Coots)

Common Moorhen (*Gallinula galeata*)
American Coot (*Fulica Americana*)

ORDER: CHARADRIIFORMES (Shorebirds, Gulls, and relatives)

FAMILY: CHARADRIIDAE (Plovers and relatives)

*Killdeer (*Charadrius vociferus*)

FAMILY: SCOLOPACIDAE (Sandpipers, Phalaropes, and Relatives)

*Greater Yellowlegs (*Tringa melanoleuca*)

ORDER: COLUMBIFORMES (Pigeons and Doves)

FAMILY: COLUMBIDAE (Pigeons and Doves)

Rock Dove (*Columba livia*)
Mourning Dove (*Zenaida macroura*)

ORDER: STRIGIFORMES (Owls)

FAMILY: TYTONIDAE (Barn Owls)

Common Barn Owl (*Tyto alba*)

FAMILY: STRIGIDAE (Typical Owls)

*Burrowing Owl (*Athene cunicularia*)

*Great Horned Owl (*Bubo virginianus*)
Western Screech Owl (*Otus kennicottii*)

ORDER: APODIFORMES (Swifts and Hummingbirds)

FAMILY: TROCHILIDAE (Hummingbirds)
Black-chinned Hummingbird (*Archilochus alexandri*)
Anna's Hummingbird (*Calypte anna*)
Rufous Hummingbird (*Selasphorus rufus*)

ORDER: PICIFORMES (Woodpeckers and relatives)

FAMILY: PICIDAE (Woodpecker and Wrynecks)
Northern Flicker (*Colaptes chrysoides*)
Nuttall's Woodpecker (*Picoides nuttallii*)

ORDER: PASSERIFORMES (Perching Birds)

FAMILY: TYRANNIDAE (Tyrant Flycatchers)
*Black Phoebe (*Sayornis nigricans*)
Say's Phoebe (*Sayornis saya*)
*Western Kingbird (*Tyrannus verticalis*)

FAMILY: LANIIDAE (Shrikes)
*Loggerhead Shrike (*Lanius ludovicianus*)

FAMILY: CORVIDAE (Jays, Magpies, and Crows)
Western Scrub Jay (*Aphelocoma coerulescens*)
American Crow (*Corvus brachyrhynchos*)
*Common Raven (*Corvus corax*)

FAMILY: ALAUDIDAE (Larks)
*Horned Lark (*Eremophila alpestris*)

FAMILY: HIRUNDINIDAE (Swallows)
Cliff Swallow (*Hirundo pyrrhonota*)
*Barn Swallow (*Hirundo rustica*)

FAMILY: TURDIDAE
American Robin (*Turdus migratorius*)

FAMILY: MIMIDAE (Mockingbirds and Thrashers)
*Northern Mockingbird (*Mimus polyglottos*)

FAMILY: STURNIDAE (Starlings)
*European Starling (*Sturnus vulgaris*)

FAMILY: MOTACILLIDAE (Wagtails and Pipits)
American Pipit (*Anthus rubescens*)

FAMILY: BOMBYCILLIDAE (Waxwings)
Cedar Waxwing (*Bombycilla cedrorum*)

FAMILY: PARULIDAE (Wood Warblers and Relatives)
Yellow-rumped Warbler (*Dendroica coronata*)

FAMILY: EMBERIZIDAE (Wood Warblers, Sparrows, Blackbirds, and relatives)
*Savannah Sparrow (*Passerculus sandwichensis*)
White-crowned Sparrow (*Zonotrichia leucophrys*)

FAMILY: ICTERIDAE (Blackbirds, Orioles and Allies)
*Red-winged Blackbird (*Agelaius phoeniceus*)
Tricolored Blackbird (*Agelaius tricolor*)

*Western Meadowlark (*Sturnella neglecta*)
*Brewer's Blackbird (*Euphagus cyanocephalus*)
Brown-headed Cowbird (*Molothrus ater*)
FAMILY: PASSERIDAE (Old World Sparrows)
*House Finch (*Carpodacus mexicanus*)
House Sparrow (*Passer domesticus*)

CLASS: MAMMALIA (Mammals)
ORDER: DIDELPHIMORPHIA (Marsupials)
FAMILY: DIDELPHIDAE (Opossums)
Virginia Opossum (*Didelphis virginiana*)
ORDER: INSECTIVORA (Insectivores)
Ornate Shrew (*Sorex ornatus*)
ORDER: CHIROPTERA (Bats)
FAMILY: PHYLLOSTOMIDAE (Leaf-nosed Bats)
Southern Long-nosed Bat (*Leptonycteris curasoae*)
FAMILY: VESPERTILIONIDAE (Evening Bats)
Yuma Myotis (*Myotis yumanensis*)
California Myotis (*Myotis californicus*)
Pale Big-eared Bat (*Corynorhinus townsendii pallescens*)
Townsend's Western Big-eared Bat (*Corynorhinus townsendii townsendii*)
Western Pipistrelle (*Pipistrellus hesperus*)
Big Brown Bat (*Eptesicus fuscus*)
Pallid Bat (*Antrozous pallidus*)
FAMILY: MOLOSSIDAE (Free-tailed Bat)
California Mastiff Bat (*Eumops perotis* ssp. *californicus*)
Brazilian Free-tailed Bat (*Tadarida brasiliensis*)
ORDER: LAGOMORPHA (Rabbits, Hares, and Pikas)
FAMILY: LEPORIDAE (Rabbits and Hares)
*Desert Cottontail (*Sylvilagus audubonii*)
*Black-tailed (Hare) Jackrabbit (*Lepus californicus*)
ORDER: RODENTIA (Rodents)
FAMILY: SCIURIDAE (Squirrels, Chipmunks, and Marmots)
*California Ground Squirrel (*Spermophilus beecheyi*)
FAMILY: GEOMYIDAE (Pocket Gophers)
*Botta's Pocket Gopher (*Thomomys bottae*)
FAMILY: MURIDAE (Old World Rats and Mice)
Western Harvest Mouse (*Reithrodontomys megalotis*)
Deer Mouse (*Peromyscus maniculatus*)
Norway Rat (*Rattus norvegicus*)
House Mouse (*Mus musculus*)
California Vole (*Microtus californicus*)
ORDER: CARNIVORA (Carnivores)
FAMILY: CANIDAE (Foxes, Wolves, and relatives)
*Coyote (*Canis latrans*)

Gray Fox (*Urocyon cinereoargenteus*)

FAMILY: PROCYONIDAE (Raccoons and relatives)

*Raccoon (*Procyon lotor*)

FAMILY: MEPHITIDAE (Skunks)

Striped Skunk (*Mephitis mephitis*)

FAMILY: FELIDAE (Cats)

Bobcat (*Lynx rufus*)

Feral Cat (*Felis domesticus*)

APPENDIX C: CUMULATIVE IMPACT ANALYSIS FOR POTENTIAL IMPACTS TO SWAINSON'S HAWK FORAGING HABITAT IN THE VICINITY OF THE CHESTNUT SOLAR PROJECT SITE AND ACCESS CORRIDOR

The purpose of this study is to provide information to complete the Cumulative Impacts Assessment for the project in support of Section 15130 of the California Environmental Quality Act (CEQA) Guidelines. These guidelines require that cumulative impacts of a project are discussed when a project's incremental effects are cumulatively considerable (15065(a)(3)). A cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts (15355). CEQA guidelines define cumulatively considerable as follows: "the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probably future projects."

In accordance with CEQA Guidelines, the following discussion of cumulative impacts reflects the standards of practicality and reasonableness, and focuses on the cumulative impact to which the identified other projects contribute to the cumulative impact. A list of past, present, and probable future projects producing related or cumulative impacts was provided by Bert Verrips and the County of Kings in September 2018. For the purposes of this analysis this list of projects has not changed (Bert Verrips, personal communication, May 30, 2019).

This analysis focuses on the project's possible cumulative effects on the Swainson's hawk (SWHA) (*Buteo swainsonii*), a California threatened species that relies largely on agricultural lands to meet its foraging needs. The objectives of this study include using available data to:

1) Identify past, current and probable future projects for cumulative impacts assessment.
2) Determine distribution and abundance of nesting Swainson's hawk in the Study Area.
3) Determine foraging habitat requirements in the Study Area.
4) Assess the cumulative impacts of the proposed Westlands Solar Park (WSP) on the distribution and abundance of foraging habitat.

INCORPORATION BY REFERENCE OF ANALYSIS FROM WSP PROGRAM EIR

This biological report constitutes a technical report for the MND on the Chestnut Solar Project and Access Corridor. Since the MND is a subsequent CEQA document that is being tiered off the

Program EIR for the WSP Master Plan and Gen-Tie Corridors Plan, the biological analysis in the PEIR applies to the MND and this biological report, and is incorporated into them by reference. As such, the analysis and conclusions of the Program EIR with respect to cumulative impacts to foraging habitat resulting from WSP development, together with other projects within a 10-mile radius of the WSP plan area, are fully applicable to the Chestnut Solar Project and Access Corridor which constitute individual project elements of the WSP Master Plan.

STUDY AREA

For this study the Study Area, or geographic scope, assessed for the cumulative impact is defined by a 10-mile radius surrounding the approved WSP Master Plan area, which covers approximately 21,000-acres. This radius was selected because published studies have identified this radius as the flight distance between active nests sites and suitable foraging habitats (Estep 1989, Babcock 1995). The area encompassed by the 10 mile radius is 443,207 acres (approximately 692 square miles).

The WSP plan area is located in the center of the Study Area approximately nine miles southwest of the City of Lemoore, CA. The entire project site consists of cultivated fields, fallow fields/pastures, agricultural roads, and irrigation canals and ditches.

With the exception of the City of Lemoore, the Naval Air Station Lemoore, and the census designated places of Lemoore Station, Stratford and the east side of Huron, the surrounding lands are similar to the Project Site with fallow/idle cropland, active agricultural fields, and grass/pasture dominating the landscape (USDA 2018). Avenal, Huron, Kettleman City, Lemoore, Lemoore Station, Naval Air Station Lemoore, and Stratford are located entirely within the Study Area. California state highway 41 is approximately 0.7 miles southeast and highway 198 is approximately 7 miles north of the site.

A few natural features are located within the Study Area. Natural Resource Conservation Service Wetlands Reserve Program land is located approximately 5 miles to the northeast of the WSP Master Plan area and the Arroyo Pasajero Westside Detention Basin is located approximately 5 miles to the west of the Master Plan area, which contain more natural habitats and may be subject to flooding. Bureau of Land Management Areas of Critical Environmental Concern are located

approximately 4 miles west and southwest of the site. Portions of the North Fork, South Fork and Clarke Fork of the Kings River are present within the Study Area, most of which contain riparian habitat and more natural riverine features. Irrigation canals and ditches are also located throughout the Study Area.

RECENT AND PROPOSED PROJECTS OF THE STUDY AREA

As of June 2019, 23 solar projects located outside the Westlands Solar Park were identified within the Study Area for this cumulative impact assessment. Acreages for these solar projects were calculated using aerial imagery and information obtained from Kings and Fresno Counties. Projects within Kings County include the Sun City, Sand Drag, and Avenal Park complex (360 acres); American Kings (978 acres); Sunpower Henrietta (836 acres); Kansas South (230 acres); Aurora Solar (186 acres); Kansas (200 acres); Mustang and Orion complex (1,280 acres); Kent South (200 acres); Kettleman Solar (220 acres); Lemoore 14 (60.39 acres); 2275 Hattesen (15.70 acres); Java Solar (96.14 acres); Mustang 2 (1,760 acres); Slate (2,230 acres); Daylight Legacy (2,103 acres); and NAS Lemoore Solar (930 acres). Projects within Fresno County include and PG&E Huron (~240 acres); PG&E Gates (57 acres); Westlands Solar Farm (92 acres); and EC&R Solar (1,580 acres). These 23 projects together encompass approximately 13,654.23 acres of the Study Area. With the addition of the planned WSP solar development (20,928 acres), the total area covered by the cumulative projects is approximately 34,582.23 acres (rounded up to 34,583 acres). For the purpose of this analysis, this total acreage amount conservatively assumes that all of the cumulative development acreage constitutes suitable SWHA foraging habitat.

METHODS

In order to assess SWHA foraging habitat all known active nests or historically active nests were recorded within the Study Area. The total population in the Study Area was determined querying the California Natural Diversity Database (CNDDB) (CDFW 2019) for observations recorded in 2017 in addition to using data from project field surveys conducted by Live Oak Associates (LOA) and Estep in 2017 (Estep 2017). All nests identified in 2017 from the CNDDB, LOA, and Estep records are assumed to be active for the purpose of this analysis.

Foraging Habitats

Land uses and habitat types were identified using the 2017 United States Department of Agriculture (USDA) National Agricultural Statistics Service Cropland Data Layer (CDL) (USDA 2018; Han et al. 2012; Boryan et al. 2011). The CDL is a raster, geo-referenced, crop-specific land cover data layer created annually for the continental United States using moderate resolution satellite imagery and extensive agricultural ground truthing (USDA 2018). For the purposes of this study, the CDL layer was limited to the Study Area which included 58 cover types.

Foraging habitat associations were based on 6 cover type categories, instead of the 58 specific cover types identified in the 2017 CDL because agricultural crop management is a dynamic process; crop types may change annually and seasonally. These were used to characterize relative foraging habitat suitability on the landscape (Estep 2012). The six land use/cover type categories used for the Study Area include:

- Alfalfa
- Irrigated Cropland
- Orchard/Vineyard
- Developed/Open Water
- Pasture/Barren
- Natural woodlands

Foraging habitat classes were based on Biology, Movements, and Habitat Relationships of the Swainson's Hawk in the Central Valley of California (Estep 1989) and California Partners in Flight Riparian Bird Conservation Plan: Swainson's Hawk (*Buteo swainsoni*) (Woodbridge 1998). Based on these documents, alfalfa, irrigated cropland, and pasture/barren, were determined to constitute suitable foraging habitat for the Swainson's hawk.

Data Preparation

Habitat and land use cover type acreages were calculated using a built-in map calculator. The Study Area includes roads and highways which are not classified habitat types in the CDL; therefore, acreages may minimally exceed the actual acreage for any given class. For the purposes of this study, this effect is considered negligible because it accounts for a very small percentage of the Study Area and does not affect habitat distribution and abundance.

RESULTS

Nest Proximity

A total of 36 SWHA nests were documented within the Study Area from surveys completed by LOA and Estep in 2017 (Estep 2017). No nests were recorded on the CNDDB within the Study Area in 2017. (Although the 2018 and 2019 nest surveys by LOA indicated some variability in nest occupancy from year to year, this analysis assumes all 36 nests would be occupied in any given year considering the generally high degree of nest fidelity by Swainson's hawks.) Figure 1 shows the nest distribution across the Study Area. The nearest SWHA nest is approximately 120 feet east of the southern tip of the WSP Master Plan area along the Blakeley Canal and 11 other nests are within five miles of the WSP Master Plan area. Twenty-four SWHA nests are between five and ten miles of the WSP Master Plan area.

Land Use Cover Types

There are six cover type categories in the 443,207-acre Study Area and five cover type categories in the WSP project site. Relative abundance for each cover type category and their SWHA forage value is listed Table 1 and described below.

Table 1. Land Cover Type Acreage and Percent Total of WSP Study Area and Project Site (USDA 2018).

Land Cover Type Category	SWHA Forage Value	Study Area Acres (Percent of Total)	Project Site Acres (Percent of Total)
Alfalfa	High	13,033.2 (2.94%)	338.9 (1.63%)
Pasture/Barren	Medium-High	119,462 (26.95%)	2,789.7 (13.46%)
Irrigated Cropland	Medium	174,860.6 (39.45%)	12,906.1 (62.26%)
Orchard/Vineyard	Low-None	104,588.2 (23.6%)	4,22636 (20.39%)
Developed/Open Water	None	31,207.9 (7.04%)	467.4 (2.25%)
Natural and Non-Native Forest	None	55.3 (0.01%)	0 (0%)
Total		443,207.2 (100%)	20,728.7 (100%)

Alfalfa. Alfalfa is considered to have the highest foraging value for SWHA (Estep 1989, 2012). This crop remains in fields for up to 5 years. Alfalfa management includes mowing and irrigation which can expose rodent prey and make prey more accessible to SWHA (Estep 2012).

Pasture/Barren. This cover type category includes barren, fallow/idle cropland, grass/pasture, herbaceous wetlands, and shrubland. Other grassland surrogates such as herbs are also included in

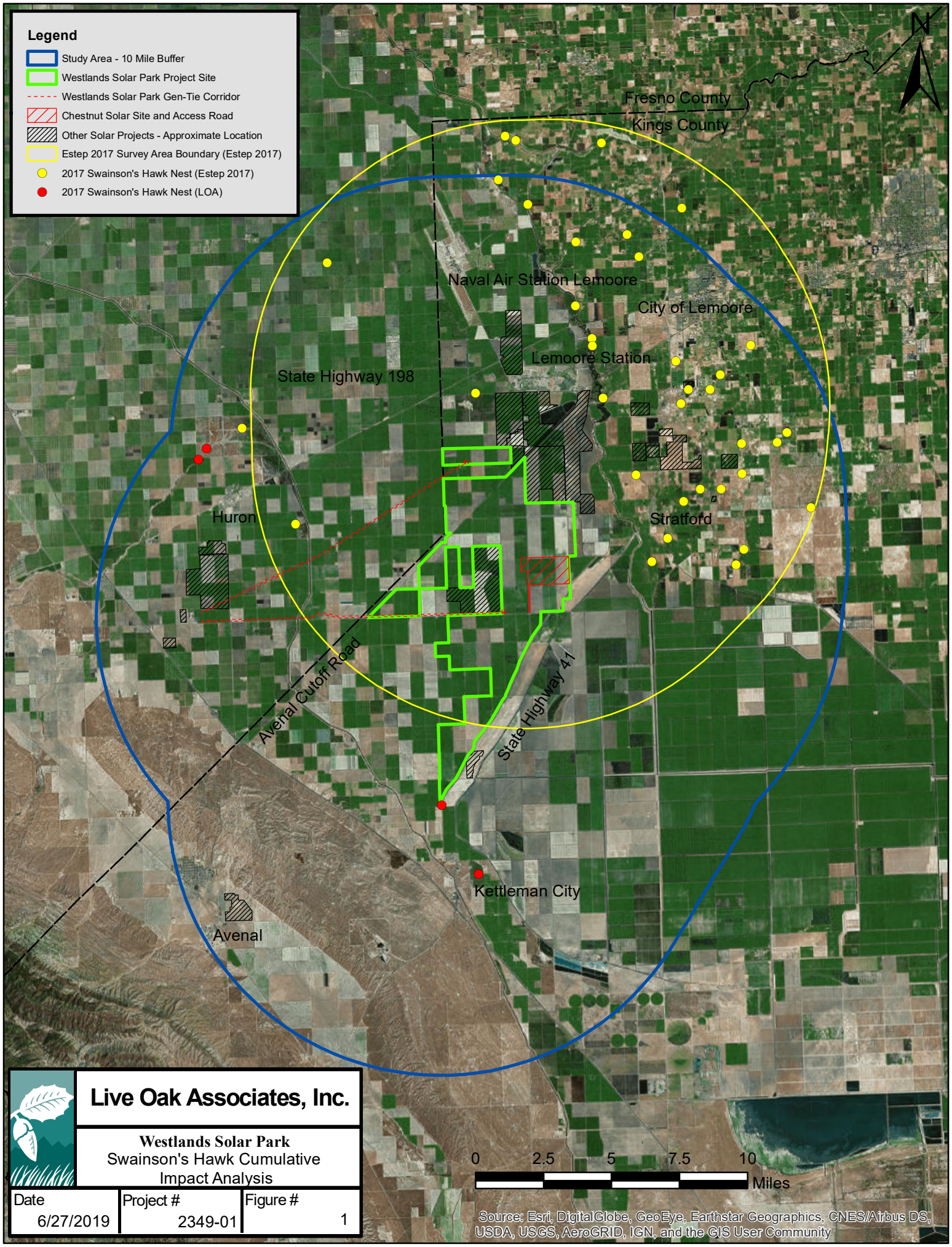
this category. Fallow/idle croplands represent the majority of this cover type. This cover type may provide medium to high forage value to SWHA depending upon prey availability.

Irrigated Cropland. The majority of this cover type category includes crops such as cotton, tomatoes, winter wheat. Other crops include barley, cantaloupes, carrots, corn, dry beans, durum wheat, garlic, honeydew melons, lettuce, oats, onions, other crops, other hay/non-alfalfa, peppers, rice, rye, safflower, sod/grass seed, sorghum, spring wheat, triticale, and watermelons are also included; however, these represent a very small percentage of the total. This cover type may provide medium foraging habitat value to SWHA (Estep 1989). Foraging value for this type may be dependent upon timing of harvest and planting.

Orchard/Vineyards. This cover type category includes almonds, cherries, citrus, grapes, nectarines, oranges, other tree crops, peaches, pecans, pistachios, plums, pomegranates, and walnuts, and represents little to no foraging value to SWHA due to a lack of accessibility for SWHA (Woodbridge 1998). Due to the little to no foraging value, this habitat is not included as foraging habitat for this analysis.

Developed/Open Water. This cover type category represents developed areas with low, moderate and high intensities such as the towns of Avenal, Huron, Kettleman City, Lemoore, Lemoore Station, Naval Air Station Lemoore, and Stratford and rural developments (e.g., cattle corrals and other infrastructure). This cover type contributes no forage value, however trees located on these properties may provide nesting habitat. Open water also represents no forage value to SWHA. A small percentage of the open water mapped in the CDL may be flooded fields, a temporary feature. Therefore, this cover type may be overrepresented; however, this effect is considered negligible in comparison to the overall Study Area.

Natural and Non-Native Forest. This cover type category is represented by evergreen forest, mixed forest, and woody wetlands. These areas may provide nesting habitat for SWHA; however, they provide no forage habitat value for SWHA.



Live Oak Associates, Inc.

Westlands Solar Park
Swainson's Hawk Cumulative Impact Analysis

Date	Project #	Figure #
6/27/2019	2349-01	1

Foraging Habitat Cumulative Analysis

Estep (1989, 2012) has proposed that if a cumulative loss of agricultural foraging habitat, from the proposed project and other projects, results in a reduction of surplus habitat to less than 70% relative to pre-project conditions, then the cumulative impact is deemed significant. Surplus habitat represents the number of available foraging acres that exceed the minimum required available foraging acres to support known Swainson's hawk nesting pairs. The significance threshold is derived from reviewing habitat land cover data to estimate the existing foraging habitat baseline condition and including the existing Swainson's hawk population foraging habitat requirements to estimate the required foraging habitat necessary to support the nesting population (Estep 1989, 2012). This methodology is used for this study.

Estep (1989) calculated that an area of 6,820 acres of foraging habitat is required for each nesting pair. The total foraging habitat acreage required for the nesting population is calculated by multiplying the number of pairs in the Study Area by 6,820 acres. Table 2 presents the Study Area analysis for foraging habitat requirements for 36 pairs located in the Study Area.

Table 2. Cumulative impact analysis for SWHA foraging habitat within the Study Area

Foraging Habitat	Acres	Percent
(a) Available Foraging Habitat within Study Area	307,356	-
(b) Unadjusted Foraging Habitat required to support 36 SWHA pairs	245,520	-
(c) Adjusted Foraging habitat required to support 36 SWHA pairs (adjusted for 30% range overlap)	171,864	-
(d) Surplus SWHA foraging habitat (a-c)	135,492	-
(e) Cumulative impact of development of WSP Master Plan area and 23 other solar projects (on foraging habitat)*	34,583	-
(f) Remaining available foraging habitat following cumulative impacts (a-e)	272,773	87.9%
(g) Remaining available surplus SWHA foraging habitat following cumulative impacts (d-e)	100,909	74.5%

*This conservatively assumes that all of the cumulative development acreage constitutes suitable SWHA foraging habitat.

Cumulative analysis for foraging habitat shows that there is a greater amount of foraging habitat available than that required to support 36 nesting pairs. Following Estep (2012), the total foraging habitat required was adjusted down to account for foraging habitat overlap within the Study Area. Estep (2012) considers the availability of the surplus foraging habitat acres in addition to the required foraging habitat to be sufficient to support a growing population. If available foraging

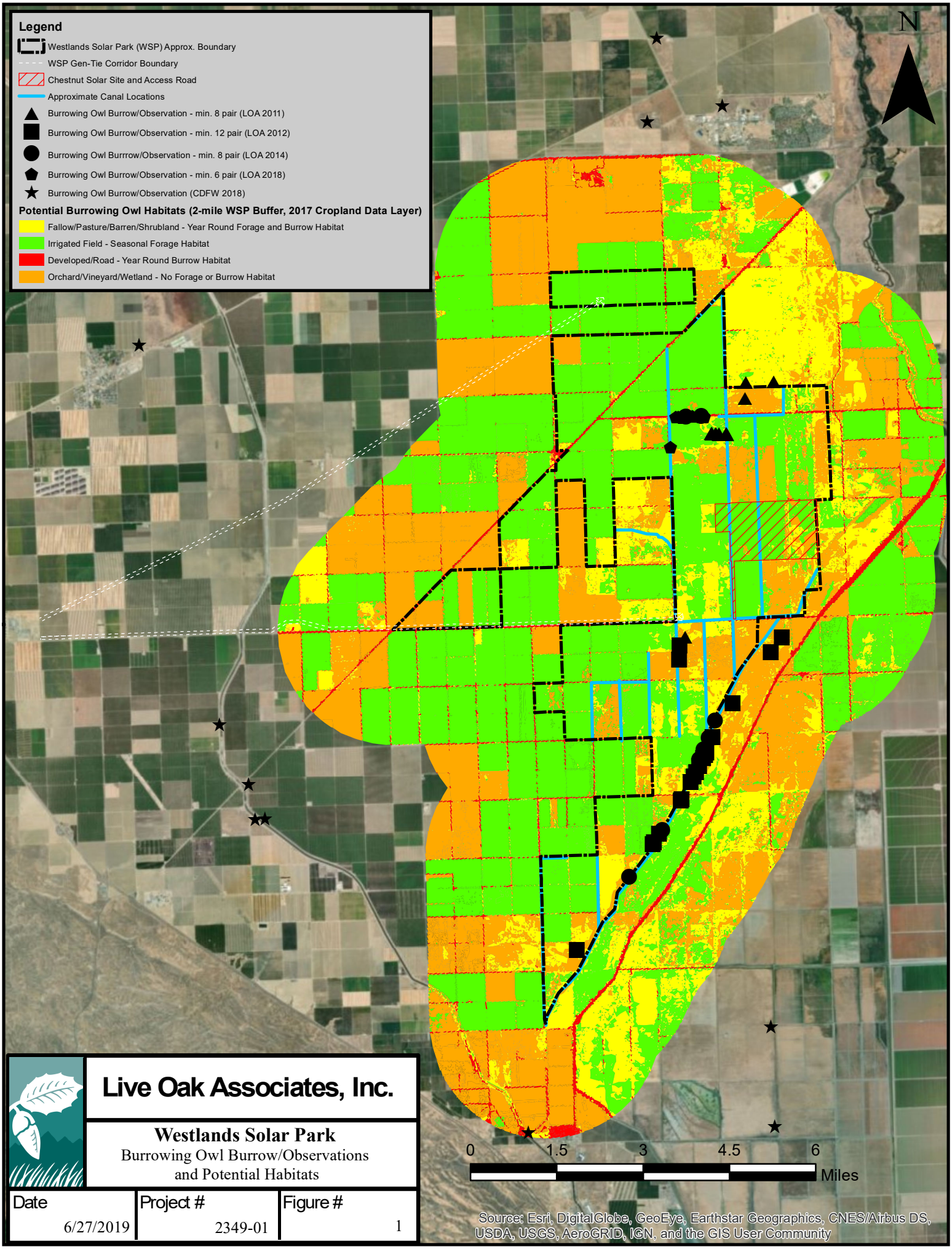
habitat required to sustain the nesting population plus at least 70% (i.e. 94,845 acres) of the existing surplus habitat remains, the habitat removal resulting from the project and the other projects in the Study Area is not expected to significantly affect either the existing population or substantially affect opportunities for future population expansion. Therefore, the cumulative impacts would be considered less-than-significant.

There are currently 23 approved or constructed solar projects within the Study Area (including the WSP Master Plan area) with a total area of approximately 34,492 acres. Table 2 shows that the impact areas of the proposed WSP project and the 23 other solar projects do not reach or go below the 70% threshold of significance (94,845 acres) as defined by Estep (2012). The remaining available surplus habitat (100,909 acres) exceeds the 70% threshold of significance. Therefore, the cumulative impact to Swainson's hawk foraging habitat is less-than-significant.

APPENDIX D: BURROWING OWL ANALYSIS FOR THE WSP MASTER PLAN AREA

LOA used 2017 cropland data (USDA 2018) to prepare a map of potentially suitable habitat for burrowing owls within two miles of the WSP Master Plan Area (Figure 1). Crops were categorized into four categories according to their suitability to support burrowing owl burrow and foraging habitat (USDA 2018; Figure 1):

1) *Fallow/Pasture/Barren/Shrubland - Year-Round Forage and Burrow Habitat.* Potentially suitable crop/habitat types to support burrowing owl forage and burrow habitat year-round as identified in the cropland data include barren, fallow/idle cropland, grass/pasture, and shrubland.
2) *Irrigated Field - Seasonal Forage Habitat.* Potentially suitable crop/habitat types to support burrowing owl seasonal forage habitat include alfalfa, barley, cantaloupes, carrots, corn, cotton, double crop barley/corn, double crop winter wheat/corn, double crop winter wheat/sorghum, dry beans, garlic, herbs, honeydew melons, lettuce, oats, onions, other crops, other hay/non-alfalfa, safflower, sod/grass seed, sorghum, spring wheat, tomatoes, triticale, watermelons, and winter wheat.
3) *Developed/Road - Year-Round Burrow Habitat.* As this category within the Project Site is limited to roadways, this category also provides year-round burrow habitat, as burrowing owls are known to use roadsides for burrow habitat; these habitat types include developed/high intensity, developed/low intensity, developed/medium intensity, and developed/open space.
4) *Orchard/Vineyard/Wetland - No Forage or Burrow Habitat*. This category includes almonds, cherries, grapes, herbaceous wetlands, open water, pecans, pistachios, pomegranates, walnuts, and woody wetlands.



Live Oak Associates, Inc.

Westlands Solar Park

Burrowing Owl Burrow/Observations and Potential Habitats

Date	Project #	Figure #
6/27/2019	2349-01	1

For the WSP Master Plan area, LOA identified 3,255.8 acres (15.70 % of Plan Area) of habitat suitable for burrowing owls year-round, 13,245 acres (63.90 % of Plan Area) suitable seasonally, and 4,227.9 acres (20.40 % of Plan Area) of unsuitable habitat (Table 1; Figure 1).

Table 1. Land Cover Type Acreage and Percent Total of WSP Master Plan Area and a 2-mile Buffer (USDA 2018)

Habitat Type	Habitat Value for BUOW	WSP Plan Area Acres (Percent of Total)	WSP Plan Area and a 2-mile Buffer Acres (Percent of Total)
Fallow/Pasture/Barren/Shrubland	Year-round forage and burrow habitat	2,789.7 (13.46%)	13,054.4 (16.21%)
Irrigated Field	Seasonal forage habitat	13,245.0 (63.90%)	38,197.0 (47.44%)
Developed/Road	Year-round burrow habitat	466.1 (2.25%)	2,882.7 (3.58%)
Orchard/Vineyard/Wetland	No forage or burrow habitat	4,227.9 (20.40%)	26,380.7 (32.77%)
Total		20,728.7 (100%)	80,514.8 (100%)

The development of WSP solar projects could result in the loss of foraging and breeding habitat for burrowing owls. Known locations of burrowing owl burrows along canals will be avoided, as the project will not be impacting the canals, and the canals will continue to be managed as they are currently managed, which will also benefit other species using the canal system to move through the Plan Area. The majority of burrowing owls observed were along the eastern edge and northeast boundaries of the Plan Area. Adequate suitable foraging habitat exists outside of the Plan Area near most of these locations, which should be able to support these owls. For any burrowing owls occurring within the Plan Area but outside the canal systems, both breeding and foraging habitat could be lost; this would constitute a significant impact to burrowing owl foraging and breeding habitat.