

APPENDIX 3.3

Biological Resources Assessment



Biological Resources Assessment

Bakersfield Temple

The Church of Jesus Christ of Latter-day Saints
Bakersfield, CA

September 22, 2025



Nationwide
[Terracon.com](https://www.terracon.com)

- Facilities
- Environmental
- Geotechnical
- Materials



23041 Avenida De La Carlota Suite 350
Laguna Hills, California 92653
P (949) 261-0051
F (949) 261-6110
Terracon.com

September 22, 2025

The Church of Jesus Christ of Latter-day Saints
50 E North Temple Street, COB12
Salt Lake City, UT 84150

Attn: Mr. Daniel Briskin
P: (808) 312-2136
E: daniel.briskin@churchofjesuschrist.org

RE: Biological Resources Assessment Report
Bakersfield Temple
12310 Stockdale Highway
Bakersfield, Kern County, California
Terracon Project No. LA257112

Dear Mr. Briskin:

Terracon Consultants, Inc. (Terracon) is pleased to submit the enclosed Biological Resources Assessment Report for the above referenced project. The following report details our findings and presents an opinion regarding the potential impact to biological resources on the site. Please feel free to contact us at 925-285-9740 or at cailan.patel@terracon.com if you have any questions or concerns.

Sincerely,

Terracon

A handwritten signature in black ink, appearing to read 'Cailan'.

Cailan Patel
Senior Staff Biologist

A handwritten signature in black ink, appearing to read 'Kayti Christianson'.

Kayti Christianson
Authorized Project Reviewer
Senior Scientist

Table of Contents

Executive Summary	i
1. Introduction	2
2. Report Objectives.....	2
3. Methodology	3
3.1 Literature Review	3
3.2 Field Reconnaissance Survey	4
4. Existing Conditions	4
4.1 Topography	4
4.2 Hydrology	4
4.3 Soils.....	5
4.4 Climate.....	6
4.5 Surrounding Land Uses.....	6
4.6 Special-status Plants.....	6
4.7 Special-status Wildlife	6
4.8 Migratory Bird Treaty Act.....	16
5. Biological Survey Results.....	17
5.1 Vegetation	17
5.2 General Wildlife.....	18
5.3 Sensitive Biological Resources	18
5.3.1 Special-Status Wildlife Species	19
5.3.2 Sensitive Plant Communities, Critical Habitats, and Habitat Connectivity.....	23
5.3.3 Jurisdictional Waters and Wetlands	24
6. Regulatory Setting	24
7. Limitations, Assumptions, and Use Reliance.....	27
8. Impacts and Recommendations	28
8.1 Impacts to Plants and Wildlife.....	28
8.1.1 Special-Status Wildlife Species	28

8.1.2 Avian Impacts	29
8.2 Impacts to Existing On-Site Vegetation Communities and Land Covers	29
8.3 Impacts to Jurisdictional Waters and Streambeds.....	30
8.4 Impacts to Wildlife Movement.....	30
8.5 Consistency With Local Policies and Ordinances	30
8.6 Consistency With Habitat Conservation Plans	31
8.7 Avoidance and Minimization Measures.....	31
9. Cumulative Impacts Analysis	35
9.1 Overview of Cumulative Impacts.....	35
9.2 Geographical and Temporal Scope.....	35
9.3 Evaluation of Cumulative Biological Resource Impacts	36
9.4 Conclusion	38
10. Closing	38
11. References	39

Appendices

Appendix A – Exhibits

- Exhibit 1 - Site Diagram
- Exhibit 2 – Topographic Map
- Exhibit 3 – National Wetlands Inventory Map
- Exhibit 4 – NRCS Soil Survey Map
- Exhibit 5 – FEMA Floodplain Map
- Exhibit 6 – CNDDDB Critical Habitat Map
- Exhibit 7 – Biological Resources Map
- Exhibit 8 – California Essential Habitat Connectivity Map
- Exhibit 9a & 9b – CNDDDB Occurrence Map
- Exhibit 10 – Photo Reference Map
- Exhibit 11 – Cumulative Impacts Land Use Map
- Exhibit 12 – Cumulative Projects Map

Appendix B – Photo Log

Appendix C – IPaC Letter Report

Appendix D – CNDDDB Query

Appendix E – EFH Mapper Report

Appendix F – Staff Report on Burrowing Owl Mitigation

Executive Summary

This Report provides the findings of a Biological Resources Assessment (BRA) prepared by Terracon Consultants, Inc. (Terracon) for the proposed development of the Bakersfield Temple project on an approximately 12.1-acre tract of vacant land (herein referred to as Study Area), identified as Kern County Assessor Parcel Numbers (APNs) 5007801200 and 5007801300 at the corner of Stockdale Highway and Jewetta Avenue in Bakersfield, Kern County, California.

Suitable habitat was identified within the Study Area for special-status species. These species include Federally-listed and State-listed special status species; species previously covered under the Metropolitan Bakersfield Habitat Conservation Plan (MBHCP), and migratory birds. The Incidental Take Permit (ITP) associated with the MBHCP expired on June 1, 2023, and it no longer covers the MBHCP species for take. Therefore, Terracon's resulting recommendations include conducting pre-construction surveys for burrowing owl; take avoidance surveys for special-status species with a low potential to occur within the Study Area (monarch butterfly, Crotch's bumble bee, Nelson's antelope squirrel, giant kangaroo rat, San Joaquin kit fox, short-nosed kangaroo rat, American badger, San Joaquin coachwhip, coast horned lizard, Swainson's hawk, and white-tailed kite), species previously covered under the Plan, and nesting birds; conducting a Worker Environmental Awareness Training to on-site personnel; and implementing a biological monitor in the event that special-status species are observed within the Project site.

By implementing the recommendations, requirements, and guidelines outlined in this BRA, impacts to biological resources, including special-status species and their habitats are expected to be mitigated to levels considered less than significant. Further, the proposed Project is not expected to substantially contribute to cumulative impacts to biological resources within the surrounding area.

1. Introduction

The Study Area is proposed for the development of a religious campus consisting of a new temple, meetinghouse, and parking area. Phase I is to include the construction of a 30,000-sf temple, parking, site utilities, landscaping, trash enclosure, service building, and an ancillary building. Phase II is to include the design and construction of a 16,500-sf meetinghouse, parking, service building, pavilion structure, and trash enclosure. The location of the Study Area as defined by the client and the adjoining properties are depicted on **Exhibit 1** of **Appendix A**. The project is overlaid over a portion of the Gosford and Stevens, California, USGS 7.5-minute series topographic map (2021) and can be viewed in **Exhibit 2**. Terracon performed the field reconnaissance survey of the subject property on April 10, 2025.

2. Report Objectives

Land development can have adverse effects on the habitats and individuals of sensitive plant and wildlife species. In such instances, regulatory bodies at the state and federal levels, in accordance with the California Environmental Quality Act (CEQA), as well as local policies and ordinances in the City of Bakersfield may oversee and regulate site development. This report focuses on several key aspects:

1. **Sensitive Biological Resources:** It examines whether sensitive biological resources or their habitats are present within the proposed Bakersfield Temple Study Area.
2. **Regulatory Framework:** It discusses the federal, state, and local laws that govern these resources.
3. **Mitigation Measures:** It explores potential mitigation measures necessary to minimize anticipated impacts to biological resources with the potential to be present within the Study Area and comply with state and federal permit requirements, as well as CEQA mandates.

The specific objectives of this report are to:

- Compile and summarize site-specific information related to existing biological resources, utilizing literature reviews, species databases, and field surveys conducted by Terracon across the entire Study Area.
- Evaluate whether biological resources or their habitats are present on-site based on habitat suitability and proximity to known species ranges.
- Outline relevant state and federal natural resources protection laws pertinent to the Project's development within the Study Area.
- Assess and discuss potential project impacts on biological resources within the Study Area, under CEQA and other relevant laws.

- Recommend avoidance and mitigation measures to minimize potential impacts to a level deemed insignificant under CEQA standards, consistent with resources agency guidelines for affected biological resources.

3. Methodology

Biological conditions were evaluated by confirming applicable regulations, policies, and standards; reviewing biological literature and querying available databases pertinent to the Study Area and vicinity (9 topographic quadrangles for CDFW's CNDDDB and CNPS Inventory of Rare and Endangered Plants); and conducting a reconnaissance-level biological field survey of the Study Area. This assessment provides existing biological conditions of the Study Area at the time of the literature review and reconnaissance survey. The methods employed are described in detail below. The findings and opinions conveyed in this report are based on this methodology.

3.1 Literature Review

Terracon reviewed readily available literature and database resources to identify potential threatened and endangered species within the Study Area. A desktop review of historical aerial photographs, historic topographic maps, United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps, soil data from the Natural Resources Conservation Service (NRCS), Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) maps, publicly available light detection and ranging (LiDAR) data, plant and wildlife species data through California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDDB) records, California Native Plant Society's (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California, United States Fish and Wildlife Service (USFWS) Information, Planning and Conservation (IPaC) service, and National Oceanic and Atmospheric Administration (NOAA) Fisheries species Essential Fish Habitat (EFH) for Study Area quadrangles and other related data applicable based on availability. The preliminary database review assisted Terracon in identifying potential aquatic resources within the Study Area, as well as the potential for threatened/endangered species habitat.

Additionally, Terracon reviewed applicable Habitat Conservation Plans (HCPs), Natural Community Conservation Plans (NCCPs), or other approved local, regional, or state habitat conservation plan that encompass the site. The Study Area lies within the Metropolitan Bakersfield Habitat Conservation Plan (MBHCP). The MBHCP is a large-scale habitat conservation and land management plan developed to acquire, preserve, and enhance native habitats which support endangered and sensitive species, while allowing urban development to proceed as set forth in the Metropolitan Bakersfield General Plan. The MBHCP study area is within both City of Bakersfield and Kern County jurisdictions.

The MBHCP, has integrated conservation measures into its land-use planning and permitting processes for projects within the plan area as well as incidental take permits under Section 10(a)(1)(B) (hereafter referred to as Incidental Take Permit [ITP]) of the United States Endangered Species Act and a permit under Section 2081 of the California Endangered Species Act. The MBHCP is designed to offset impacts resulting from loss of habitat through the authorization of an otherwise lawful activity. Therefore, this assessment is informed by the MBHCP and Metropolitan Bakersfield General Plan processes.

3.2 Field Reconnaissance Survey

A field reconnaissance survey was conducted by Terracon biologists, Cailan Patel and Rachel Spellenberg on April 10, 2025. These surveys involved observations regarding suitability of habitat or other visual evidence of the federally or state-listed species during a pedestrian survey. Note that this task is to identify if habitat preferred by a threatened and endangered species is present within the Study Area; it is not substitute for a protocol-level survey for specific species, which may be necessary if suitable habitat is determined to be present. GPS data was collected using a Trimble Juno T41, capable of sub-meter accuracy. GPS positions were processed and corrected to analyze data using ArcGIS.

The reconnaissance surveys consisted primarily of pedestrian transects; 10-meter wide parallel transects were conducted to adequately assess the Study Area for vegetation communities and burrows of special-status species. Survey transect methodology was based on *Burrowing Owl Survey Protocol and Mitigation Guidelines* (State of California Department of Fish and Game 2012).

Representative photographs were taken to document vegetation communities, evidence of species or their habitat, or other notable biological resources observations. Photographs as well as a photo reference map are provided in **Appendix B** and **Exhibit 10**, respectively.

4. Existing Conditions

Terracon reviewed the desktop resources to gain understanding of the Study Area and to preliminarily evaluate whether habitat for special-status plant and wildlife species exists within this area.

4.1 Topography

The Study Area is in Bakersfield, California. The United States Geologic Survey (USGS) 7.5-minute Topographic Map of the subject site, Gosford and Stevens, California, was reviewed to identify potential Waters of the U.S. or other topographic features within and surrounding the Study Area. The Study Area is located at an elevation of approximately 365 feet. Based on this map, the Study Area does not appear to contain aquatic features. See **Exhibit 2** for the topographic map.

4.2 Hydrology

Hydrology of the Study Area and vicinity was evaluated through review of topographic maps, aerial photos, the National Hydrography Dataset (USGS 2025), and the National Wetland Inventory (USFWS 2025), in conjunction with field survey data.

The Study Area is located within the Richfield Weir-Kern River Watershed, Hydrologic Unit Code (HUC) 1800300030111 (EPA 2025). Further, it is located within the San Joaquin Valley Groundwater Basin (Basin Number 5-022) (CDWR 2025).

Terracon reviewed National Wetland Inventory (NWI) data for the Study Area to identify potential wetland areas. Based on the NWI dataset, the Study Area does not appear to contain wetland features. The nearest features in the vicinity include 2 riverine features approximately 0.2 miles to the

south; one identified as Cross Valley Canal and the other identified as the Kern River. Additionally, one riverine feature was identified by the NWI appearing to be a canal on aerial imagery approximately 0.25 miles east of the Study Area. See **Exhibit 3** for the NWI map.

Terracon reviewed the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM). According to the FIRM panel, the Study Area falls primarily within an area of minimal flood hazard and the eastern portion of the Study Area is mapped as an area not included in the floodplain study. Nearby floodplain units include a 100-year floodplain and a regulatory floodway approximately 0.2 miles to the south. The FEMA Floodplain Map for the Study Area is included as **Exhibit 5**.

4.3 Soils

The U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) has mapped and inventoried soils at both landscape (course) and detailed (fine) scales. These data are catalogued in previously published soil surveys, the Soil Survey Geographic Database, and the U.S. General Soil Map. These can be accessed through the Web Soil Survey Application (USDA NRCS 2025).

The Study Area is covered by the *Kern County, California, Northwestern Part* NRCS survey area. Within the Study Area, soils are associated with floodplains and alluvial fans. Based on Web Soil Survey data, the Study Area contains one soil map unit, which is described below. The soils map is provided as **Exhibit 4**.

Hydric soils are defined by the National Technical Committee for Hydric Soils as soils that in their undrained condition, are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that support the growth and regeneration of hydrophytic vegetation (59 Federal Register 16835). Soils that are sufficiently wet to support the growth and regeneration of hydrophytic vegetation due to artificial measures are included in the concept of hydric soils on the list "Hydric Soils of the United States" (National List) (USDA NRCS 2024). Soils are identified for inclusion on the list based on specific criteria established by law (67 Federal Register 58756). The National List is a compilation of all map units with either a major or minor component that is at least in part hydric. ...Because the list includes both major and minor (small) percentages for map units, in some cases most of the map unit may not be hydric... Some components may be phases of soil series that have a range of characteristics... therefore, only a portion of that component's concept (or range in characteristics) may in fact be hydric. The list is useful in identifying map units that may contain hydric soils."

The soil map unit identified within the Study Area is not rated as a hydric soil. However, multiple areas, identified in **Exhibit 7**, appeared to have darker soils, with reduced vegetation, evidently allowing water to pond within the Study Area.

Wasco Sandy Loam

This soil map unit typically occurs within floodplains and alluvial fans. The soil series, Wasco, is formed in alluvium derived from granite. These soils are found at elevations of 250 feet to 3,700 feet. This soil series is well drained with a rare frequency of flooding and no frequency of ponding. The depth to the water table is greater than 80 inches and the typical soil profile is sandy loam from 0 to 15 inches and sandy loam from 15 to 60 inches. This soil unit is not rated as a hydric soil.

4.4 Climate

The Study Area has an arid climate, characteristic of the California Central Valley. A nearby weather station in Bakersfield, California (Bakersfield Airport, California Weather Station 040442) has recorded weather conditions since 1937 (Western Regional Climate Center (WRCC) 2025). Average high temperatures range from 57.4 degrees Fahrenheit (°F) in January to 98.6°F in July, while average low temperatures range from 38.5°F in January and December to 69.2°F in July.

Climate data for this weather station indicates that average annual rainfall in the vicinity is approximately 6.17 inches and average annual snowfall is approximately 0.1 inches (WRCC 2025).

4.5 Surrounding Land Uses

The assessor class for the Study Area is C-O, Commercial and Professional Office (City of Bakersfield 2025). Primary land uses within the vicinity of the Study Area include Planned Unit Development (PUD) to the north, Commercial and Professional Office (C-O) to the west, Open Space (OS) to the east, Single-Unit Dwelling (R-1) to the south and southwest, and Planned Commercial Development (PCD) to the southeast.

4.6 Special-status Plants

Based on the database review of IPaC, CNDDDB, and CNPS, Terracon identified five (5) special-status plant species that required evaluation for potential to occur in the Study Area: California jewelflower (*Caulanthus californicus*), San Joaquin woolly-threads (*Monolopia* [*Lembertia*] *congdonii*), Bakersfield smallscale (*Atriplex tularensis*), Kern mallow (*Eremalche parryi* ssp. *kernensis*), and Bakersfield cactus (*Opuntia basilaris* var. *treleasei*). These species and their habitats are listed in **Table 1**.

4.7 Special-status Wildlife

Based on the database review of IPaC and CNDDDB, Terracon identified 19 special-status wildlife species (threatened, endangered, or candidate threatened/endangered), 12 California Species of Special Concern or Fully Protected species, and 14 migratory bird species that required evaluation for potential to occur in the Study Area.

The special-status species include monarch butterfly (*Danaus plexippus*), Crotch's bumble bee (*Bombus crotchii*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), vernal pool fairy shrimp (*Branchinecta lynchi*), Nelson's antelope squirrel (*Ammospermophilus nelsoni*), giant kangaroo rat (*Dipodomys ingens*), Tipton kangaroo rat (*Dipodomys nitratoideus nitratoideus*), Buena Vista Lake ornate shrew (*Sorex ornatus relictus*), San Joaquin kit fox (*Vulpes macrotis mutica*), western spadefoot toad (*Spea hammondi*), blunt-nosed leopard lizard (*Gambelia sila*), northwestern pond turtle (*Actinemys marmorata*), California condor (*Gymnogyps californianus*), southwestern willow flycatcher (*Empidonax trailii extimus*) tri-colored blackbird (*Agelaius tricolor*), Swainson's hawk (*Buteo swainsoni*), burrowing owl (*Athene cunicularia*), western snowy plover (*Charadrius nivosus nivosus*), and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*).

The California species listed as Species of Special Concern or Fully Protected that required evaluation include short-nosed kangaroo rat (*Dipodomys nitratoideus brevinasus*), western mastiff bat (*Eumops perotis californicus*), Tulare grasshopper mouse (*Onychomys torridus tularensis*), American badger (*Taxidea taxus*), Bakersfield legless lizard (*Anniella grinnelli*), California legless lizard (*Aniella* spp.), California glossy snake (*Arizona elegans occidentalis*), San Joaquin coachwhip (*Masticophis flagellum ruddocki*), coast horned lizard (*Phrynosoma blainvillii*), fulvous whistling-duck (*Dendrocygna bicolor*), white-tailed kite (*Elanus leucurus*), and yellow-headed blackbird (*Xanthocephalus xanthocephalus*).

The migratory bird species that required evaluation include Belding's savannah sparrow (*Passerculus sandwichensis beldgingi*), Bullock's oriole (*Icterus bullockii*), California gull (*Larus californicus*), California thrasher (*Toxostoma redivivum*), Clark's grebe (*Aechmophorus clarkia*), common yellowthroat (*Geothlypis trichas sinuosa*), golden eagle (*Aquila chrysaetos*), Lawrence's goldfinch (*Spinus lawrencei*), northern harrier (*Circus hudsonius*), Nuttall's woodpecker (*Dryobates nuttallii*), olive-sided flycatcher (*Contopus cooperi*), Santa Barbara song sparrow (*Melospiza melodia graminea*), tricolored blackbird (*Agelaius tricolor*), wrentit (*Chamaea fasciata*).

These species and their habitats are listed in **Table 1** and **Table 2** below.

Table 1.

Special-Status Species Potentially Occurring within the Study Area					
Common Name	Scientific Name	Status Fed/CA/ other	Habitat and Seasonal Distribution in California	Habitat Present/ Absent	Likelihood of Occurrence Within the Study Area
Plants					
Bakersfield Smallscale	<i>Atriplex tularensis</i>	--/SE/--	Found in chenopod scrub and meadow and seep habitats, specifically with alkaline soils present.	Absent	Not expected: No suitable habitat present within Study Area.
California Jewelflower	<i>Caulanthus californicus</i>	FE/SE/--	Found in chenopod scrub, pinyon and juniper woodlands, and valley and foothill grasslands.	Present	Low: Fiddleneck—phacelia fields grassland community present in Study Area may provide suitable habitat.
Kern Mallow	<i>Eremalche parryi</i> ssp. <i>kernensis</i>	FE/--/--	Found in chenopod scrub, pinyon and juniper woodlands, and valley and foothill grasslands.	Present	Low: Fiddleneck—phacelia fields grassland community present in Study Area may provide suitable habitat.
San Joaquin Woollythreads	<i>Monolopia congdonii</i>	FE/SE/--	Found in chenopod scrub and valley and foothill grasslands.	Present	Low: Fiddleneck-phacelia fields grassland community present in Study Area may provide suitable habitat.
Bakersfield Cactus	<i>Opuntia basilaris</i> var. <i>treleasei</i>	FE/SE/--	Found in chenopod scrub and valley and foothill grasslands.	Absent	Absent: Suitable grassland habitat present, however, no Bakersfield cactus observed within Study Area.
Invertebrates					

Special-Status Species Potentially Occurring within the Study Area					
Common Name	Scientific Name	Status Fed/CA/other	Habitat and Seasonal Distribution in California	Habitat Present/Absent	Likelihood of Occurrence Within the Study Area
Monarch Butterfly	<i>Danaus plexippus</i>	PT/--/--	Found in grasslands and associated with <i>Asclepias</i> species. Low incidence in California during winter. Critically important wintering areas present in Coastal California.	Present	Low: Study Area located along migratory pathway of this species. Flowering plant species present may provide foraging habitat.
Crotch's Bumble Bee	<i>Bombus crotchii</i>	--/SC/--	Found between San Diego and Redding, California in open grasslands, shrublands, chaparral, including desert margins including Joshua tree woodland and creosote scrub, and semi-urban settings.	Present	Low: Fiddleneck—phacelia fields vegetation community present in Study Area may provide suitable habitat.
Valley Elderberry Longhorn Beetle	<i>Desmocerus californicus dimorphus</i>	FT/--/--	Found in riparian scrub, specifically associated with <i>Sambucus</i> species.	Absent	Not Expected: <i>Sambucus</i> species not present in Study Area.
Vernal Pool Fairy Shrimp	<i>Branchinecta lunchi</i>	FT/--/--	Found in vernal pools	Absent	Not expected: No suitable habitat present in Study Area.
Mammals					
Nelson's Antelope Squirrel	<i>Ammospermophilus nelsoni</i>	--/ST/--	Found in chenopod scrub and valley and foothill grasslands.	Present	Low: Fiddleneck—phacelia fields grassland community and burrows present in Study Area may provide suitable habitat.

Special-Status Species Potentially Occurring within the Study Area					
Common Name	Scientific Name	Status Fed/CA/other	Habitat and Seasonal Distribution in California	Habitat Present/Absent	Likelihood of Occurrence Within the Study Area
Giant Kangaroo Rat	<i>Dipodomys ingens</i>	FE/SE/--	Found in chenopod scrub and valley and foothill grasslands.	Present	Low: Fiddleneck—phacelia fields grassland community and burrows present within Study Area may provide suitable habitat.
Tipton Kangaroo Rat	<i>Dipodomys nitratoide nitratoide</i>	FE/SE/--	Found in chenopod scrub.	Absent	Not expected: No suitable habitat present within Study Area.
Buena Vista Lake Ornate Shrew	<i>Sorex ornatus relictus</i>	FE/--/SSC	Found in marshes, swamps, and riparian scrub.	Absent	Not expected: No suitable habitat present. Soils within Study Area lacks moisture, leaf litter, and debris.
San Joaquin Kit Fox	<i>Vulpes macrotis mutica</i>	FE/ST/--	Found in chenopod scrub and valley and foothill grasslands.	Present	Low: Fiddleneck—phacelia fields grassland community and burrows present throughout Study Area may provide suitable habitat.
Short-nosed Kangaroo Rat	<i>Dipodomys nitratoide brevinasus</i>	--/--/SSC	Found in chenopod scrub and valley and foothill grasslands.	Present	Low: Fiddleneck—phacelia fields grassland community and burrows present throughout Study Area may provide suitable habitat.
Western Mastiff Bat	<i>Eumops perotis californicus</i>	--/--/SSC	Found in chaparral, cismontane woodlands, coastal scrub, and valley and foothill grasslands.	Absent	Not expected: Fiddleneck—phacelia fields grassland community may provide suitable foraging habitat, however, no suitable roosting habitat present within vicinity of Study Area.
Tulare Grasshopper Mouse	<i>Onychomys torridus tularensis</i>	--/--/SSC	Found in chenopod scrub.	Absent	Not expected: No suitable habitat present in Study Area.

Special-Status Species Potentially Occurring within the Study Area					
Common Name	Scientific Name	Status Fed/CA/other	Habitat and Seasonal Distribution in California	Habitat Present/Absent	Likelihood of Occurrence Within the Study Area
American Badger	<i>Taxidea taxus</i>	--/--/SSC	Found in broadleaved upland forests, chenopod scrub, chaparral, desert dunes and washes, Joshua tree woodland, Mojavean desert scrub, Sonoran desert scrub and thorn woodland, and valley and foothill grasslands.	Present	Low: Fiddleneck—phacelia fields, grassland community and burrows present in Study Area may provide suitable habitat.
Amphibians					
Western Spadefoot Toad	<i>Spea hammondi</i>	PT/--/SSC	Found in cismontane woodlands, coastal scrub, valley and foothill grasslands, vernal pools, and wetlands.	Absent	Not expected: No suitable habitat present in Study Area.
Reptiles					
Blunt-nosed Leopard Lizard	<i>Gambelia sila</i>	FE/SE/FP	Found in chenopod scrub.	Absent	Not expected: No suitable habitat present within Study Area.
Northwestern Pond Turtle	<i>Actinemys marmorata</i>	PT/--/SSC	Found in aquatic habitats including ponds, streams, creeks, and rivers. Nesting occurs in upland habitats within vicinity of these aquatic habitats.	Absent	Not expected: No suitable habitat present within Study Area.

Special-Status Species Potentially Occurring within the Study Area					
Common Name	Scientific Name	Status Fed/CA/other	Habitat and Seasonal Distribution in California	Habitat Present/Absent	Likelihood of Occurrence Within the Study Area
Bakersfield Legless Lizard	<i>Anniella grinnelli</i>	--/--/SSC	Found in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks.	Absent	Not expected: No suitable habitat present within Study area.
California Legless Lizard	<i>Anniella</i> spp.	--/--/SSC	Occurs from Contra Costa County south to San Diego, found in a variety of open habitats primarily in moist, loose soils.	Absent	Not expected: No suitable habitat present within Study area.
California Glossy Snake	<i>Arizona elegans occidentalis</i>	--/--/SSC	Found in a range of scrub and grassland habitats, primarily with loose and/or sandy soils.	Absent	Not expected: No suitable habitat present within Study area.
San Joaquin Coachwhip	<i>Masticophis flagellum ruddocki</i>	--/--/SSC	Found in chenopod scrub and valley and foothill grasslands.	Present	Low: Fiddleneck—phacelia fields grassland community and burrows present in Study Area may provide suitable habitat.
Coast Horned Lizard	<i>Phrynosoma blainvillii</i>	--/--/SSC	Found in chaparral, cismontane woodlands, coastal and coastal bluff scrub, desert washes, pinyon and juniper woodlands, riparian woodlands and scrub, and valley and foothill grasslands.	Present	Low: Fiddleneck—phacelia fields grassland community and burrows present in Study Area may provide suitable habitat. Ant species present in Study Area may provide suitable source of forage

Special-Status Species Potentially Occurring within the Study Area					
Common Name	Scientific Name	Status Fed/CA/ other	Habitat and Seasonal Distribution in California	Habitat Present/ Absent	Likelihood of Occurrence Within the Study Area
Birds					
California Condor	<i>Gymnogyps californianus</i>	FE/--/--	Found in vast habitats of undeveloped land, using large trees for roosting, and nesting on rocky cliffs or tree cavities.	Absent	Not expected: No suitable habitat present within Study Area.
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	FE/--/--	Found in dense riparian habitats specifically vegetated with dense willows or other shrubby vegetation near water sources or saturated soils.	Absent	Not expected: No suitable habitat present within Study Area.
Tricolored Blackbird	<i>Agelaius tricolor</i>	--/ST/SSC	Found in freshwater marshes and swamps and wetlands.	Absent	Not expected: No suitable habitat present in Study Area.
Swainson's Hawk	<i>Buteo swainsoni</i>	--/ST/--	Found in Great Basin grasslands, riparian forests and woodlands, and valley and foothill grasslands.	Present	Low: Fiddleneck—phacelia fields grassland community may provide suitable foraging habitat.
Burrowing Owl	<i>Athene cunicularia</i>	C/--/SSC, BLMS	Found in wide-open, sparsely vegetated areas like prairies, deserts, grasslands, and agricultural fields.	Present	Moderate: Sparsely vegetated grassland and burrows present in Study Area may provide suitable habitat.

Special-Status Species Potentially Occurring within the Study Area					
Common Name	Scientific Name	Status Fed/CA/other	Habitat and Seasonal Distribution in California	Habitat Present/Absent	Likelihood of Occurrence Within the Study Area
Western Snowy Plover	<i>Charadrius nivosus nivosus</i>	FT/--/SSC	Found in Great Basin standing waters, sand shores, and wetlands.	Absent	Not expected: No suitable habitat present in Study Area.
Western Yellow-billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	FT/SE/--	Found in riparian forests.	Absent	Not expected: No suitable habitat present in Study Area.
Fulvous Whistling-duck	<i>Dendrocygna bicolor</i>	--/--/SSC	Found in freshwater marshes and swamps.	Absent	Not expected: No suitable habitat present in Study Area.
White-tailed Kite	<i>Elanus leucurus</i>	--/--/FP	Found in cismontane woodlands, marshes, swamps, riparian woodlands, valley and foothill grasslands, and wetlands.	Present	Low: Fiddleneck—phacelia fields grassland community may provide suitable foraging habitat.
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>	--/--/SSC	Found in marshes, swamps, and wetlands with dense riparian vegetation.	Absent	Not expected: No suitable habitat present in Study Area.

SOURCE:

- CDFW Natural Diversity Database (CNDDDB), March 2025 for the U.S. Geological Survey's (USGS) 7.5-minute Gosford quadrangle and eight surrounding quadrangles, and Kern County.
- California Native Plant Society (CNPS), March 2025 for the U.S. Geological Survey's (USGS) 7.5-minute Gosford quadrangle and eight surrounding quadrangles.
- U.S. Fish and Wildlife Service (USFWS), March 2025 for Kern County and Project Area coordinates.

a. Status:

Federal

FE	Federally listed as Endangered
FT	Federally listed as Threatened
FPD	Federally Proposed for Delisting
FC	Federal Candidate
PE	Proposed Endangered
PT	Proposed Threatened
S	Federally Sensitive
SC	National Marine Fisheries Service or U.S. Fish and Wildlife Service designated Species of Concern. Species of Concern status does not carry any procedural or substantive protections under the ESA.

State

SE	State-listed as Endangered
ST	State-listed as Threatened
SPD	State-Proposed for Delisting
S	State Sensitive
SR	State Rare
SC	State Candidate
PE	Proposed Endangered
WL	Watch List
SSC	California Department of Fish and Game designated "Species of Special Concern"

Other

CH	Critical Habitat
FP	California Department of Fish and Game designated "Fully Protected"– Permit required for "take"
CWL	California Department of Fish and Game designated "California Watch List"
SLC	California Native Plant Society (CNPS) Ranking Species of Local Concern
1B	California Native Plant Society (CNPS) Ranking. Defined as plants that are rare, threatened, or endangered in California and elsewhere.
2	California Native Plant Society (CNPS) Ranking. Defined as plants that are rare, threatened, or endangered in California, but more common elsewhere.
3	California Native Plant Society (CNPS) Ranking. Plants About Which More Information is Needed - A Review List.
BLMS	Bureau of Land Management Sensitive

Recent modifications to the CNPS Ranking System include the addition of a new Threat Code extension to listed species (e.g., List 1B.1, List 2.2 etc.). A Threat Code extension of x.1 signifies that a species is seriously endangered in California; x.2 is fairly endangered in California; and x.3 is not very endangered in California.

b. Likelihood of occurrence evaluations:

A rating of "**High**" indicates that all of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high potential of being found on the site.

A rating of "**Moderate**" indicates that some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate potential of being found on the site.

A rating of "**Low**" indicates that few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.

A rating of "**Present**" indicates that the species is observed on the site or has been recorded (e.g., CNDDDB, other reports) on the site recently (within the last 5 years).

A rating of "**Not Expected**" indicates that habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime). The species is not expected to be found on the site.

4.8 Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (MBTA) decrees that migratory birds and their parts (including eggs, nests, and feathers) are federally protected. The MBTA is the domestic law that affirms, or implements, the United States commitment to four international conventions (with Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird resource. Each of the conventions protect selected species of birds that are common to these countries (i.e., they occur in these countries at some point during their annual life cycle). Certain birds are protected under the MBTA and the Bald and Golden Eagle Protection Act (BGEPA). Activities that result in a take of migratory birds or eagles is prohibited unless permitted and authorized by the USFWS.

Based on the IPaC and CNDDb database review, Terracon identified the following migratory Bird of Conservation Concern that have the potential to occur in the Study Area. The species are listed in **Table 2** below.

Table 2. Migratory Birds with Potential of Presence in Study Area

Species Name	Bird of Conservation Concern (BCC)	Seasonal Occurrence in Study Area
Belding's savannah sparrow (<i>Passerculus sandwichensis beldgingi</i>)	Yes	Breeds Apr 1 to Aug 15
Bullock's oriole (<i>Icterus bullockii</i>)	Yes	Breeds Mar 21 to Jul 25
California gull (<i>Larus californicus</i>)	Yes	Breeds Mar 1 to Jul 31
California thrasher (<i>Toxostoma redivivum</i>)	Yes	Breeds Jan 1 to Jul 31
Clark's grebe (<i>Aechmophorus clarkia</i>)	Yes	Breeds Jun 1 to Aug 31
Common yellowthroat (<i>Geothlypis trichas sinuosa</i>)	Yes	Breeds May 20 to Jul 31
Golden eagle (<i>Aquila chrysaetos</i>)	No	Breeds Jan 1 to Aug 31
Lawrence's goldfinch (<i>Spinus lawrencei</i>)	Yes	Breeds Mar 20 to Sep 20
Northern harrier (<i>Circus hudsonius</i>)	Yes	Breeds Apr 5 to Sep 15
Nuttall's woodpecker (<i>Dryobates nuttallii</i>)	Yes	Breeds Apr 1 to Jul 20
Olive-sided flycatcher (<i>Contopus cooperi</i>)	Yes	Breeds May 20 to Aug 31
Santa Barbara song sparrow (<i>Melospiza melodia graminea</i>)	Yes	Breeds Mar 1 to Sep 5
Tricolored blackbird (<i>Agelaius tricolor</i>)	Yes	Breeds Mar 15 to Aug 10

Wrentit (<i>Chamaea fasciata</i>)	Yes	Breeds Mar 15 to Aug 10
-------------------------------------	-----	-------------------------

Based on a review of readily available documentation for the Study Area including the IPaC report, CNDDB query, and aerial imagery, it appears that the Study Area contains suitable habitat for one or more of the above-mentioned migratory birds of concern.

5. Biological Survey Results

The following section describes the observations and results of the field reconnaissance surveys conducted by Terracon biologists.

5.1 Vegetation

Terracon biologists mapped one natural vegetation community within the Study Area: Fiddleneck – Phacelia Fields (*Amsinckia* [*menziesii*, *tessellata*] – *Phacelia* spp. Herbaceous Alliance) (CNPS 2025). The fiddleneck – phacelia fields community within the Study Area consists primarily of *Amsinckia menziesii* co-dominant with *Bromus rubens* and *Hordeum murinum* covering the majority of the Study Area. A brief description of this natural community and other areas present in the Study Area are provided below.

Vegetation observed within the Study Area consisted primarily of native and non-native species, dominantly wall barley (*Hordeum murinum*), red brome (*Bromus rubens*), fiddleneck (*Amsinckia menziesii*), and sand pygmyweed (*Crassula connata*). Additional species observed among these dominant species include but are not limited to prickly Russian thistle (*Salsola tragus*), common rosemary (*Rosmarinus officianlis*), great brome (*Bromus diandrus*), black mustard (*Brassica nigra*), common stork's-bill (*Erodium cicutarium*), sleeping combseed (*Pectocarya penicillata*), Mediterranean grass (*Schismus barbatus*), silverleaf nightshade (*Solanum elaeagnifolium*), saltgrass (*Distichlis spicata*), London rocket (*Sisymbrium irio*), common tarweed (*Centromadia pungens*), burr medic (*Medicago polymorpha*), toad rush (*Juncus bufonius*), annual yellow sweetclover (*Melilotus indicus*), sacred datura (*Datura wrightii*), white goosefoot (*Chenopodium album*), groundsel (*Senecio vulgaris*), bachelor's buttons (*Cotula australis*), and common mallow (*Malva neglecta*).

Fiddleneck – Phacelia Fields (*Amsinckia* [*menziesii*, *tessellata*] – *Phacelia* spp. Herbaceous Alliance

This community is defined as having *Amsinckia menziesii*, *Amsinckia tessellate*, and/or *Phacelia* spp. or other *Amsinckia* sp. as seasonally co-dominant in the herbaceous layer with *Amblyopappus pusillus*, *Astragalus didymocarpus*, *Atriplex californica*, *Avena* spp., *Bromus diandrus*, *Bromus hordeaceus*, *Bromus rubens*, *Castilleja exserta*, *Centromadia pungens*, *Croton setigerus*, *Deinandra fasciculata*, *Dichelostemma capitatum*, *Erodium* spp., *Guillenia lasiophylla*, *Hordeum murinum*, *Lasthenia californica*, *Lasthenia gracilis*, *Lotus wrangelianus*, *Lupinus bicolor*, *Plagiobothrys canescens*, *Plagiobothrys collinus*, and *Vulpia bormoides*. Emergent shrubs may be present at low cover, including *Adenostoma fasciculatum*, *Artemisia californica*, *Eastwoodia elegans*, *Encelia farinose*, *Ericameria palmeri*, *Eriogonum fasciculatum*, *Isocoma menziesii*, or *Lupinus albifrons*.

Membership rules for this community may include *Amsinckia menziesii* $\geq 10\%$ relative cover in the herbaceous layer; *Vulpia bromoides* co-dominant with *Amsinckia menziesii* and *Plagiobothrys canescens* in the herbaceous layer; *Amsinckia menziesii*, *A. tessellata*, *A. vernicosa*, *Phacelia ciliata*, *P. distans*, and/or *P. tanacetifolia*, is/are dominant or seasonally characteristic in the herbaceous layer with $>10\%$ relative cover; *Amsinckia intermedia*, *A. menziesii*, or *Ambylopappus pusillus* dominant, co-dominant, or seasonally characteristic at $>10\%$ relative cover in the herbaceous layer; *Amsinckia* spp. and/or *Phacelia* spp. $>50\%$ relative cover in the herbaceous layer; *Amsinckia* spp. or *Phacelia* spp. $>15\%$ relative cover as co-dominant or characteristic plants in the herbaceous layer, with non-natives potentially having higher cover yet nominate native species are present and characteristic; or *Amsinckia* spp., *Croton setigerus*, an annual *Eriogonum* spp. or *Phacelia* spp. $>15\%$ relative cover as co-dominant or characteristic plants in the herbaceous layer, with non-natives potentially having higher cover yet nominate native species are present and characteristic (CNPS 2025).

It should be noted that the majority of the Study Area is comprised of the fiddleneck – phacelia fields vegetation community, at approximately 9.95 acres of the 12.1 acres of the Study Area.

Further, multiple features containing high percentages of cover of sand pygmyweed (*Crassula connata*), a species occasionally associated with vernal pools, were observed. These features appeared to have the potential to pond. These areas approximately cover 2.15 acres of the Study Area. In reviewing historical aerial imagery, however, it does not appear that these features exhibit inundation, and are not likely to form vernal pools. Nonetheless, these features were mapped and are displayed in **Exhibit 7**.

5.2 General Wildlife

The fiddleneck – phacelia fields vegetation community and surrounding areas observed within the Study Area have the potential to support a variety of wildlife. Wildlife species observed include house finch (*Haemorhous mexicanus*), domestic cat (*Felis catus*), California ground squirrel (*Otospermophilus beecheyi*), common ladybug (*Coccinella septempunctata*), ants (Formicidae), red-tailed hawk (*Buteo jamaicensis*), spotted towhee (*Pipilo maculatus*), common raven (*Corvus corax*), western side-blotched lizard (*Uta stansburiana elegans*), California scrub jay (*Aphelocoma californica*), and mourning dove (*Zenaida macroura*). Small mammal burrows were observed throughout the Study Area. Many of these burrows appeared to be active and California ground squirrels were observed to be entering and exiting. Observed biological resources are displayed in **Exhibit 7**.

5.3 Sensitive Biological Resources

Local, State, and Federal agencies regulate special-status species and require an assessment of their presence or potential presence to be conducted on-site prior to the approval of any proposed activity on a property. This section discusses biological resources observed in the Study Area and evaluates the potential for the Study Area to support other sensitive biological resources. Assessments for the potential occurrence of special-status species are based upon known ranges, habitat preferences for the species, and species occurrence records from the CNDDDB. The potential for each special-status species to occur in the Study Area was evaluated according to the following criteria:

- **Not Expected.** Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime). The species is not expected to be found on the site.

- **Low Potential.** Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
- **Moderate Potential.** Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate potential of being found on the site.
- **High Potential.** All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high potential of being found on the site.
- **Present.** Species is observed on the site or has been recorded (e.g., CNDDDB, other reports) on the site recently (within the last 5 years).

Appendices C and D provide the complete list of all special-status resources with records for IPaC query and within a 9-quadrant CNDDDB query for the Study Area respectively.

5.3.1 Special-Status Wildlife Species

Terracon evaluated 31 special-status wildlife species for their potential to occur within the Study Area. Species are considered to have special status based on a State and/or Federal listing, or because they are considered a California Species of Special Concern (SSC) or Fully Protected (FP). Of these 31 species, suitable habitat for 12 of the species was observed within the Study Area. Species with a low potential to occur within the Study Area include monarch butterfly (*Danaus plexippus*), Crotch's bumble bee (*Bombus crotchii*), Nelson's antelope squirrel (*Ammospermophilus nelsoni*), giant kangaroo rat (*Dipodomys ingens*), San Joaquin kit fox (*Vulpes macrotis macrotis*), short-nosed kangaroo rat (*Dipodomys nitratus brevinasus*), American badger (*Taxidea taxus*), coast horned lizard (*Phrynosoma blainvillii*), San Joaquin coachwhip (*Masticophis flagellum ruddocki*), Swainson's hawk (*Buteo swainsoni*), and white-tailed kite (*Elanus leucurus*). Burrowing owl (*Athene cunicularia*) has a moderate potential to occur within the Study Area. The remaining species are not discussed further as no suitable habitat was observed within the Study Area. Referenced occurrence data is displayed in **Exhibit 9**.

Monarch Butterfly

The Study Area is located in the migratory path of the monarch butterfly, however, no *Asclepias* species were observed within the Study Area, and therefore, the species will likely not make use of the Study Area to breed. The Study Area contains a wide variety of flowering plant species that may provide a nectar food source for this species during its migration. Therefore, if present, the monarch butterfly would likely be for a short period of time (Reppert & Roode 2018). The monarch butterfly has a low potential to occur within the Study Area.

Crotch's Bumble Bee

Crotch's bumble bee has been reported through the CNDDDB and there are two recorded occurrences approximately 6.6 miles to the northeast and 6.9 miles to the southeast of the Study Area (Occurrence No. 97, 1959 and No. 304, 2020, respectively). Although there are no recent occurrences of this species within the vicinity, the Study Area consists of fiddleneck-phacelia fields grassland

habitat, which provides suitable habitat for this species of bee (Hatfield and Jepsen 2021). Additionally, the typical food-plant species for this bee include *Asclepias*, *Chaenactis*, *Medicago*, *Phacelia*, *Salvia*, *Clarkia*, *Eriogonum*, *Lupinus*, *Papaver*, *Amsinckia* etc. (IUCN 2024 & LPF 2013). Due to the presence of *Amsinckia* species providing forage, if present, this species would likely occupy the Study Area temporarily. Therefore, the Crotch's bumble bee has a low potential to occur within the Study Area.

Nelson's Antelope Squirrel

Nelson's antelope squirrel is found within the western San Joaquin valley on dry, sparsely vegetated soils in the Merced, Kern, Kings, and Tulare Counties (Ahlborn 2005). This species uses burrows for cover, digging their own burrows or using existing kangaroo rat or other mammal burrows (Grinnel and Dixon 1919). Suitable vegetation for this species includes widely scattered shrubs and annual forbs and grasses on gently sloped areas (Harris and Stearns 1991). The CNDDDB contains one recorded occurrence of this species within the vicinity of the Study Area, approximately 8.2 miles to the southwest (Occurrence No. 290, 1990). The Study Area consists of fiddleneck-phacelia fields grassland vegetated primarily with forbs and grass species and contains mammal burrows throughout. Therefore, Nelson's antelope squirrel has a low potential to occur within the Study Area.

Giant Kangaroo Rat

The giant kangaroo rat occurs in scattered colonies along the western side of the San Joaquin valley on fine sandy loam soils vegetated by sparse annual grass and forb species (Ahlborn 1999). Food plant species for the giant kangaroo rat include *Lepidium* spp., *Erodium cicutarium*, *Schismus arabicus*, and *Bromus* spp. (USFWS 2025). This species is a burrowing mammal, either digging their own burrows or making use of existing mammal burrows primarily in areas no shrub canopy cover (Ahlborn 1999). The CNDDDB contains one recorded occurrence of this species within the vicinity of the Study Area, approximately 11 miles to the southwest (Occurrence No. 92, 1979). The Study Area contains suitable food plant species and burrows throughout. Therefore, the giant kangaroo rat has a low potential to occur within the Study Area.

San Joaquin Kit Fox

The San Joaquin kit fox is found in the desert and grasslands of the San Joaquin Valley, historically ranging from San Joaquin County in the north to Kern County in the south, however, by 1930, the range of this species had been reduced by more than half, with the largest portion of the range remaining in the southern and western portions of the valley (USFWS 2025a). This species uses burrows for cover in loose-textured, sandy and loamy soils (Morrell 1972). The primary food source for this species is kangaroo rats and ground squirrels, however, the overarching species, *Vulpes macrotis*, is known to hunt black-tailed jackrabbits, desert cottontails, insects, reptiles, birds and their eggs, and even forage certain vegetation (Laughrin 1970). The CNDDDB contains multiple recorded occurrences of this species within the vicinity of the Study Area, approximately 0.9 miles to the southwest, 1.8 miles to the southeast, 2 miles to the east, 1.1 miles to the northeast, and 2 miles to the north (Occurrence No. 224, 2006; No. 227, 2007; No. 226, 2007; No. 1106, 2007; and No. 355; 1988; respectively). Due to the presence of burrows and burrowing mammals within the Study Area and relatively recent and nearby occurrences, the San Joaquin kit fox has a low potential to occur within the Study Area.

Short-nosed Kangaroo Rat

The short-nosed kangaroo rat is a subspecies of the San Joaquin kangaroo rat that is typically found in grasslands with scattered shrubs and desert-shrub associations on friable soils (Brown and Williams 2025). This species generally inhabits flat or gently sloping terrain with alkaline soils and low to moderate shrub cover (White 1992). The CNDDDB contains two recorded occurrences of this species within the vicinity of the Study Area, approximately 12.4 miles to the southwest and 13.2 miles to the south (Occurrence No. 66, 1992 and 41, 2002; respectively). The Study Area contains fiddleneck-phacelia grassland vegetation and burrows throughout, and therefore, the short-nosed kangaroo rat has a low potential to occur within the Study Area.

American Badger

The American badger is an uncommon resident of California, but it is found throughout most of the State (Grinnell et al. 1937). This species is most abundant in drier, open portions of most shrub, forest, and herbaceous habitats that contain friable soils (Ahlborn 1990). Badgers dig burrows in friable soils for cover and frequently reuse old burrows but may also dig new burrows (Messick and Hornocker 1981). The CNDDDB contains one recorded occurrence within the vicinity of the Study Area, approximately 6.7 miles to the east (Occurrence No. 255, 1900). Although there are no recent nearby occurrences, the Study Area contains sparsely vegetated grassland and contains friable soils and many burrows throughout. Therefore, the American badger has a low potential to occur within the Study Area.

San Joaquin Coachwhip

The San Joaquin coachwhip is endemic to California, ranging from the Grapevine in the Kern County portion of the San Joaquin Valley north into the inner south coast ranges and north to Alameda County (Stebbins and McGinnis 2018). This species occurs in open, dry, treeless areas with little to no cover, including valley grasslands and *Atriplex* spp. scrub, avoiding dense vegetation including oak chaparral woodlands. The San Joaquin coachwhip makes use of rodent and other mammal burrows, shaded vegetation, and surface objects for cover. The CNDDDB contains four recorded occurrences within the vicinity of the Study Area, approximately 5 to 8.3 miles to the southwest (Occurrence No. 66, 2000; No. 67, 2000; No. 73, 2006; and No. 74, 2006). The Study Area contains grassland vegetation and burrows throughout, providing adequate vegetation and refugia for this species. Therefore, the San Joaquin coachwhip has a low potential to occur within the Study Area.

Coast Horned Lizard

The coast horned lizard occupies a variety of habitats including scrublands, grasslands, coniferous woodlands, and broadleaf woodlands (Grismer 2002). This species is typically found in areas with friable soils, low shrub cover, and ant colonies used as a food source (Stebbins 2003). For cover, this species buries itself in loose soils or occupies burrows where it will also lay eggs. The CNDDDB contains three recorded occurrences within the vicinity of the Study Area, approximately 6.6 miles to 8 miles to the southwest (Occurrence No. 661, 2006; No. 662, 2006; and No. 726, 2008). The Study Area contains grassland vegetation and ant colonies are present, providing a potential source of food for this species. Therefore, the coast horned lizard has a low potential to occur within the Study Area.

Swainson's Hawk

Swainson's hawk is an uncommon breeding resident and migratory bird in the Central Valley and Mojave Desert. This hawk breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah in the Central Valley and forages in adjacent grasslands or suitable grain or alfalfa fields or livestock pastures (Polite 2006). This species can be found roosting in large trees, but in areas with no trees, will roost on the ground. This hawk is typically found near water in the Central Valley but can also be found in more arid regions/areas. The CNDDDB contains multiple recorded occurrences within the vicinity of the Study Area, approximately 5 miles to the northwest, 2.7 miles to 5.2 miles to the southwest, and 6.8 miles to the northeast (Occurrence No. 2529, 2008; No. 398, 1994; No. 2777, 2016; and 2528, 1935; respectively). The Study Area contains suitable foraging habitat and is located within the migratory pathway of this species, but does not contain suitable nesting habitat, therefore, if present, the Swainson's hawk would likely only temporarily occupy the Study Area. Therefore, the Swainson's hawk has a low potential to occur within the Study Area.

Burrowing Owl

The burrowing owl is a diminutive owl species that inhabits arid, open regions with sparse vegetation in the western part of North America. Its preferred environments encompass grasslands, rangelands, and agricultural areas, but it can also be found in fallow fields or vacant lots within urbanized areas (Polite 1999). These owls depend on pre-existing burrows made by other animals, particularly ground squirrels, which they adapt for their own shelter. Burrowing owls are known to rotate breeding sites, and although burrowing owls are not present on a given site during one nesting season, there is a likelihood that they may be present at that site in a later nesting season. The CNDDDB contains multiple recorded occurrences within the vicinity of the Study Area, approximately 4.6 miles to the northwest, 2.3 miles to 5.4 miles to the northeast, 2 miles to 3.7 miles to the southeast, and 5.4 miles to the southwest (Occurrence No. 842, 2006; No. 875, 2006; No. 78, 1987; No. 41, 1987; No. 701, 2004; No. 712, 2004; No. 702, 2004; No. 906, 2006; and No. 907, 2006; respectively). Many burrows are present throughout the Study Area, providing suitable nesting habitat for this species, and nearby recorded occurrences suggest that burrowing owls may have and/or may potentially make use of the Study Area for nesting in the future. Therefore, the burrowing owl has a moderate potential to occur within the Study Area.

White-tailed Kite

The white-tailed kite is found in coastal and valley lowlands in California where it is commonly found in agricultural areas (Polite 2005). This species preys primarily on small mammals but occasionally preys on other birds, insects, reptiles, and amphibians (Thomson 1975). This species typically nests on dense oak trees, willows, or other species of trees (Dixon et al. 1957). The CNDDDB contains one occurrence of this species within the vicinity of the Study Area approximately 2.8 miles to the southwest (Occurrence No. 106, 1992). The Study Area contains grassland vegetation and many burrowing mammals and reptiles providing suitable foraging habitat and prey for this species. However, the Study Area does not contain suitable nesting habitat, therefore, if present within the Study Area, the white-tailed kite would likely only be present temporarily. Therefore, the white-tailed kite has a low potential to occur within the Study Area.

Migratory Birds

The Study Area contains foraging habitat for a variety of native avian species common to the region. Additionally, vegetation present within the vicinity of the Study Area may provide suitable nesting habitat. No nests were observed at the time of the site visit. Nesting native bird species are protected by the MBTA. The nesting season generally extends from January through September in the region for the migratory birds of conservation concern listed in **Table 2**, above.

5.3.2 Sensitive Plant Communities, Critical Habitats, and Habitat Connectivity

Based on the database review of IPaC, CNDDDB, and CNPS, Terracon identified 5 special-status or protected plant species that required evaluation for potential to occur in the Study Area, the Bakersfield smallscale (*Atriplex tularensis*), California jewelflower (*Caulanthus californicus*), Kern mallow (*Eremalche parryi* ssp. *kernensis*), San Joaquin woollythreads (*Monolopia congdonii*), and Bakersfield cactus (*Opuntia basilaris* var. *treleasei*). The Bakersfield cactus was not observed and has been determined to be absent within the Study Area and is not further discussed. Additionally, no suitable habitat for the Bakersfield smallscale was observed within the Study Area and therefore is not discussed further.

The California jewelflower is typically found in flats, alluvial fans, and gentle slopes with sandy to gravelly soils. Plant communities containing this species include open grasslands and shrublands (CPC 2020). The CNDDDB contains one recorded occurrence approximately 2 miles to the northwest (Occurrence No. 41, 1900). The Study Area contains grassland vegetation that may provide suitable habitat, and therefore, the California jewelflower has a low potential to occur within the Study Area.

The Kern mallow is found in grassland and saltbush scrub habitats of the southern San Joaquin Valley and adjacent areas of California (USFWS 2025c). The population size of this species is heavily dependent on rainfall; a lack thereof at a location one year can be followed by hundreds of individuals the next year with above normal rainfall. The CNDDDB contains multiple recorded occurrences within the vicinity of the Study Area, approximately 6.2 miles to 9 miles to the northwest, 5 miles to the west, and 5 miles to 8.6 miles to the southwest (Occurrence No. 131, 2015; No. 74, 2008; No. 210, 2020; No. 138, 2015; and 211, 2020; respectively). The Study Area contains grassland vegetation that may provide suitable habitat, and therefore, the Kern mallow has a low potential to occur within the Study Area.

The San Joaquin woollythreads is found in non-native grassland, valley saltbush scrub, interior coast range saltbush scrub, and upper Sonoran subshrub scrub communities in neutral to sub-alkaline soils (USFWS 2025b). On the San Joaquin Valley floor, this species is typically found in sandy or sandy loam soils with grasses and forbs are the dominant vegetation. The CNDDDB contains multiple recorded occurrences within the vicinity of the Study Area, approximately 4.7 miles to 5.7 miles to the southwest, 5 miles to 8 miles to the northwest, and 6.2 miles to the northeast (Occurrence No. 65, 2013; No. 61, 2013; No. 24, 1954; No. 70, 1987; No. 26, 1937; No. 82, 1988; respectively). Although these occurrences are not recent (most recent occurrence recorded in 2013), the Study Area contains grassland vegetation and may provide suitable habitat. Therefore, the San Joaquin woollythreads has a low potential to occur within the Study Area.

Federally-designated critical habitat for the California condor was identified approximately 30 miles to the southeast, 22 miles to the northeast, and 40 miles to the south. Additionally, the nearest

Federally-designated critical habitat for Buena Vista Lake ornate shrew was identified approximately 22 miles to the northwest and approximately 10 miles to the east. The Study Area, however, does not contain any Federally-designated critical habitat. The Critical Habitat Map is displayed as **Exhibit 6**.

The Study Area is not located in a California Essential Habitat Connectivity (CEHC) area. The nearest CEHC area to the Study Area is approximately 4.5 miles to the southwest. The CEHC Map is displayed as **Exhibit 8**.

5.3.3 Jurisdictional Waters and Wetlands

Within the arid and semi-arid western United States limited precipitation restricts wetland and riparian resources to 1-5% of the land surface, a relatively low proportion compared to other systems globally; the proportion of wetland resources is approximately <4.6% in arid areas such as the San Joaquin Valley, decreased from the approximately 30% coverage that was estimated to be present in the 1850s (USACE 2008).

During the survey, a plant species list (provided in **Section 5.1**) was compiled to determine the wetland plant indicator status of the species present within the Study Area. The majority of the dominant species present throughout the Study Area have an indicator status of either *Upland* or *Facultative Upland*. However, the species *Crassula connata*, a *Facultative* species, was observed within features appearing to have the potential to temporarily hold water. These features were primarily vegetated dominantly with *Crassula connata* and other typical species observed within the Study Area as described above. Additionally, these features did not contain a relatively-permanent surface water connection to a navigable water, and therefore are not likely to be federally-jurisdictional. These features are displayed in **Exhibit 7**.

The NWI database did not identify any aquatic features within the Study Area. Additionally, the Study Area is mapped within an *Area of Minimal Flood Hazard*.

The Study Area does not appear to have a relatively-permanent surface water connection to a navigable water, and therefore, is not likely to contain Federally-jurisdictional waters or wetland features.

6. Regulatory Setting

Special-status habitats and vegetation types, associations, or sub-associations that support concentrations of special-status plant or animal species, are of relatively limited distribution, or are of particular value to wildlife.

Listed species are those that are formally listed as threatened or endangered by the federal government (USFWS) under the Federal Endangered Species Act (FESA) or as threatened, endangered, or rare by the State of California under the California Endangered Species Act or California Native Plant Protection Act. Some species are considered rare (but not formally listed) by resource agencies, organizations with biological interests/expertise (e.g., Audubon Society, CNPS, The Wildlife Society), and the scientific community.

The following is a brief summary of the regulatory context under which biological resources are managed at the federal, state, and local levels. A number of federal and state statuses provide a regulatory structure that guides the protection of biological resources. Agencies with the responsibility for protection of biological resources within the Study Area include:

- U.S. Army Corps of Engineers (wetlands and other waters of the United States)
- Central Valley Regional Water Quality Control Board (waters of the State)
- U.S. Fish and Wildlife Service (federally listed species and migratory birds)
- California Department of Fish and Wildlife (riparian areas, streambeds and lakes; state-listed species; Species of Special Concern; nesting birds)

U.S. Army Corps of Engineers

Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (USACE) has authority to regulate activities that could discharge fill of material into wetlands or other “waters of the United States.” Perennial and intermittent creeks are considered waters of the United States (WOTUS) if they are hydrologically connected to other jurisdictional waters (typically a navigable water). The USACE also implements the federal policy embodied in Executive Order 11990, which is intended to result in no net loss of wetland value or acres. In achieving the goals of the Clean Water Act, the USACE seeks to avoid adverse impacts and offset unavoidable adverse impacts on existing aquatic resources. Any fill of wetland that are hydrologically connected to jurisdictional waters would require a permit from the USACE prior to the start of work. Typically, when a project involves impacts to waters of the United States, the goal of no net loss of wetland acres or values is met through avoidance and minimization to the extent practicable, followed by compensatory mitigation involving creation or enhancement of similar habitats.

Regional Water Quality Board

The State Water Resources Control Board (SWRCB) and the local Regional Water Quality Control Board (RWQCB) have jurisdiction over “waters of the State,” pursuant to the Porter-Cologne Water Quality Control Act, which are defined as any surface water or groundwater, including saline waters, within the boundaries of the State. The SWRCB has issued general Waste Discharge Requirements (WDRs) regarding discharges to “isolated” waters of the State (Water Quality Order No. 2004-0004-DWQ, Statewide General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdiction). The RWQCB administers actions under this general order for isolated waters not subject to federal jurisdiction and is also responsible for the issuance of water quality certifications pursuant to Section 401 of the Clean Water Act for waters subject to federal jurisdiction.

United States Fish and Wildlife Service

The USFWS and National Marine Fisheries Service (NMFS) share responsibility for implementing the Federal Endangered Species Act (FESA) (16 United States Code [USC] § 153 et seq.). Generally, the USFWS implements the FESA for terrestrial and freshwater species, while the NMFS implements the FESA for marine and anadromous species. Projects that would result in “take” of any federally threatened or endangered species are required to obtain permits from the USFWS or NMFS through either Section 7 (interagency consultation with a federal nexus) or Section 10 (Habitat Conservation

Plan) of the FESA, depending on the involvement by the federal government in permitting and/or funding of the project. The permitting process is used to determine if a project would jeopardize the continued existence of a listed species and what measures would be required to avoid jeopardizing the species. "Take" under federal definition means to harass, harm (which includes habitat modification), pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Proposed or candidate species do not have the full protection of the FESA; however, the USFWS and NMFS advise project applicants that they could be elevated to listed status at any time. Additionally, the USFWS implements the Migratory Bird Treaty Act (16 USC Section 703-711) and the Bald and Golden Eagle Protection Act (16 USC Section 668).

California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW) derives its authority from the Fish and Game Code of California. The California Endangered Species Act (CESA) (Fish and Game Code Section 2050 et. seq.) prohibits take of state listed threatened or endangered species. Take under CESA is restricted to direct mortality of a listed species and the law does not prohibit indirect harm by way of habitat modification. Where incidental take would occur during construction or other lawful activities, CESA allows the CDFW to issue an Incidental Take Permit upon finding, among other requirements, that impacts to the species have been minimized and fully mitigated.

The CDFW also enforces Sections 3511, 4700, 5050 and 5515 of the Fish and Game Code, which prohibits take of species designated as Fully Protected. The CDFW is not allowed to issue an Incidental Take Permit for Fully Protected Species; therefore, impacts to these species must be avoided.

California Fish and Game Code sections 3503, 3503.5, and 3513 describe unlawful take, possession or destruction of native birds, nests and eggs. Section 3503.5 of the Code protects all birds-of-prey and their eggs and nests against take, possession, or destruction of nests or eggs. Section 3513 makes it a state-level offense to take any bird in violation of the federal Migratory Bird Treaty Act. CDFW administers these requirements.

Species of Special Concern (SSC) is a category used by the CDFW for those species which are considered to be indicators of regional habitat changes or are considered to be potential future protected species. SSC do not have any special legal status except that which may be afforded by the Fish and Game Code as noted above. The SSC category is intended by the CDFW for use as a management tool to include these species in special consideration when decisions are made concerning the development of natural lands. The CDFW also has authority to administer the Native Plant Protection Act (NPPA) (Fish and Game Code Section 1900 et. seq.). The NPPA requires the CDFW to establish criteria for determining if a species, subspecies, or variety of native plant is endangered or rare. Effective in 2015, CDFW promulgated regulations (14 CCR 786.9) under the authority of the NPPA, establishing that the CESA's permitting procedures would be applied to plants listed under the NPPA as "Rare." With this change, there is little practicable difference for the regulated public between plants listed under CESA and those listed under the NPPA.

Perennial, intermittent, and ephemeral streams and associated riparian vegetation, when present, also fall under the jurisdiction of CDFW. Section 1600 et. seq. of the Fish and Game Code (Lake and Streambed Alteration Agreements) gives the CDFW regulatory authority over activities that divert, obstruct, or alter the channel, bed or bank of any river, stream, or lake.

Metropolitan Bakersfield Habitat Conservation Plan

The proposed project would need to remain in compliance with the provisions of the FESA. The proposed project is located within the coverage area of the MBHCP, which addresses biological impacts within the Metropolitan Bakersfield General Plan area. The MBHCP's Implementation/Management Agreement indicates the applicability of the MBHCP pertaining primarily to "Urban Development." According to MBHCP Implementing Agreement Section 2.20 Urban Development:

The term "Urban Development" means a change in land use from Open Land to any other land use for which a permit such as a grading permit, grading plan approval, building permit or use permit is required from the City or County, including but not limited to, the construction of buildings on lots of record and projects undertaken directly by the city or County.

According to the MBHCP Implementing Agreement Section 2.21 Urban Development Permit:

The term "Urban Development Permit" means issuance of a building permit by the City or County for a project that would result in Urban Development. Where a project would ultimately result in Urban Development. The term "Urban Development Permit" also means issuance of a use permit or grading plan approval, or approval of activities undertaken by a public agency including but not limited to public works construction and related activities, if applicable by the City or County.

Development within the Metropolitan Bakersfield area requires a one-time MBHCP habitat mitigation fee of \$2,145.00 per gross acre of land development. The habitat mitigation fee is submitted to the County of Kern (County) Building Inspection Division along with any other fees that are associated with the building or grading permit. The habitat mitigation fee is due at the time the grading or building permit is issued.

Species covered under the MBHCP/Federal ITP include Bakersfield cactus, California jewelflower, San Joaquin woollythreads, Hoover's eriastrum, Kern mallow, blunt-nosed leopard lizard, giant kangaroo rat, Tipton kangaroo rat, and San Joaquin kit fox.

Based on the interpretation of the MBHCP Implementing Agreement text (i.e., Section 2.21 Urban Development Permit), the proposed project would appear to be covered under the MBHCP for FESA compliance. However, the Incidental Take Permit (ITP) issued to the MBHCP expired on June 1, 2023. Therefore, the species originally covered under the MBHCP are no longer covered and impacts to the special status species discussed in this assessment would require coordination with CDFW and/or USFWS and issuance of an ITP if take is anticipated for said species.

7. Limitations, Assumptions, and Use Reliance

This Biological Resources Assessment has been performed in accordance with professionally accepted biological investigation practices conducted at this time in the geographic area. The biological investigation is limited by the scope of work performed. Reconnaissance biological surveys for certain taxa may have been conducted as part of this assessment but were not performed during any particular blooming period, nesting period, or particular part of the season or day when positive identification would be expected if present, and therefore cannot be considered definitive. The biological surveys are limited also by the environmental conditions present at the time of the surveys.

In general, biological surveys do not guarantee that the organisms are not present and will not be discovered in the future within the Study Area. No other guarantees or warranties, expressed or implied, are provided. The findings and opinions conveyed in this report are based on findings derived from site surveys, jurisdictional area, review of CNDDB, and specified historical and literature sources. Although Terracon believes the data sources are reasonably reliable, Terracon cannot and does not guarantee the authenticity or reliability of the data sources it has used. Additionally, pursuant to our contract, aquatic resources were not delineated as part of this assessment.

8. Impacts and Recommendations

Implementation of the proposed Project in the natural grassland habitats of the Study Area has the potential to affect various special-status species. The following sections provide an analysis of potential Project effects to these resources and recommendations for additional analysis that may be necessary. The final determination of effects of significance and required mitigation measures for the Project will be made by the City of Bakersfield in coordination with USFWS and CDFW.

8.1 Impacts to Plants and Wildlife

Criterion: Impacts would be significant if the Project 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 Wildlife or U.S. Fish and Wildlife Service

As described above, the Study Area is primarily composed of one natural vegetation community. This vegetation community has been identified as the fiddleneck—phacelia herbaceous community. During the site reconnaissance surveys, this vegetation community was observed to provide suitable habitat for special-status species and migratory birds. Direct and indirect impacts to these species from Project activities would be considered *potentially significant, absent mitigation*. However, through implementation of additional recommended surveys and avoidance and minimization or mitigation measures approved by CDFW and/or USFWS, impacts would be reduced to a ***less than significant*** level.

8.1.1 Special-Status Wildlife Species

No special-status species were observed within the Study Area during the field surveys. However, portions of the Study Area contain suitable habitat for monarch butterfly, Crotch's bumble bee, Nelson's antelope squirrel, giant kangaroo rat, San Joaquin kit fox, short-nosed kangaroo rat, American badger, San Joaquin coachwhip, coast horned lizard, Swainson's hawk, burrowing owl, and white-tailed kite.

Species-specific surveys for burrowing owl should be conducted in accordance with applicable protocols (the California Burrowing Owl Consortium's *Burrowing Owl Survey Protocol Mitigation Guidelines*, DFG's *Staff Report on Burrowing Owl Mitigation* [2012] and [1993]). Burrowing owl

surveys should be conducted throughout the Study Area. Non-protocol level surveys may be performed with prior agency approval. Survey timing and methodology are included as **Appendix F**.

Regarding the species with a low potential to occur within the Study Area; monarch butterfly, Crotch's bumble bee, Nelson's antelope squirrel, giant kangaroo rat, San Joaquin kit fox, short-nosed kangaroo rat, American badger, San Joaquin coachwhip, coast horned lizard, Swainson's hawk, and white-tailed kite, take avoidance surveys should be conducted prior to project construction activities to avoid impacts to individuals of these species, if present within the Study Area.

No USFWS-designated critical habitat for Federally listed wildlife species is mapped within the Study Area. Therefore, no critical habitat would be affected by the proposed Project; however, some of the special-status species outlined above, if present on-site during Project activities, could be impacted directly or indirectly.

Burrowing Owl Impacts

The majority of the Study Area contains relatively undisturbed natural grassland community with areas of low vegetation cover and burrows throughout, therefore providing suitable burrowing and foraging habitat for burrowing owl. Protocol-level surveys are recommended for burrowing owls in accordance with the California Department of Fish and Game's protocol mentioned above. Results of these surveys would determine the potential for impacts and inform the applicability of additional mitigation measures to reduce impacts, as impacts to individuals of this species would be considered significant.

Migratory Bird Impacts

The Study Area contains suitable nesting and foraging habitat for avian species protected under the BGEPA and MBTA. If Project activities are to occur within the nesting bird season (generally January 1 through September), nesting bird surveys are recommended for migratory birds prior to Project activities. In the event of an observation of an active nest, an appropriate buffer should be established, and a biological monitor may be required by CDFW and/or USFWS.

8.1.2 Avian Impacts

Common bird species were observed within the Study Area and vicinity. No nests were observed during the site reconnaissance, however, suitable nesting habitat for migratory birds was observed within the Study Area. These species during their nesting period are protected by the MBTA and may nest on site. The Study Area also contains suitable foraging habitat for avian species protected under the BGEPA and MBTA. Project activities have the potential to directly or indirectly impact nesting birds, therefore nesting bird surveys and protective nest buffers for active on-site or nearby nests are recommended prior to Project activities. Pre-construction nesting bird survey recommendations are included in Section 8.7.

8.2 Impacts to Existing On-Site Vegetation Communities and Land Covers

Criterion: Impacts would be significant if the Project would have substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans,

policies, regulations, or by the California Department of Fish and Wildlife or U.S Fish and Wildlife Service.

As described above, vegetation within the Study Area is primarily characterized by one main vegetation community: fiddleneck—phacelia fields. This community is rank 5 (demonstrably secure) and is not considered a sensitive natural community. Native habitats, including riparian habitats and other communities designated by the CDFW as sensitive do not occur within the Study Area. Considering this information, the Project's impacts on existing vegetation would be **less than significant**.

8.3 Impacts to Jurisdictional Waters and Streambeds

Criterion: Impacts would be significant if the Project would have a substantial adverse effect on federally protected wetland 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.

The majority of the dominant species present throughout the Study Area have an indicator status of either *Facultative Upland* or *Upland*. However, *Crassula connata*, a *Facultative* species, was observed within features appearing to have the potential to pond. These features were primarily vegetated dominantly with *Crassula connata* and other typical species observed within the Study Area as described above. Additionally, these features did not contain a relatively-permanent surface water connection to a navigable water, and therefore are not likely to be federally-jurisdictional.

Further, the NWI database did not identify any aquatic features within the Study Area.

The Study Area does not appear to have a relatively-permanent surface water connection to a navigable water, and therefore, is not likely to contain Federally-jurisdictional waters or wetland features and impacts to jurisdictional waters and streambeds would be **less than significant**.

8.4 Impacts to Wildlife Movement

Criterion: Impacts would be significant if the Project would 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.

The Study Area is not located in a California Essential Habitat Connectivity (CEHC) area. The nearest CEHC area to the Study Area is approximately 4.5 miles to the southwest. Therefore, potential impacts of the proposed Project on wildlife movement would be **less than significant** and no mitigation is recommended.

8.5 Consistency With Local Policies and Ordinances

Criterion: Impacts would be significant if the Project would conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

The proposed Project has been designed with consideration for the policies and ordinances of the City of Bakersfield relating to biological resources, and the proposed Project is consistent with these policies and ordinances. Therefore, the Project impacts on local policies and ordinances will be ***less than significant***.

8.6 Consistency With Habitat Conservation Plans

Criterion: Impacts would be significant if the Project would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

The Study Area is located within the Metropolitan Bakersfield Habitat Conservation Plan. The City of Bakersfield is a participant and local jurisdiction of the Plan and incorporates policies and ordinances pertinent to conservation of biological resources through the City of Bakersfield General Plan. The proposed Project has been designed with consideration for the policies and ordinances of the City of Bakersfield, and the proposed Project is consistent with these policies and ordinances; specifically, protection of threatened and endangered species through conducting biological surveys prior to Project activities. As discussed above, the Project will implement special-status species take avoidance surveys prior to Project initiation. Therefore, the Project impacts on habitat conservation plans will be ***less than significant***.

8.7 Avoidance and Minimization Measures

Avoidance and minimization measures described below may offset potentially significant impacts on biological resources. The lead agency, City of Bakersfield, in coordination with USFWS and CDFW will ultimately determine the level of minimization measures required for the Project. Below are some recommendations for consideration in consultation with the appropriate agencies.

Biological Awareness Training

Prior to Project activities within the Study Area, a qualified biologist shall initiate a Worker Environmental Awareness Program (WEAP) designed to educate on-site workers about critical environmental concerns associated with the Project. This training shall be mandatory for on-site personnel. It shall be administered on the first day of work, before any Project activities commence. This training shall place particular emphasis on educating participants about the protected species that may potentially be present within the Study Area, including but not limited to burrowing owl, Nelson's antelope squirrel, San Joaquin kit fox, other potentially-occurring special-status species, and nesting birds.

The program shall include the following elements:

- A presentation, either developed by a qualified biologist or in consultation with one, which shall address the sensitive biological resources that may be present within the Study Area. It shall also elucidate the rationale behind safeguarding these resources and the consequences of non-compliance.

- Brochures or booklets that contain written descriptions, photographs of protected species, and a comprehensive list of site rules related to the protection of biological resources. These materials shall be distributed to all participants in the WEAP.
- Contact information for the project's biological monitor, along with clear instructions for participants to contact the monitor with inquiries concerning the WEAP presentation or booklets.
- An acknowledgement form that each worker is required to sign, confirming their receipt of WEAP training and their commitment to adhere to the rules aimed at preserving biological resources.

The Church shall ensure that all on-site personnel receive the WEAP training throughout the entire Project. A training log shall be maintained within the Study Area and signed by on-site personnel immediately after WEAP training to document compliance with this requirement.

Biological Monitor

Prior to Project activities, a qualified biologist shall be designated as the biological monitor in the event of an observation of a special-status species within the Project area during the pre-construction and take avoidance surveys. This monitor shall be required to be on-site at all times during activities involving vegetation clearance or ground disturbance. Their primary responsibility shall be to ensure that any potential impacts to biological resources are either avoided or minimized to the greatest extent possible.

Once the Project approaches a phase where it is determined by the biological monitor that biological resources are no longer present, as determined by their expertise, they may request a reduction or discontinuation of biological monitoring in that specific area.

The biological monitor shall be vested with the authority to halt specific Project activities if the monitor suspects any violations of avoidance or minimization measures or if there are concerns about compliance with local, state, or federal laws. This authority is essential for the protection of biological resources and adherence to regulatory requirements.

Pre-construction Burrowing Owl Surveys

Prior to Project activities, surveys for burrowing owl shall be conducted according to *Staff Report on Burrowing Owl Mitigation* (State of California Department of Fish and Game 2012) by a qualified biologist to determine the presence or absence of burrowing owl within the Project site. If any signs suggesting the presence of burrowing owl are detected, vegetation clearing and ground disturbing activities shall be prohibited in the area where the signs are found. Instead, the USFWS and CDFW shall be contacted to formulate a strategy for avoidance.

The burrowing owl surveys shall be conducted as follows:

Number of visits and timing. If within breeding season (1 February to 31 August), conduct 4 survey visits: 1) at least one (1) site visit between 15 February and 15 April, and 2) a minimum of three (3) survey visits, at least three weeks apart between 15 April and 15 July, with at least one (1) visit after 15 June.

If conducting surveys outside of the breeding season survey window above, follow the same survey methods below, but conduct at least four (4) visits, spread evenly, throughout the non-breeding season.

Survey method. Conduct surveys in the entire Project site by walking straight line transects spaced 7m to 20m apart, adjusting for vegetation height and density. At the start of each transect and, at least, every 100m, scan the entire visible Project area for burrowing owls using binoculars. During walking surveys, record all potential burrows used by burrowing owls as determined by the presence of one or more burrowing owls, pellets, prey remains, whitewash, or decoration. Some burrowing owls may be detected by their calls, so observers should also listen for burrowing owls while conducting the survey

Time of day. Surveys should be conducted between morning civil twilight and 10:00 AM and two hours before sunset until evening civil twilight to provide the highest detection probabilities.

Reporting. Prepare a survey report with the survey methods used and results including the information described in the *Staff Report on Burrowing Owl Mitigation* (State of California Department of Fish and Game 2012).

The results of these surveys, including graphical representations pinpointing the locations of any burrowing owl sign, along with documentation detailing any avoidance measures implemented, must be submitted to CDFW within 14 days following the conclusion of the pre-construction surveys or construction monitoring. This submission serves as evidence of compliance with pertinent state regulations pertaining to the protection of the burrowing owl.

The biologist(s) conducting the pre-construction and take-avoidance surveys shall record a comprehensive list of species observed on-site during the surveys and report observations of special status species and other species previously covered under the Metropolitan Bakersfield Habitat Conservation Plan to the local jurisdiction (City of Bakersfield) and the appropriate agency (CDFW and/or USFWS). As the Metropolitan Bakersfield Habitat Conservation Plan Incidental Take Permit for covered species is expired, in the event of an observation, City of Bakersfield, as the local jurisdiction, CDFW as State jurisdiction, and/or USFWS as federal jurisdiction shall be notified to provide further guidance to the Project proponent regarding necessary actions to avoid, minimize, or mitigate for take of protected species.

Pre-Construction Surveys for Nesting Birds

To avoid impacts to nesting birds associated with the proposed Project, initial construction related to ground disturbing activities shall, to the extent feasible, occur outside of the avian nesting season (December through September). If construction and construction noise occur within this avian nesting season, all suitable habitats within 100 feet of the Project Site shall be surveyed for the presence of nests by a qualified biologist no more than five (5) days before commencement of any vegetation removal or other ground disturbing activities. If it is determined that the Project Site or surrounding area is occupied by nesting birds, protective measures shall be implemented as described below.

If pre-construction nesting bird surveys result in the location of active nests, no grading, vegetation removal, or heavy equipment activity shall take place within 300 feet of non-raptor nests and 500 feet

of raptor nests, or as determined by a qualified biologist. Protective measures (e.g., sampling) shall be required to ensure compliance with the California Fish and Game Code requirements. The qualified biologist shall serve as a construction monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts occur. A report of the findings, prepared by a qualified biologist, shall be submitted to the City of Bakersfield prior to construction-related activities that have the potential to disturb any active nests during the nesting season.

Additionally, the pre-construction nesting bird surveys shall provide avoidance of impacts to Swainson's hawk and white-tailed kite. These species are not likely to nest within the Project Site, however, they may use portions of the Project Site temporarily to forage. In the event of a nest observation, during pre-construction nesting bird surveys, the minimization measures described above shall be followed.

The biologist(s) conducting the pre-construction and take-avoidance surveys shall record a comprehensive list of species observed on-site during the surveys and report observations of special status species and other species previously covered under the Metropolitan Bakersfield Habitat Conservation Plan to the local jurisdiction (City of Bakersfield) and the appropriate agency (CDFW and/or USFWS). As the Metropolitan Bakersfield Habitat Conservation Plan Incidental Take Permit for covered species is expired, in the event of an observation, City of Bakersfield, as the local jurisdiction, CDFW as State jurisdiction, and/or USFWS as federal jurisdiction shall be notified to provide further guidance to the Project proponent regarding necessary actions to avoid, minimize, or mitigate for take of protected species.

Take-avoidance Surveys for Special-status Species

Special-status wildlife species with a low potential to occur within the Project Site include monarch butterfly, Crotch's bumble bee, Nelson's antelope squirrel, giant kangaroo rat, San Joaquin kit fox, short-nosed kangaroo rat, American badger, San Joaquin coachwhip, coast horned lizard, Swainson's hawk, and white-tailed kite. Special-status plant species with a low potential to occur within the Project Site include the California jewelflower, Kern mallow, and San Joaquin woollythreads.

The likelihood of Project-related impacts to monarch butterfly, Crotch's bumble bee, Swainson's hawk, and white-tailed kite would not likely be considered significant under CEQA because these species have been determined to only temporarily occupy the Study Area to forage.

Within fourteen (14) days prior to Project activities, take-avoidance surveys shall be conducted to confirm the presence or absence of the special-status species listed above. These surveys may be conducted in conjunction with the pre-construction nesting bird surveys. The biologist(s) conducting the pre-construction and take-avoidance surveys shall record a comprehensive list of plant and wildlife species observed on-site during the surveys and report observations of special status species and other species previously covered under the Metropolitan Bakersfield Habitat Conservation Plan to the local jurisdiction (City of Bakersfield) and the appropriate agency (CDFW and/or USFWS). As the Metropolitan Bakersfield Habitat Conservation Plan Incidental Take Permit for covered species is expired, in the event of an observation, City of Bakersfield, as the local jurisdiction, CDFW as State jurisdiction, and/or USFWS as federal jurisdiction shall be notified to provide further guidance to the Project proponent regarding necessary actions to avoid, minimize, or mitigate for take of protected species.

9. Cumulative Impacts Analysis

This section evaluates the potential cumulative impacts on biological resources resulting from the construction and operation of the Bakersfield Temple (Project). While the Project's direct impacts on biological resources are anticipated to be less than significant with incorporation of mitigation measures described in this Assessment, incremental contributions from past, present, and reasonably foreseeable future projects may collectively affect these resources. As mandated by the CEQA Guidelines Section §15130, this analysis assesses cumulative impacts for relevant environmental issue areas.

9.1 Overview of Cumulative Impacts

CEQA defines cumulative impacts as the combined effects of multiple projects that, when evaluated together, result in considerable environmental consequences. These impacts may arise from individually minor, but collectively significant actions over time (CEQA Guidelines §15355). A proper cumulative analysis must:

1. Identify past, present, and probably future projects contributing to cumulative impacts, including those beyond agency jurisdiction.
2. Summarize expected biological resource impacts for these projects.
3. Analyze cumulative impacts and explore feasible mitigation measures.

9.2 Geographical and Temporal Scope

This cumulative impacts analysis focuses on a 5-mile radius around the Project site and follows standard methodologies for evaluating past, present, and reasonably foreseeable future projects that may contribute to impacts on biological resources. The analysis accounts for existing church projects and their potential impacts on biological resources, recognizing that these facilities often serve as community anchors within distinct land use patterns. This analysis additionally incorporates a range of other related project types, including residential, commercial, industrial, and institutional.

As shown in the Cumulative Impacts Land Use Map, included as **Exhibit 11**, three main land uses were estimated: open space, agriculture, and urban (residential, commercial, and industrial). Urban development within a 5-mile buffer comprises approximately 66.9% of land use, agriculture at 21.5%, and open space at 11.6% (primarily associated with the Kern River). Due to the Project site's developed surroundings, the potential for large-scale habitat loss or fragmentation is lower than in more natural or rural areas.

Additionally, the Cumulative Projects Map, included as **Exhibit 12**, identifies existing places of worship within the 5-mile radius of the Project Site. Twelve existing religious facilities were identified to be present within urban land use areas surrounding the Project Site. Further, other past, present, and reasonably foreseeable future projects within this area may include additional religious projects, residential development, commercial and industrial development, and development of open space land use such as parks.

9.3 Evaluation of Cumulative Biological Resource Impacts

Within the City of Bakersfield, projects proposing development of developed or undeveloped land are subject to regulations regarding impacts to biological resources at multiple jurisdictional levels (local, state, and federal). Compliance with the federal Endangered Species Act (ESA), state California Endangered Species Act (CESA), and local policies as contained in the City of Bakersfield General Plan ensures that potential impacts to biological resources such as special-status species, habitats, and ecological functions are evaluated. These regulatory frameworks typically require project proponents to implement avoidance and minimization measures to minimize or avoid impacts to biological resources. Where impacts cannot be avoided completely, mitigation measures may be required to achieve no net loss of special-status species or their habitats.

When assessing cumulative impacts, incremental impacts of the proposed Project, in combination with other past present, and reasonably foreseeable future projects, could effect biological resources. The enforcement of federal, state, and local regulations helps ensure that individual projects collectively contribute to avoidance and minimization of impacts to biological resources rather than significant cumulative impacts.

Cumulative Impacts to Special-status Plants and Wildlife

The Project site is located in an area primarily surrounded by urban development. However, the site is undeveloped and contains a recognized natural California vegetation community; fiddleneck—phacelia fields. This vegetation community and the undeveloped nature of the Project site has been assessed as providing potential habitat for special-status species and migratory birds.

As mentioned above, projects within the City of Bakersfield are subject to local, federal, and state regulations regarding special-status plant and wildlife species. Projects involving the development of otherwise undeveloped land are subject to these regulations and are required to incorporate design features, avoidance and minimization measures, and/or mitigation measures to minimize and avoid impacts to special-status species.

The proposed Project and similar projects within the cumulative impact study area are generally developed in urban areas where denser populations are present. These areas are primarily already well-developed and lack large, high-quality expanses of suitable habitat or populations of special-status species. Although impacts to large populations of these species are not likely to occur as a result of these projects, impacts to individuals of these species may occur if present within a given project site. Therefore, these projects generally are required to incorporate the above-mentioned measures to minimize and avoid such impacts. The proposed Project, specifically, incorporates measures to provide the following avoidance and/or minimization of impacts to special-status species:

1. **Biological Awareness Training:** A qualified biologist will educate on-site workers about the biological resources concerns associated with the Project. The purpose of this training is to educate on-site personnel on species and other biological resources that may occur within the Project site so that if observed, they can notify the qualified biologist for guidance as to how to avoid, minimize or mitigate for the take of these resources.
2. **Biological Monitor:** In the event of an observation of a special-status species during pre-construction and take avoidance surveys, a qualified biologist will be present during Project

construction activities to ensure that impacts on biological resources, are avoided or minimized.

3. **Pre-construction Take Avoidance Surveys:** A qualified biologist will conduct pre-construction surveys for the presence or absence of special-status species and migratory birds with the potential to occur within the Project site. In the event of an observation of a special-status species on site or evidence thereof, the qualified biologist will notify the appropriate agency (City of Bakersfield, CDFW, USFWS, etc.) of the resources observed so that they agency may provide further guidance to the Project proponent regarding necessary measures to avoid, minimize or mitigate for the take of the biological resource.

Cumulative Impacts to On-site Vegetation Communities and Land Covers

The proposed Project site consists of one recognized California vegetation community; fiddleneck—phacelia fields. This vegetation community is a rank 5 community in California (demonstrably secure), meaning that it is not sensitive or rare.

This is a natural vegetation community, and removal of the vegetation on site would result in a less than significant impact on vegetation communities. However, as stated above, the proposed Project and similar projects within the cumulative impact study area are generally developed in urban areas where the majority of the land is already developed. Therefore, the development of the proposed Project would not substantially contribute to cumulative impacts on vegetation communities.

Cumulative Impacts to Jurisdictional Waters and Streambeds

The proposed Project site has been assessed as not containing federally jurisdictional waters or streambeds. Therefore, the development of the proposed Project would have no contribution to cumulative impacts to jurisdictional waters and streambeds.

Cumulative Impacts to Wildlife Movement

The proposed Project site is located in an area surrounded by urban development and is not located in a California Essential Habitat Connectivity (CEHC) area. Further, the proposed Project site is directly surrounded by urban development. The nearest natural area is the Kern River and urban development is present between this feature and the proposed Project site. The proposed Project would have a less than significant impact on wildlife movement and therefore would not significantly contribute to cumulative impacts on this resource.

Cumulative Impacts on Local Policies and Ordinances

The proposed Project is located in Bakersfield, Kern County and is subject to the regulations and ordinances in the City of Bakersfield General Plan. Projects within this jurisdiction are subject to these regulations and would be reviewed by the City of Bakersfield for consistency with the General Plan prior to being issued development permits to carry out the project. The proposed Project has been designed with consideration for the City of Bakersfield General Plan, and therefore, would not significantly contribute to cumulative impacts on local policies and ordinances.

Cumulative Impacts on Habitat Conservation Plans

The proposed Project is located within the Metropolitan Bakersfield Habitat Conservation Plan (MBHCP). Up until June 1, 2023, the MBHCP held an Incidental Take Permit (ITP) that covered the take of Bakersfield cactus, California jewelflower, San Joaquin woollythreads, Hoover's eriastrum, Kern mallow, blunt-nosed leopard lizard, giant kangaroo rat, Tipton kangaroo rat, and San Joaquin kit fox. Past projects within the MBHCP plan area were required to pay mitigation fees for every acre of habitat lost to development of said project. This allowed the proponents of the MBHCP to allocate these funds towards the goals of benefitting the species covered under the MBHCP.

However, the ITP issued to the MBHCP expired on June 1, 2023, so incidental take for species covered under this plan is no longer permitted. Because species originally covered by the MBHCP are no longer covered under an ITP, the proposed Project will instead follow the regulations of the state and federal agencies (CDFW, USFWS, USACE, etc.) regarding impacts to biological resources. The proposed Project and future related projects within the cumulative impact study area and greater City of Bakersfield would be required to establish avoidance and minimization measures and/or mitigation measures to be approved by the agencies to avoid and minimize impacts to biological resources. The measures outlined within this assessment will be implemented by the proposed Project, and therefore, would not significantly contribute to cumulative impacts on biological resources previously protected and covered by the MBHCP.

9.4 Conclusion

Due to the Study Area being relatively disturbed and surrounded by urban development and the implementation of avoidance and minimization measures and mitigation measures, its contribution to cumulative biological impacts is expected to be less than significant under CEQA. Less than significant cumulative impact to biological resources is anticipated.

10. Closing

Terracon appreciates the opportunity to submit this report to The Church of Jesus Christ of Latter-day Saints. If you have questions or concerns regarding this assessment, please contact Cailan Patel by phone at 925-285-9740, or via email, at cailan.patel@terracon.com.

11. References

- Ahlborn, G. 1990. American Badger *Taxidea taxus*. California Wildlife Habitat Relationships System. California Department of Fish and Wildlife.
- Ahlborn, G. 1999. Giant Kangaroo Rat *Dipodomys ingens*. California Wildlife Habitat Relationships System. California Department of Fish and Wildlife.
- Ahlborn, G. 2005. Nelson's Antelope Ground Squirrel *Ammospermophilus nelsoni*. California Wildlife Habitat Relationships System. California Department of Fish and Wildlife.
- Brown, N.L and Williams, D.F. 2025. Short-nosed Kangaroo Rat *Dipodomys nitratoides brevinasus*. California State University Stanislaus Endangered Species Recovery Program.
- State of California Department of Fish and Game. 2012. Staff Report on Burrowing Owl Mitigation. State of California, Natural Resources Agency, Department of Fish and Game, March 7, 2012.
- California Department of Water Resources (CDWR). 2025. Groundwater Basin Boundary Assessment Tool. <https://gis.water.ca.gov/app/bbat>
- California Native Plant Society (CNPS). 2025. A Manual of California Vegetation Online. <https://vegetation.cnps.org/>
- Center for Plant Conservation (CPC). 2020. California Jewelflower (*Caulanthus californicus*). Center for Plant Conservation.
- City of Bakersfield. 2025. Land Use and Planning Viewer. <https://bakersfielddatalibrary-cob.opendata.arcgis.com/apps/9fbb25e825e3425a84e7dea631e42f7b/explore>
- Environmental Protection Agency. 2025. How's My Waterway? <https://mywaterway.epa.gov/community/3919%20phelan%20road,%20phelan,%20california/eating-fish>
- Granholt, S. 2008. Tricolored Blackbird *Agelaius tricolor*. California Wildlife Habitat Relationships System. California Department of Fish and Wildlife.
- Grinnell, J., and J. Dixon. 1919. Natural history of the ground squirrels of California. Calif. State Comm. Horticulture Bull. 7:597-708.
- Grinnell, J.; Dixon, J.S.; and Linsdale, J.M. 1937. Fur-bearing mammals of California. 2 Vols. Univ. California Press, Berkeley. 777pp.
- Grismer, L. L. 2002. Amphibians and reptiles of Baja California including its Pacific islands and islands in the Sea of Cortes. University of California Press, Berkeley. xiii + 399 pp.
- Harris, J. H., and D. M. Streans. 1991. Population density, census methods, habitat relationships, and home range of the San Joaquin antelope ground squirrel, 1988-89. California Dept. Fish and Game, Nongame Bird and Mammal Section Rep., 91-02:1-37.

Hatfield, Richard G. and Jepsen, Sarina. 2021. A conservation conundrum: protecting bumble bees under the California Endangered Species Act. California Fish and Wildlife Special CESA Issue:98-106 2021.

Kern County. 2025. Kern County Assessor Recorder.

<https://assessorapps.kerncounty.com/PropertySearch/Parcels/PropertyDetails.aspx?srctext=08401042&srctype=apn>

Laughrin, L. 1970. San Joaquin kit fox: its distribution and abundance. Calif. Dept. Fish and Game, Sacramento. Wildl. Manage. Br. Admin. Rep. No. 70-2. 20pp.

Messick, J.P. and Hornocker, M.G. 1981. Ecology of the badger in southwestern Idaho. Wildl. Monogr. No.76. 53pp.

Morey, S. 2000. Western Spadefoot. California Wildlife Habitat Relationships System. California Department of Fish and Wildlife.

Morrell, S. 1972. Life history of the San Joaquin kit fox. Calif. Fish and Game. 58:162-174. O'Farrell, T. P., and L. Gilbertson. 1979. Ecological life history of the desert kit fox in the Mojave Desert of southern California. USDI Bur. Land Manage., Riverside. Draft Final Rep. 95pp.

Murillo, E. 2022. The Drought Continues to Impact the Residents of Kern County. Kern Sol News. July 18, 2022.

Polite, C. 1999. Burrowing Owl *Athene cunicularia*. California Wildlife Habitat Relationships System. California Department of Fish and Wildlife.

Polite, C. 2006. White-tailed Kite *Elanus leucurus*. California Wildlife Habitat Relationships System. California Department of Fish and Wildlife.

Polite, C. 2006. Swainson's Hawk *Buteo swainsoni*. California Wildlife Habitat Relationships System. California Department of Fish and Wildlife.

Reppert, S.M. and Roode, J.C. 2018. Demystifying Monarch Butterfly Migration. Curr. Biol. 2018 Sep 10; 28(17):R1009-R1022. Doi: 10.1016/j.cub.2018.02.067.

Stebbins, R. C. 1951. Amphibians of western North America. Univ. California Press, Berkeley. 538 pp.

Stebbins, R. C. 1972. California amphibians and reptiles. Univ. California Press, Berkeley. 152 pp.

Stebbins, R. C. 2003. A field guide to western reptiles and amphibians. Third edition. Houghton Mifflin Company, Boston.

Stebbins, R.C. and McGinnis, S.M. 2018 *Peterson Field Guide to Western Reptiles & Amphibians*. 4th Edition. Houghton Mifflin Harcourt Publishing Company, 2018.

United States Geographic Survey (USGS). 2025. National Hydrography Dataset.

United States Army Corps of Engineers (USACE). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. Engineer Research and Development Center, ERDC/EL TR-06-16

United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). 2025. Web Soil Survey Application.

United States Fish and Wildlife Service (USFWS). 2025. Giant Kangaroo Rat.
<https://www.fws.gov/species/giant-kangaroo-rat-dipodomys-ingens>

United States Fish and Wildlife Service (USFWS). 2025a. San Joaquin Kit Fox.
<https://www.fws.gov/species/san-joaquin-kit-fox-vulpes-macrotis-mutica>

United States Fish and Wildlife Service (USFWS). 2025b. San Joaquin Woollythreads.
<https://www.fws.gov/species/san-joaquin-woolly-threads-monolopia-congdonii>

Vollmar, J.E. 2002. Chapter 2: Landscape Setting. In J.E. Vollmar (editor). Wildlife and Rare Plant Ecology of Eastern Merced County's Vernal Pool Grasslands. Vollmar Consulting, Berkeley, California.

Western Regional Climate Center. 2025. Climate Summaries. <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca0442>

White, C.A.V. 1992. Population Status of the Short-Nosed Kangaroo Rat on the Carrizo Plain Natural Area, California. 1992 Transactions of the Western Section of the Wildlife Society 28:30-33.

Appendix A – Exhibits

Exhibit 1 – Site Diagram

Exhibit 2 – Topographic Map

Exhibit 3 – National Wetlands Inventory Map

Exhibit 4 – NRCS Soil Survey Map

Exhibit 5 – FEMA Floodplain Map

Exhibit 6 – CNDDDB Critical Habitat Map

Exhibit 7 – Biological Resource Map

Exhibit 8 – California Essential Habitat Connectivity Map

Exhibit 9a & 9b – CNDDDB Occurrence Map

Exhibit 10 – Photo Reference Map

Exhibit 11 – Cumulative Impact Analysis Land Use Map

Exhibit 12 – Cumulative Projects Map



Legend

Study Area (12.1 ac)



0 300 600 1,200
Feet
1:7,200 1 inch equals 600 feet

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Project No.:
LA257112
Date:
Apr 2025
Drawn By:
CNP
Reviewed By:
JHW



50 Goldenland Ct, Suite 100 Sacramento, CA 95834
PH. (916) 928-4690 terracon.com

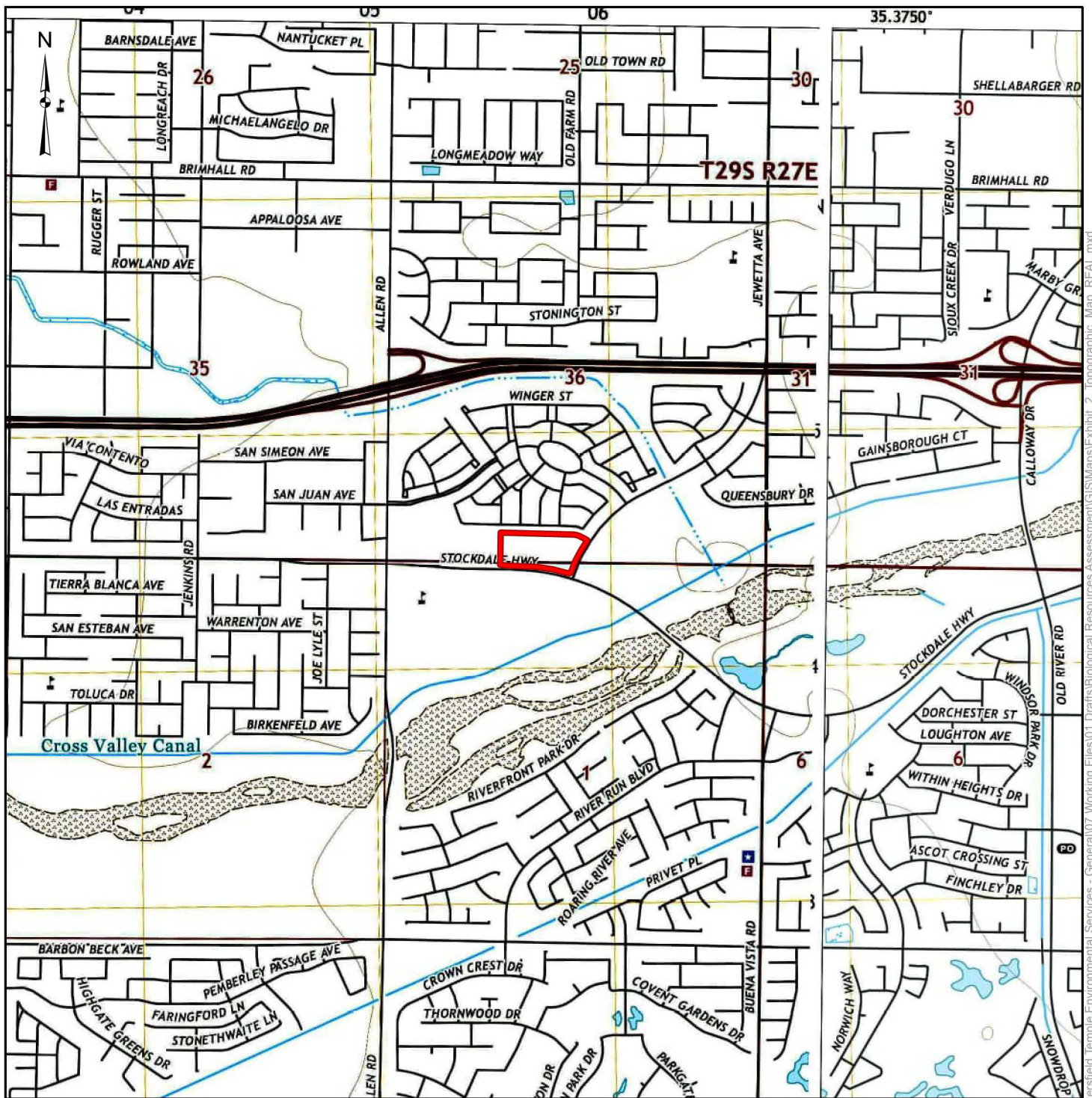
SITE DIAGRAM

Biological Resources Assessment Report

Bakersfield Temple
Bakersfield, CA

Exhibit

1



Legend

Study Area (12.1 ac)

0 1,000 2,000 4,000
Feet
1:24,000 1 inch equals 2,000 feet

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap
Stevens and Gosford, CA, 7.5-minute Series Quadrangle Map
(2021)

Project No.:
LA257112
Date:
Apr 2025
Drawn By:
CNP
Reviewed By:
JHW



50 Goldenland Ct, Suite 100 Sacramento, CA 95834
PH. (916) 928-4690 terracon.com

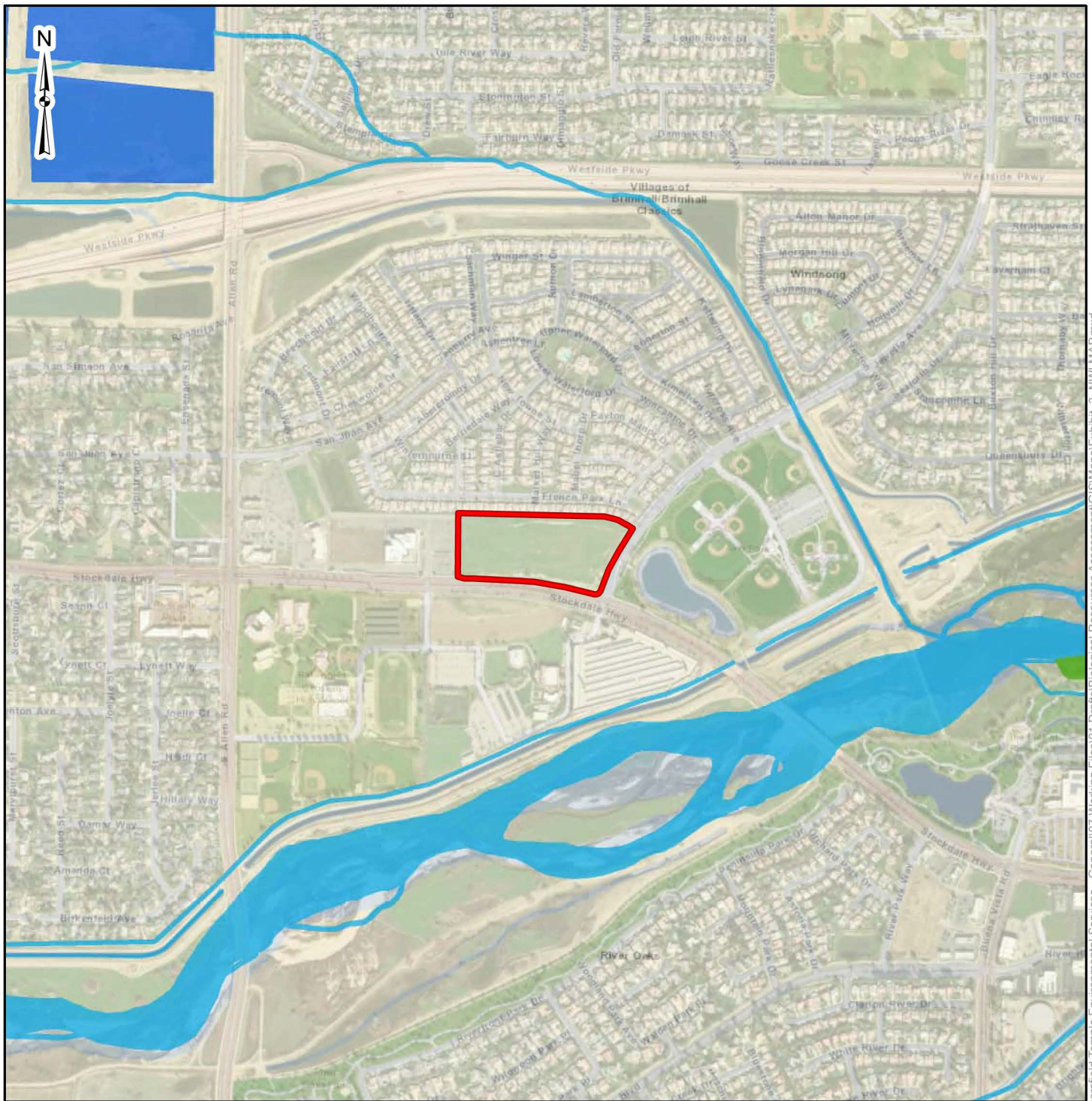
TOPOGRAPHIC MAP

Biological Resources Assessment Report

Bakersfield Temple
Bakersfield, CA

Exhibit

2



Legend

Study Area (12.1 ac)

Wetland Unit (NWI 2025)

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

0 1,000 2,000
Feet
1:12,000 1 inch equals 1,000 feet

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap
National Wetlands Inventory (USFWS, 2025)

Project No.:
LA257112
Date:
Apr 2025
Drawn By:
CNP
Reviewed By:
JHW



50 Goldenland Ct, Suite 100 Sacramento, CA 95834
PH. (916) 928-4690 terracon.com

NATIONAL WETLANDS INVENTORY MAP

Biological Resources Assessment Report

Bakersfield Temple
Bakersfield, CA

Exhibit

3



Legend

■ Study Area (12.1 ac)

Soil Unit (NRCS 2025)

■ Wasco sandy loam (243)

0 100 200 400 Feet
1:2,400 1 inch equals 200 feet

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap
NRCS Soil Survey (USDA, 2024)

Project No.:
LA257112
Date:
Apr 2025
Drawn By:
CNP
Reviewed By:
JHW



50 Goldenland Ct, Suite 100 Sacramento, CA 95834
PH. (916) 928-4690 terracon.com

NRCS SOIL SURVEY MAP

Biological Resources Assessment Report

Bakersfield Temple
Bakersfield, CA

Exhibit

4



Legend

- Study Area (12.1 ac)
- Area with reduced flood risk due to levee
- 100-year floodplain
- Regulatory floodway
- 500-year floodplain
- Area of minimal flood hazard

0 250 500 1,000
Feet
1:6,000 1 inch equals 500 feet

DATA SOURCES:
ESRI WMS - World Aerial Imagery, World Topographic Map
FEMA FIRM - (FEMA, 2025)

Project No.:
LA257112
Date:
Apr 2025
Drawn By:
CNP
Reviewed By:
JHW



50 Goldenland Ct, Suite 100 Sacramento, CA 95834
PH. (916) 928-4690 terracon.com

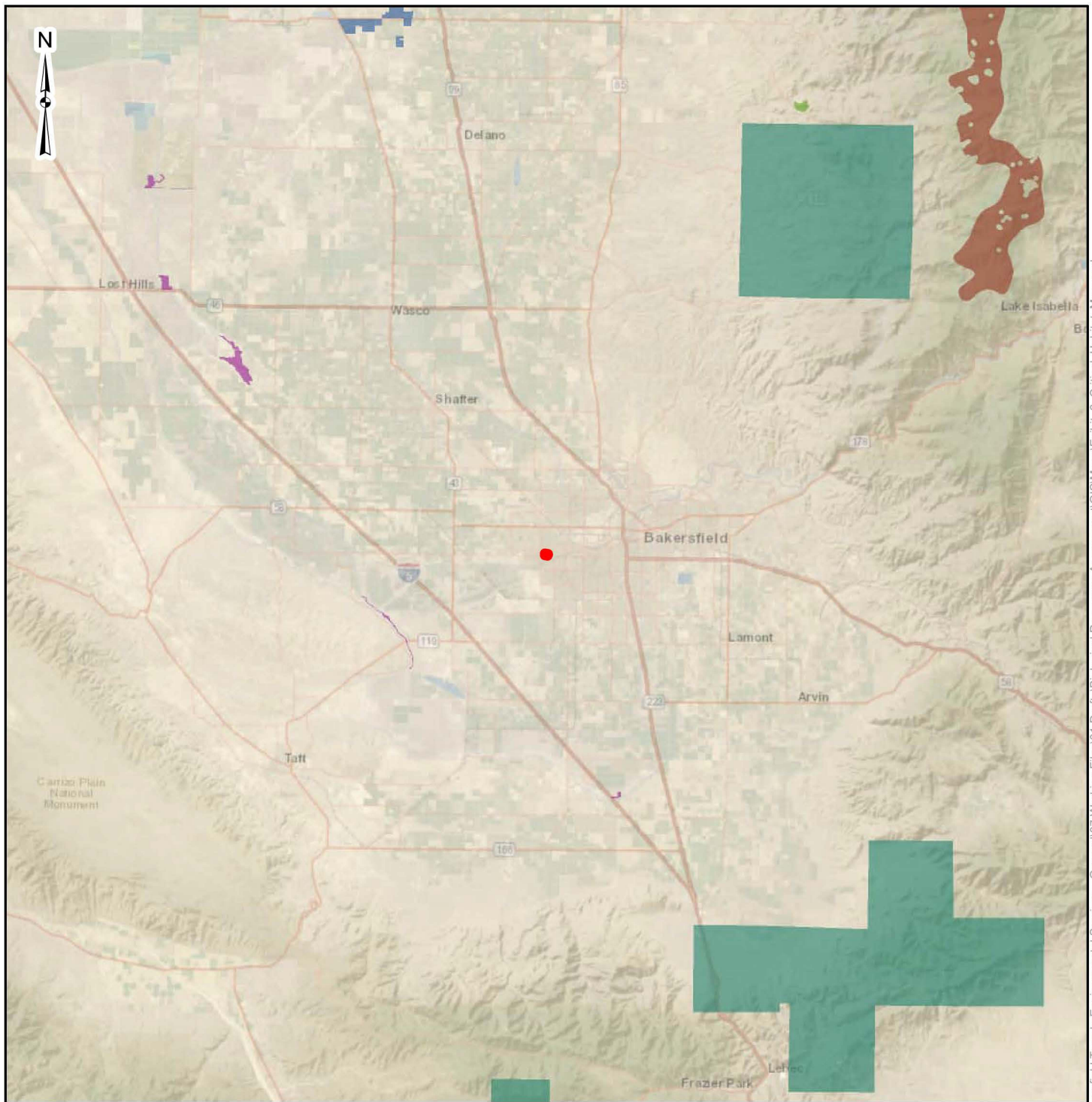
FEMA FLOODPLAIN MAP

Biological Resources Assessment Report

Bakersfield Temple
Bakersfield, CA

Exhibit

5



Legend

■ Study Area (12.1 ac)

Critical Habitat (USFWS 2025)

- Buena Vista Lake ornate shrew
- California condor
- Fisher
- Keck's Checker-mallow
- Vernal pool fairy shrimp

0 5 10 20
Miles
1:633,600 1 inch equals 10 miles

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap
U.S. Fish and Wildlife Service (USFWS 2025)

Project No.:
LA257112
Date:
May 2025
Drawn By:
CNP
Reviewed By:
JHW



50 Goldenland Ct, Suite 100 Sacramento, CA 95834
PH. (916) 928-4690 terracon.com

USFWS CRITICAL HABITAT MAP

Biological Resources Assessment Report

Bakersfield Temple
Bakersfield, CA

Exhibit

6



Legend

- Study Area (12.1 ac)
- Fiddleneck-Phacelia fields
- Crassula connata-vegetated features
- Small burrow complex
- herbaceous vegetation community

0 200 400
Feet
1:2,400 1 inch equals 200 feet

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Project No.:
LA257112
Date:
Apr 2025
Drawn By:
CNP
Reviewed By:
JHW



50 Goldenland Ct, Suite 100 Sacramento, CA 95834
PH. (916) 928-4690 terracon.com

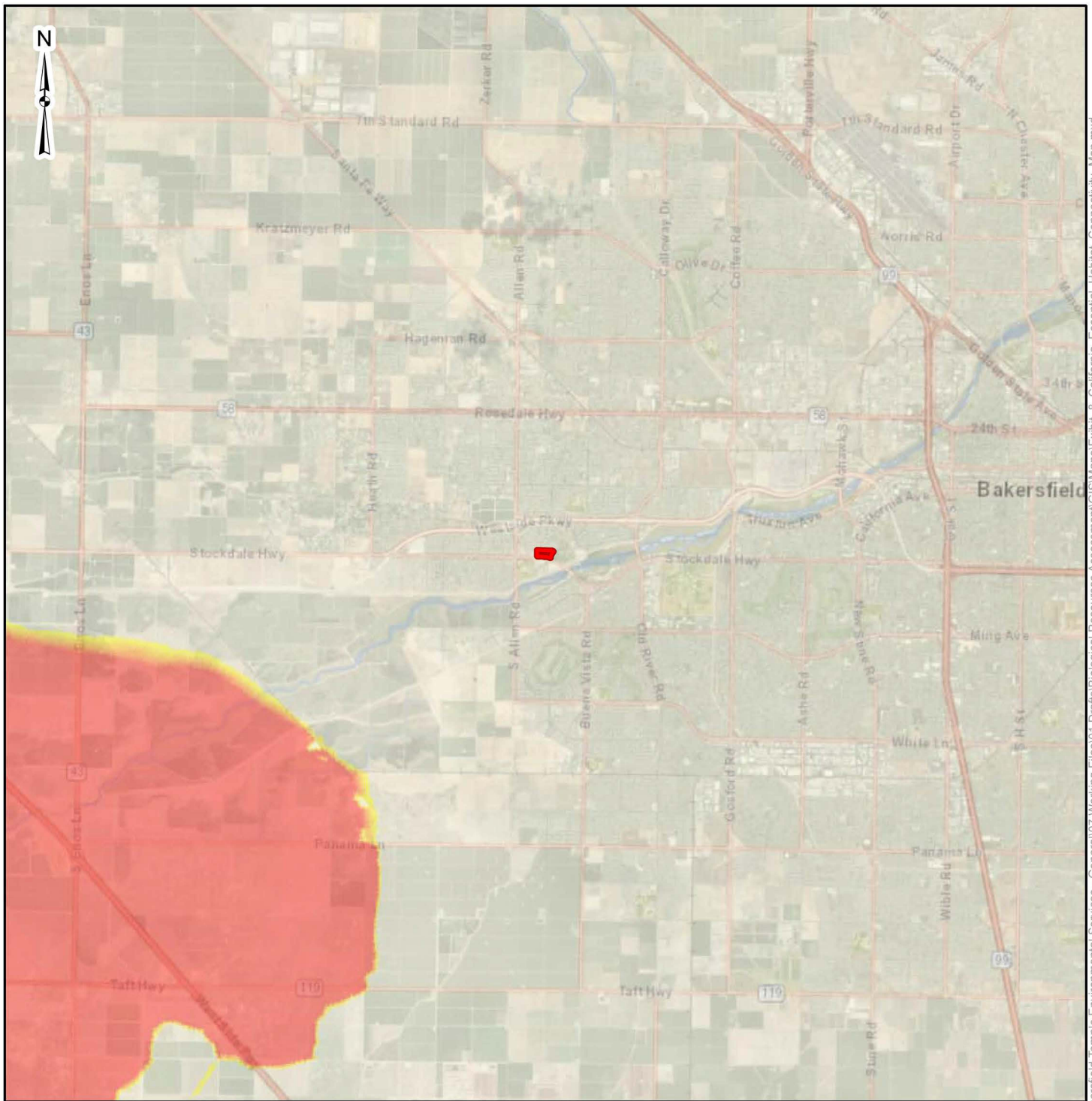
BIOLOGICAL RESOURCES MAP

Biological Resources Assessment Report

Bakersfield Temple
Bakersfield, CA

Exhibit

7



Legend

Study Area (12.1 ac)

Habitat Connectivity (CDFW 2025)

Low Connectivity
 High Connectivity

0 1 2 4
Miles

1:126,720 1 inch equals 2 miles

DATA SOURCES:
 ESRI WMS - World Aerial Imagery, OpenStreetMap
 California Department of Fish and Wildlife 2025

Project No.:
 LA257112
 Date:
 Apr 2025
 Drawn By:
 CNP
 Reviewed By:
 JHW



50 Goldenland Ct, Suite 100 Sacramento, CA 95834
 PH. (916) 928-4690 terracon.com

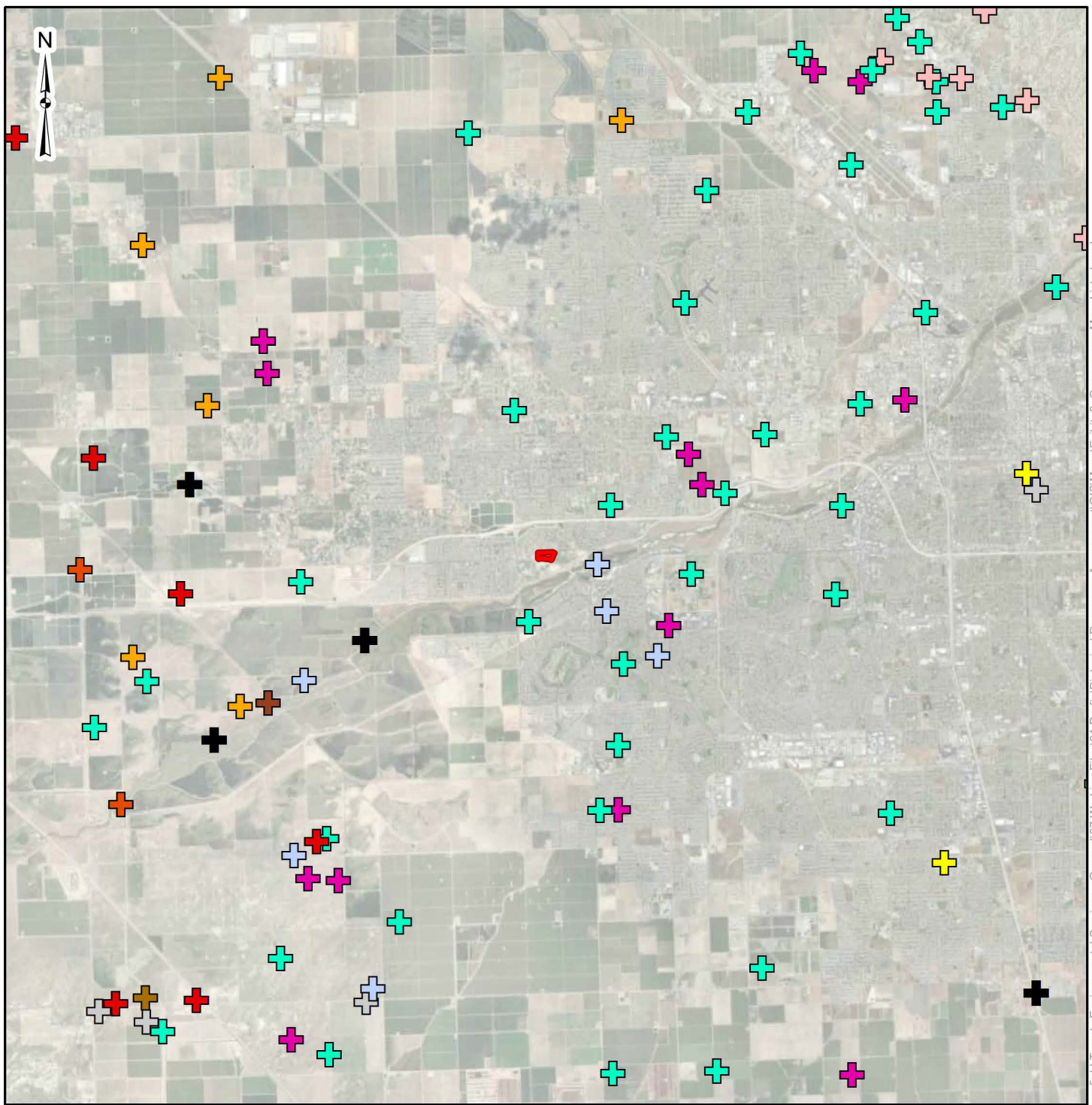
CALIFORNIA ESSENTIAL HABITAT CONNECTIVITY MAP

Biological Resources Assessment Report

Bakersfield Temple
 Bakersfield, CA

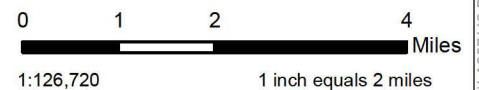
Exhibit

8



Legend

- | | | |
|--------------------------------|----------------------------|----------------------------|
| Study Area (12.1 ac) | Crotch's bumble bee | Swainson's hawk |
| Occurrences (CDFW 2025) | Kern mallow | Tipton kangaroo rat |
| Bakersfield cactus | Nelson's antelope squirrel | Blunt-nosed leopard lizard |
| Buena Vista Lake ornate shrew | San Joaquin kit fox | Burrowing owl |
| California jewelflower | San Joaquin woollythreads | Tricolored blackbird |



DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap
CNDDDB (CDFW 2025)

Project No.:
LA257112
Date:
Apr 2025
Drawn By:
CNP
Reviewed By:
JHW



50 Goldenland Ct, Suite 100 Sacramento, CA 95834
PH. (916) 928-4690 terracon.com

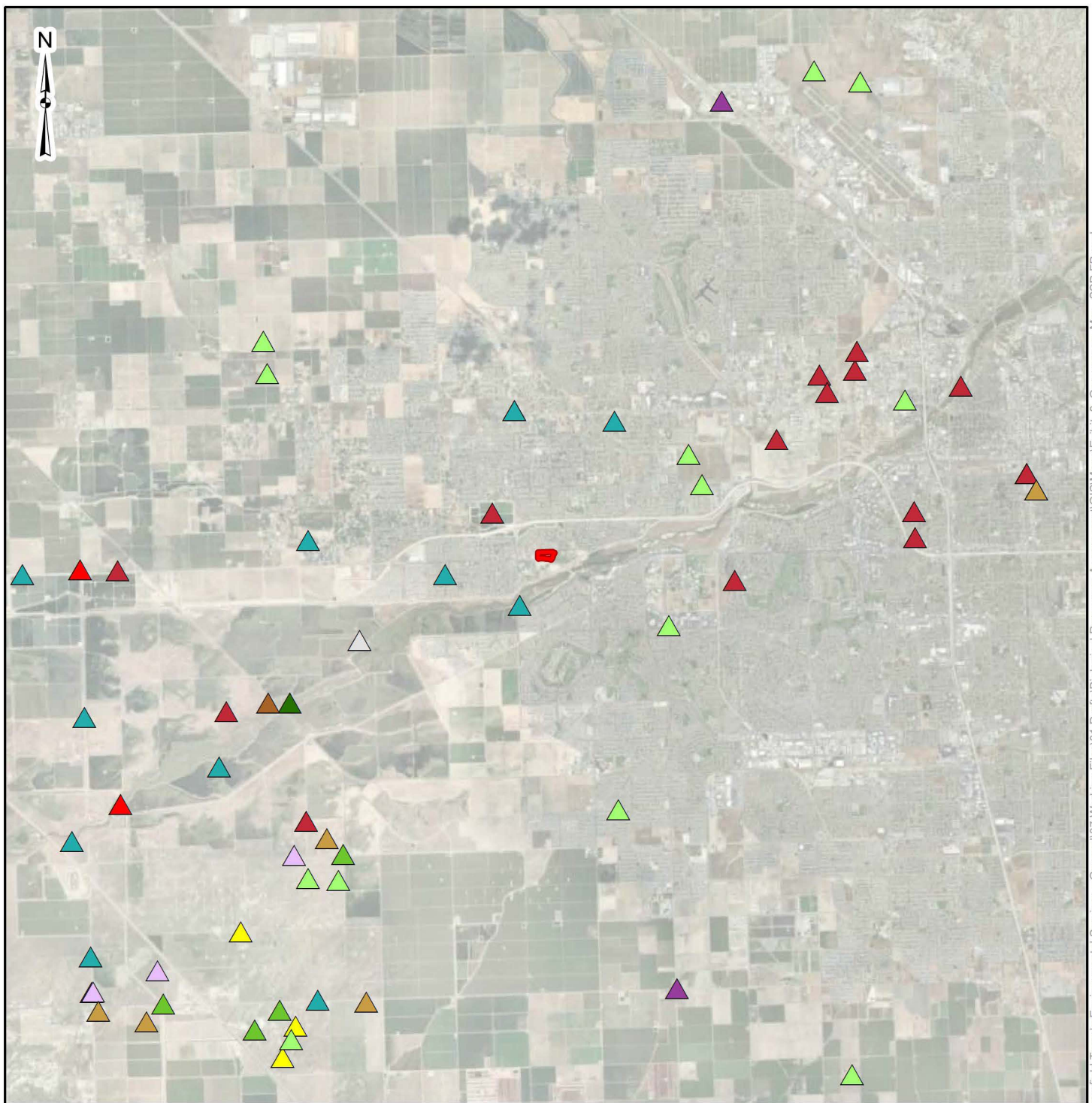
CNDDDB SPECIAL-STATUS OCCURRENCE MAP

Biological Resources Assessment Report

Bakersfield Temple
Bakersfield, CA

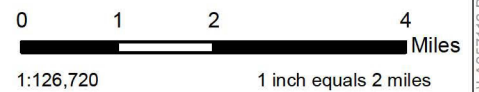
Exhibit

9a



Legend

- Study Area (12.1 ac)
- ▲ American badger
- ▲ Bakersfield legless lizard
- ▲ Buena Vista Lake ornate shrew
- ▲ California glossy snake
- ▲ San Joaquin coachwhip
- ▲ Tulare grasshopper mouse
- ▲ blunt-nosed leopard lizard
- ▲ burrowing owl
- ▲ coast horned lizard
- ▲ northwestern pond turtle
- ▲ tricolored blackbird
- ▲ western mastiff bat
- ▲ western spadefoot
- ▲ white-tailed kite



DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap
CNDDDB (CDFW 2025)

Project No.:
LA257112
Date:
Apr 2025
Drawn By:
CNP
Reviewed By:
JHW



50 Goldenland Ct, Suite 100 Sacramento, CA 95834
PH. (916) 928-4690 terracon.com

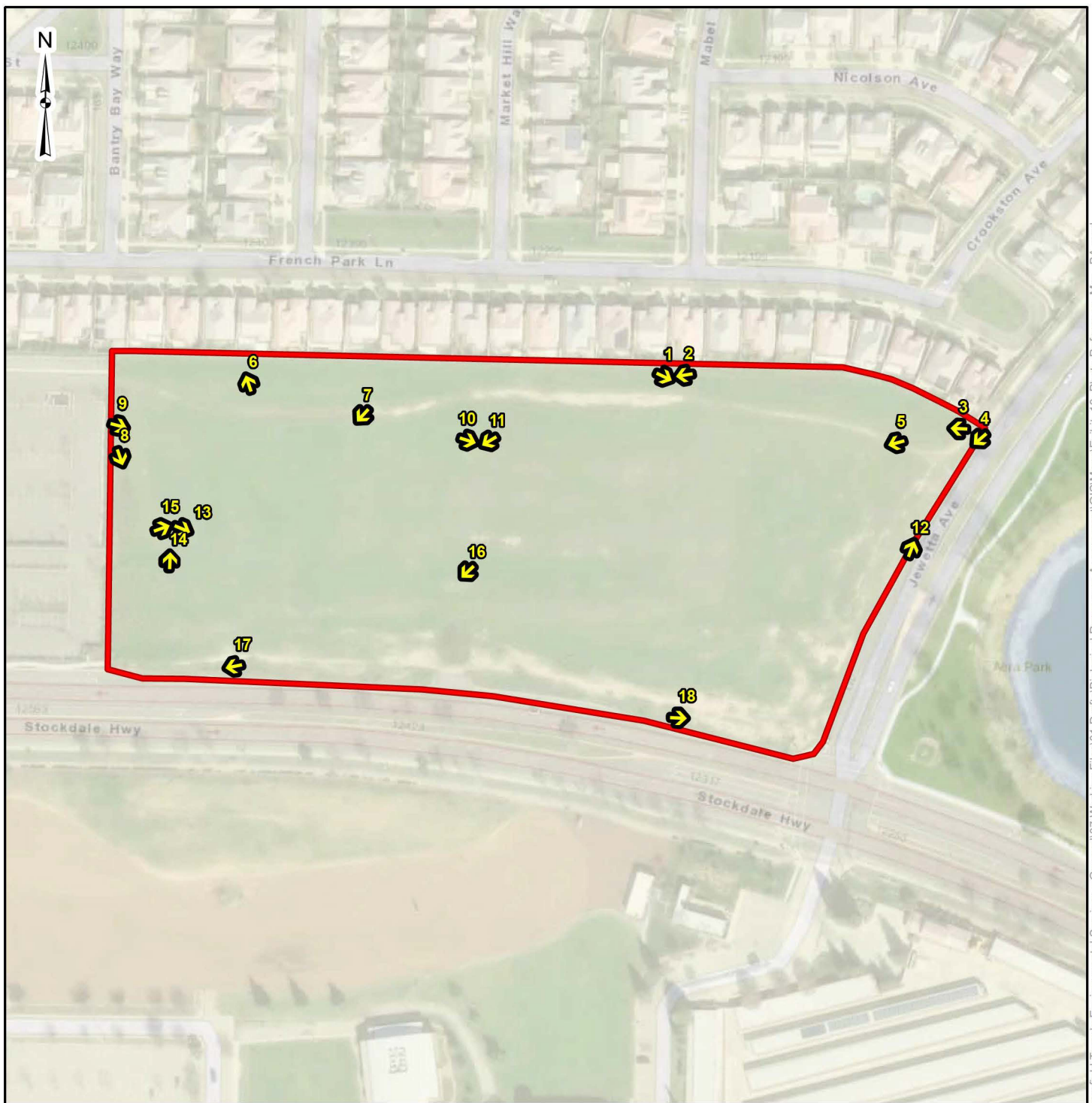
CNDDDB SSP-FP OCCURRENCE MAP

Biological Resources Assessment Report

Bakersfield Temple
Bakersfield, CA

Exhibit

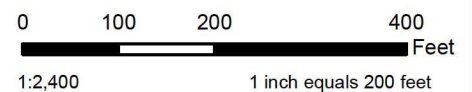
9b



Legend

Study Area (12.1 ac)

↗ Photo Location



DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

Project No.:
LA257112
Date:
Apr 2025
Drawn By:
CNP
Reviewed By:
JHW



50 Goldenland Ct, Suite 100 Sacramento, CA 95834
PH. (916) 928-4690 terracon.com

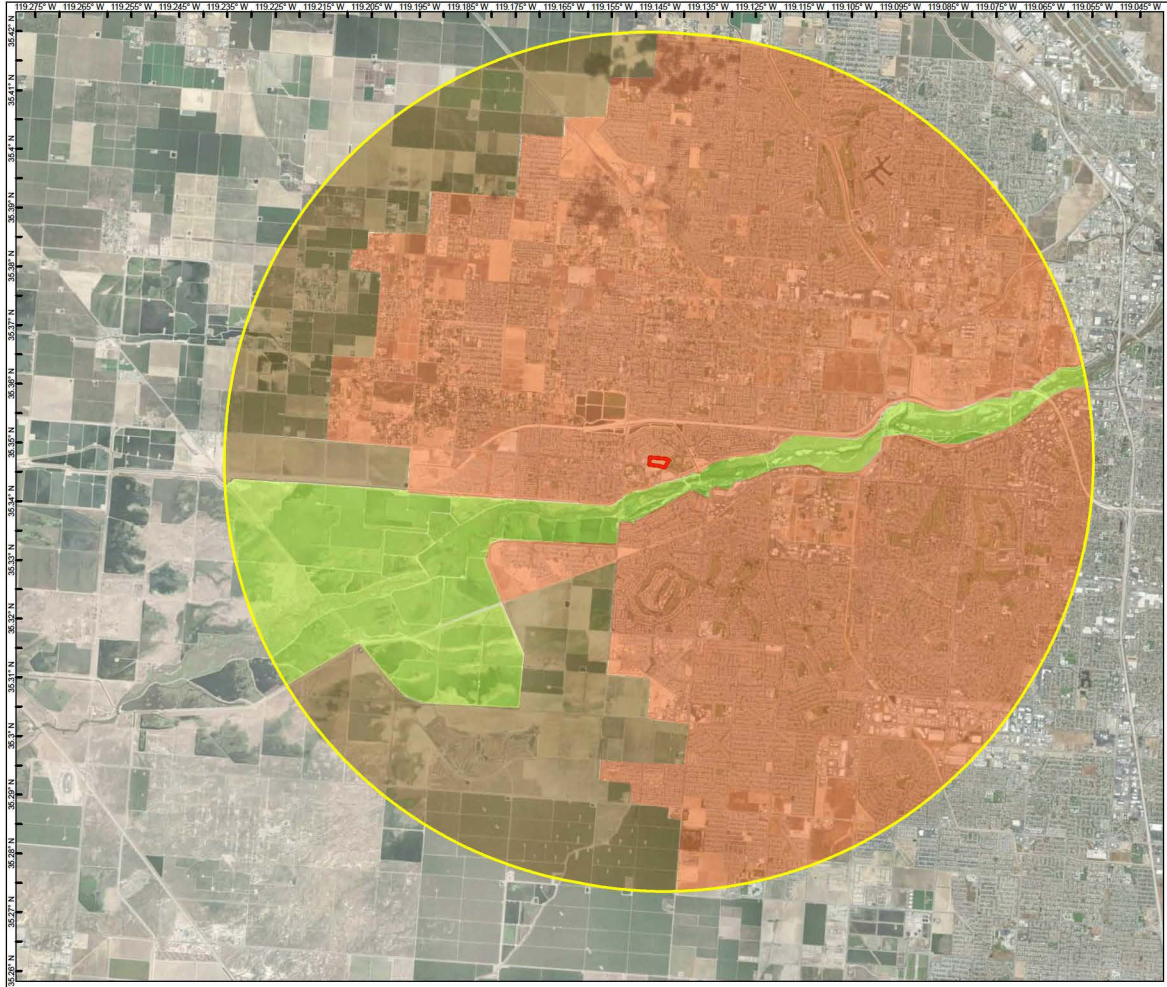
PHOTO REFERENCE MAP

Biological Resources Assessment Report

Bakersfield Temple
Bakersfield, CA

Exhibit

10



Legend

- Study Area (12.1 ac)
- 5-mile buffer

Land Use

- Agriculture
- Open Space
- Urban (Residential, Commercial, Industrial)

CUMULATIVE IMPACTS ANALYSIS LAND USE MAP

Biological Resources Assessment Report

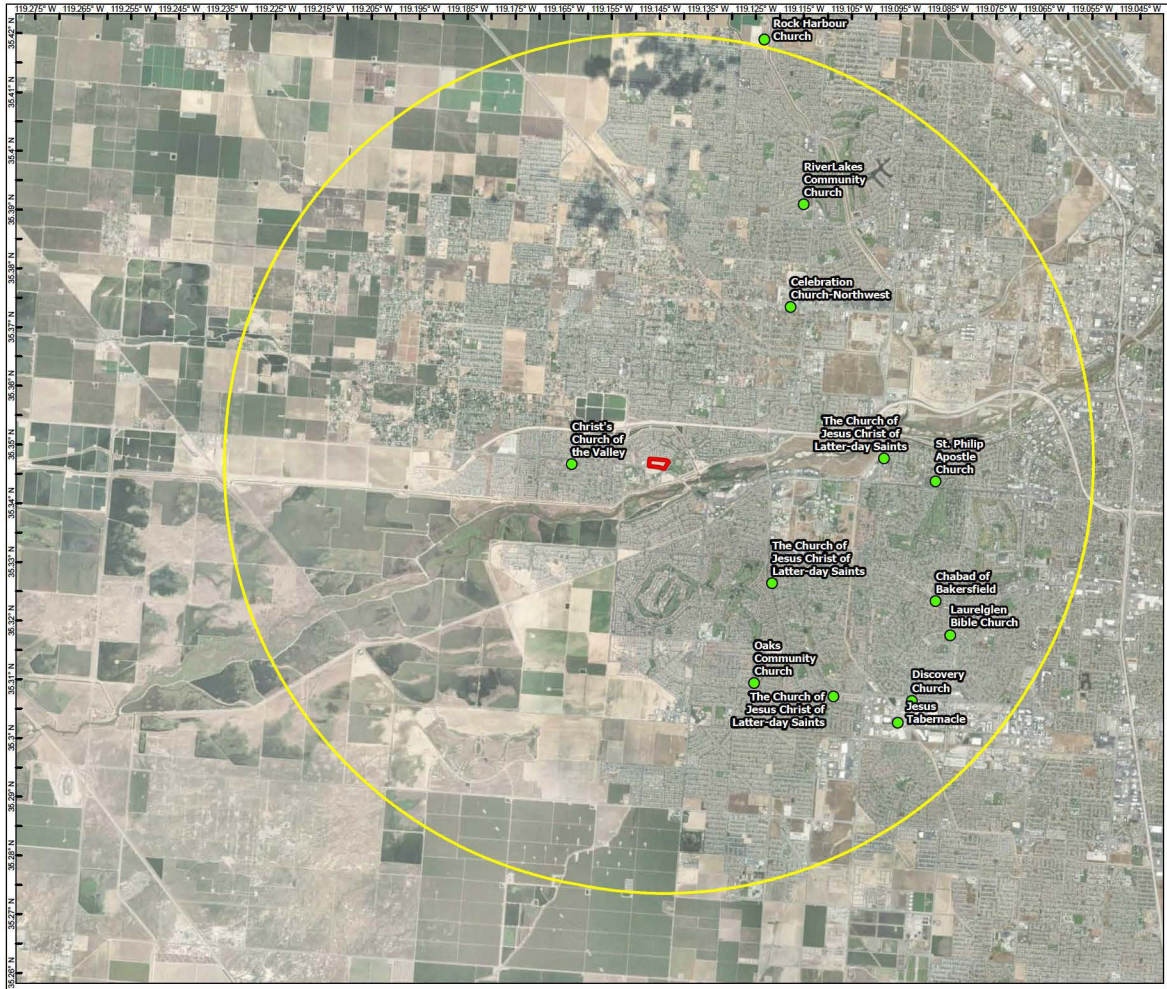
Bakersfield Temple
Bakersfield, CA

Exhibit

11

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

0 6,000 12,000 18,000 Feet
1 inch equals 6,000 feet
1:72,000



Legend

- Study Area (12.1 ac)
- 5-mile buffer
- Cumulative project

CUMULATIVE PROJECTS MAP

Biological Resources Assessment Report

Bakersfield Temple
Bakersfield, CA

Exhibit

12

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap

0 6,000 12,000 18,000 Feet

1 inch equals 6,000 feet
1:72,000

Appendix B – Photo Log

Photo 1	
Date: April 10, 2025	
Description: View of typical fiddleneck—phacelia fields vegetation community along northern boundary of Study Area	
Photo 2	
Date: April 10, 2025	
Description: View of typical fiddleneck—phacelia fields vegetation community along northern boundary of Study Area	

Photo 3	
Date: April 10, 2025	
Description: View of typical fiddleneck— phacelia fields vegetation community in northeastern corner of Study Area	
Photo 4	
Date: April 10, 2025	
Description: View of typical fiddleneck— phacelia fields vegetation community along eastern boundary of Study Area	

Photo 5	
Date: April 10, 2025	
Description: View of typical fiddleneck— phacelia fields vegetation community in northeastern corner of Study Area	
Photo 6	
Date: April 10, 2025	
Description: View of mammal burrow typical of Study Area in northwestern portion of Study Area	

Photo 7	
Date: April 10, 2025	
Description: View of typical fiddleneck— phacelia fields vegetation community in northern portion of Study Area	
Photo 8	
Date: April 10, 2025	
Description: View of typical fiddleneck— phacelia fields vegetation community along western boundary of Study Area	

Photo 9	
Date: April 10, 2025	
Description: View of typical fiddleneck— phacelia fields vegetation in western portion of Study Area facing east	
Photo 10	
Date: April 10, 2025	
Description: View of <i>Crassula connata</i> - vegetated feature in central portion of Study Area	

Photo 11	
Date: April 10, 2025	
Description: View of typical fiddleneck— phacelia fields vegetation in central portion of Study Area	
Photo 12	
Date: April 10, 2025	
Description: View along eastern boundary of Study Area	

Photo 13	
Date: April 10, 2025	
Description: View of western portion of Study Area facing east	
Photo 14	
Date: April 10, 2025	
Description: View of western portion of Study Area facing north	

Photo 15	
Date: April 10, 2025	
Description: View of western portion of Study Area facing northeast	
Photo 16	
Date: April 10, 2025	
Description: View of <i>Crassula connata</i> - vegetated feature within central portion of Study Area	

Photo 17	
Date: April 10, 2025	
Description: View along southwestern boundary of Study Area	
Photo 18	
Date: April 10, 2025	
Description: View along southeastern boundary of Study Area	

Appendix C – IpaC Letter Report

IPaC resource list

This report is an automatically generated list of resources for the U.S. Fish and Wildlife Service. It also includes trust resources that are located in the project area. However, determining the specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Please note that the Federal Highways Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat Determination Key is temporarily offline for updates and will be available soon. We apologize for any inconvenience this may cause.

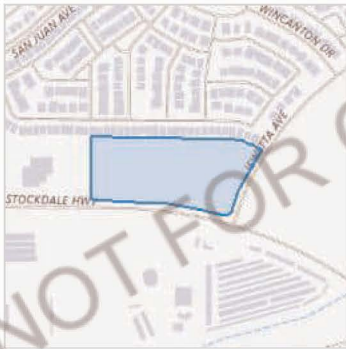


to as *trust resources*) under referenced below. The list may be updated by activities in the project area. Gathering additional site-

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Kern County, California



Local office

Sacramento Fish And Wildlife Office

☎ (916) 414-6600

📅 (916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Buena Vista Lake Ornate Shrew <i>Sorex ornatus relictus</i> Wherever found There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/1610	Endangered
Giant Kangaroo Rat <i>Dipodomys ingens</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6051	Endangered
San Joaquin Kit Fox <i>Vulpes macrotis mutica</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	Endangered
Tipton Kangaroo Rat <i>Dipodomys nitratoideus nitratoideus</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7247	Endangered

Birds

NAME	STATUS
------	--------

California Condor <i>Gymnogyps californianus</i>	Endangered
--	------------

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

<https://ecos.fws.gov/ecp/species/8193>

Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i>	Endangered
--	------------

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

<https://ecos.fws.gov/ecp/species/6749>

Reptiles

NAME	STATUS
------	--------

Blunt-nosed Leopard Lizard <i>Gambelia silus</i>	Endangered
--	------------

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/625>

Northwestern Pond Turtle <i>Actinemys marmorata</i>	Proposed Threatened
---	---------------------

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/1111>

Amphibians

NAME	STATUS
------	--------

Western Spadefoot <i>Spea hammondi</i>	Proposed Threatened
--	---------------------

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/5425>

Insects

NAME	STATUS
------	--------

Monarch Butterfly <i>Danaus plexippus</i>	Proposed Threatened
---	---------------------

Wherever found

There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat.

<https://ecos.fws.gov/ecp/species/9743>

Crustaceans

NAME	STATUS
------	--------

Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i>	Threatened
---	------------

Wherever found

There is **final** critical habitat for this species. Your location does not overlap the critical habitat.

<https://ecos.fws.gov/ecp/species/498>

Flowering Plants

NAME	STATUS
------	--------

California Jewelflower <i>Caulanthus californicus</i>	Endangered
---	------------

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/4599>

San Joaquin Woolly-threads <i>Monolopia (=Lembertia) congdonii</i>	Endangered
--	------------

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/3746>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act² and the Migratory Bird Treaty Act (MBTA)¹. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

There are Bald Eagles and/or Golden Eagles in your [project](#) area.

Measures for Proactively Minimizing Eagle Impacts

For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the [National Bald Eagle Management Guidelines](#). You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to [Bald Eagle Nesting and Sensitivity to Human Activity](#).

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

If disturbance or take of eagles cannot be avoided, an [incidental take permit](#) may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the [Do I Need A Permit Tool](#). For assistance making this determination for golden eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

Ensure Your Eagle List is Accurate and Complete

If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (🟡)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

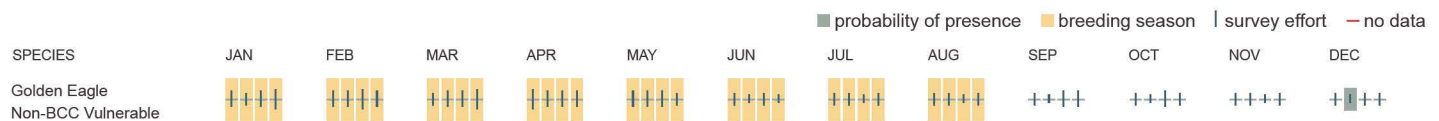
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) ¹ prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service). The incidental take of migratory birds is the injury or death of birds that results from, but is not the purpose, of an activity. The Service interprets the MBTA to prohibit incidental take.

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases [birds of concern](#), including [Birds of Conservation Concern \(BCC\)](#), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the [Nationwide avoidance and minimization measures for birds](#) document, and any other project-specific avoidance and minimization measures suggested at the link [Measures for avoiding and minimizing impacts to birds](#) for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles document](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Belding's Savannah Sparrow <i>Passerculus sandwichensis beldingi</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole <i>Icterus bullockii</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25

California Gull <i>Larus californicus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
California Thrasher <i>Toxostoma redivivum</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Clark's Grebe <i>Aechmophorus clarkii</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Common Yellowthroat <i>Geothlypis trichas sinuosa</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31
Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lawrence's Goldfinch <i>Spinus lawrencei</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9464	Breeds Mar 20 to Sep 20
Northern Harrier <i>Circus hudsonius</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8350	Breeds Apr 1 to Sep 15
Nuttall's Woodpecker <i>Dryobates nuttallii</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9410	Breeds Apr 1 to Jul 20
Olive-sided Flycatcher <i>Contopus cooperi</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Santa Barbara Song Sparrow <i>Melospiza melodia graminea</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/5513	Breeds Mar 1 to Sep 5
Tricolored Blackbird <i>Agelaius tricolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10
Wrentit <i>Chamaea fasciata</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 10

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

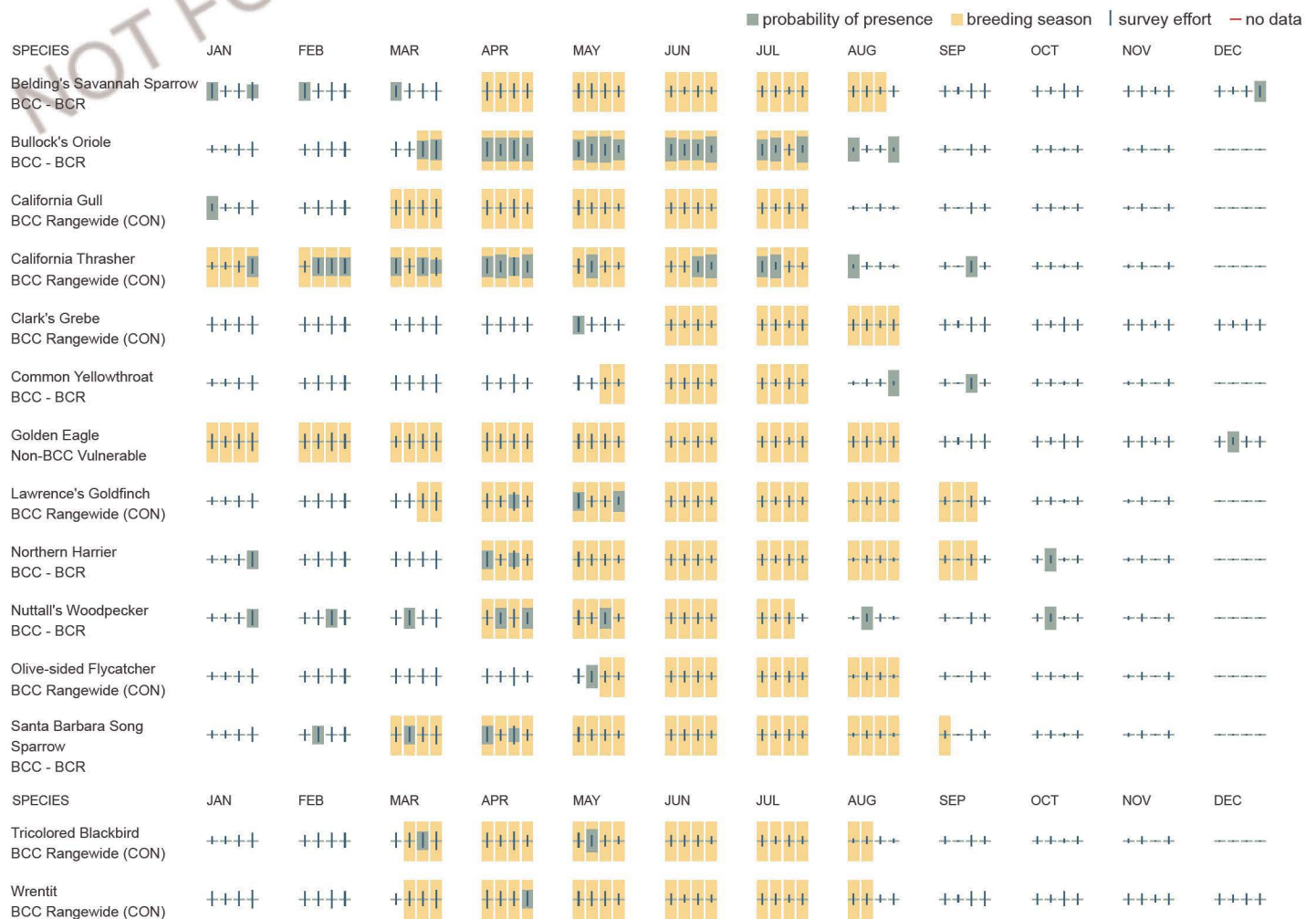
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Avoidance & Minimization Measures for Birds](#) describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the [Bald and Golden Eagle Protection Act](#) and those species marked as "Vulnerable". See the FAQ "What are the levels of concern for migratory birds?" for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle ([Bald and Golden Eagle Protection Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the [RAIL Tool](#) and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern \(BCC\)](#) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Bald and Golden Eagle Protection Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ "Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Appendix D – CNDDDB Query

CALIFORNIA DEPARTMENT OF

FISH and WILDLIFE **RareFind**

Query Summary:

Quad **IS** (Gosford (3511931) **OR** Rosedale (3511942) **OR** Oildale (3511941) **OR** Oil Center (3511848) **OR** Lamont (3511838) **OR** Weed Patch (3511828) **OR** Conner (3511921) **OR** Millux (3511922) **OR** Stevens (3511932))
AND Federal Listing Status **IS** (Endangered **OR** Threatened **OR** Proposed Endangered **OR** Candidate) **OR** State Listing Status **IS** (Endangered **OR** Threatened **OR** Candidate Endangered **OR** Candidate Threatened)

Print

Close

CNDDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Other Status	Habitats
Agelaius tricolor	tricolored blackbird	Birds	ABPBXB0020	960	3	None	Threatened	G1G2	S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_EN-Endangered, USFWS_BCC-Birds of Conservation Concern	Freshwater marsh, Marsh & swamp, Swamp, Wetland
Ammospermophilus nelsoni	Nelson's (=San Joaquin) antelope squirrel	Mammals	AMAFB04040	287	4	None	Threatened	G2G3	S3	null	BLM_S-Sensitive, IUCN_EN-Endangered	Chenopod scrub
Athene cunicularia	burrowing owl	Birds	ABNSB10010	2107	32	None	Candidate Endangered	G4	S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Coastal prairie, Coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, Valley & foothill grassland
Atriplex tularensis	Bakersfield smallscale	Dicots	PDCHE04240	3	2	None	Endangered	GX	SX	1A	null	Chenopod scrub, Meadow & seep
Bombus crotchii	Crotch's bumble bee	Insects	IIHYM24480	526	5	None	Candidate Endangered	G2	S2	null	IUCN_EN-Endangered	null
Buteo swainsoni	Swainson's hawk	Birds	ABNKC19070	2577	10	None	Threatened	G5	S4	null	BLM_S-Sensitive, IUCN_LC-Least Concern	Great Basin grassland, Riparian forest, Riparian woodland, Valley & foothill grassland
Caulanthus californicus	California jewelflower	Dicots	PDBRA31010	67	1	Endangered	Endangered	G1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden, SB_UCBG-UC Botanical Garden at Berkeley	Chenopod scrub, Pinon & juniper woodlands, Valley & foothill grassland
Charadrius nivosus nivosus	western snowy plover	Birds	ABNNB03031	140	1	Threatened	None	G3T3	S3	null	CDFW_SSC-Species of Special Concern	Great Basin standing waters, Sand shore, Wetland
Coccyzus americanus occidentalis	western yellow-billed cuckoo	Birds	ABNRB02022	165	1	Threatened	Endangered	G5T2T3	S1	null	BLM_S-Sensitive, USFS_S-Sensitive	Riparian forest

Desmocerus californicus dimorphus	valley elderberry longhorn beetle	Insects	IICOL48011	271	1	Threatened	None	G3T3	S3	null	null	Riparian scrub
Dipodomys ingens	giant kangaroo rat	Mammals	AMAFD03080	143	1	Endangered	Endangered	G1G2	S2	null	IUCN_EN-Endangered	Chenopod scrub, Valley & foothill grassland
Dipodomys nitratoides nitratoides	Tipton kangaroo rat	Mammals	AMAFD03152	81	16	Endangered	Endangered	G2T1T2	S2	null	IUCN_VU-Vulnerable	Chenopod scrub
Eremalche parryi ssp. kernensis	Kern mallow	Dicots	PDMAL0C031	202	8	Endangered	None	G3G4T3	S3	1B.2	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden, SB_SBBG-Santa Barbara Botanic Garden	Chenopod scrub, Pinon & juniper woodlands, Valley & foothill grassland
Gambelia sila	blunt-nosed leopard lizard	Reptiles	ARACF07010	475	19	Endangered	Endangered	G1	S2	null	CDFW_FP-Fully Protected, IUCN_EN-Endangered	Chenopod scrub
Monolopia congdonii	San Joaquin woollythreads	Dicots	PDASTA8010	111	9	Endangered	None	G2	S2	1B.2	SB_UCBG-UC Botanical Garden at Berkeley	Chenopod scrub, Valley & foothill grassland
Opuntia basilaris var. treleasei	Bakersfield cactus	Dicots	PDCAC0D055	62	27	Endangered	Endangered	G5T1	S1	1B.1	SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	Chenopod scrub, Cismontane woodland, Valley & foothill grassland
Sorex ornatus relictus	Buena Vista Lake ornate shrew	Mammals	AMABA01102	7	3	Endangered	None	G5T1	S1	null	CDFW_SSC-Species of Special Concern	Marsh & swamp, Riparian scrub
Vulpes macrotis mutica	San Joaquin kit fox	Mammals	AMAJA03041	1020	78	Endangered	Threatened	G4T2	S3	null	null	Chenopod scrub, Valley & foothill grassland

CALIFORNIA DEPARTMENT OF

FISH and WILDLIFE **RareFind**

Query Summary:

Quad **IS** (Gosford (3511931) **OR** Rosedale (3511942) **OR** Oildale (3511941) **OR** Oil Center (3511848) **OR** Lamont (3511838) **OR** Weed Patch (3511828) **OR** Conner (3511921) **OR** Millux (3511922) **OR** Stevens (3511932))

AND Other Status **CONTAINS** (CDFW_FP-Fully Protected **OR** CDFW_SSC-Species of Special Concern)

Print

Close

CNDDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Other Status	Habitats
Actinemys marmorata	northwestern pond turtle	Reptiles	ARAAD02031	1160	3	Proposed Threatened	None	G2	SNR	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_VU-Vulnerable, USFS_S-Sensitive	null
Agelaius tricolor	tricolored blackbird	Birds	ABPBXB0020	960	3	None	Threatened	G1G2	S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_EN-Endangered, USFWS_BCC-Birds of Conservation Concern	Freshwater marsh, Marsh & swamp, Wetland
Anniella grinnelli	Bakersfield legless lizard	Reptiles	ARACC01050	30	15	None	None	G2G3	S2S3	null	CDFW_SSC-Species of Special Concern	null
Anniella spp.	California legless lizard	Reptiles	ARACC01070	125	1	None	None	G3G4	S3S4	null	CDFW_SSC-Species of Special Concern	null
Arizona elegans occidentalis	California glossy snake	Reptiles	ARADB01017	260	11	None	None	G5T2	S2	null	CDFW_SSC-Species of Special Concern	null
Athene cunicularia	burrowing owl	Birds	ABNSB10010	2107	32	None	Candidate Endangered	G4	S2	null	BLM_S-Sensitive, CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern, USFWS_BCC-Birds of Conservation Concern	Coastal prairie, Coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, Valley & foothill grassland
Charadrius nivosus nivosus	western snowy plover	Birds	ABNNB03031	140	1	Threatened	None	G3T3	S3	null	CDFW_SSC-Species of Special Concern	Great Basin standing waters, Sand shore, Wetland
Dendrocygna bicolor	fulvous whistling-duck	Birds	ABNJB01010	3	1	None	None	G5	S1	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Freshwater marsh, Marsh & swamp
Dipodomys nitratoides brevinasus	short-nosed kangaroo rat	Mammals	AMAFD03153	64	2	None	None	G2T1T2	S1S2	null	BLM_S-Sensitive, CDFW_SSC-	Chenopod scrub, Valley

											Species of Special Concern, IUCN_VU- Vulnerable	& foothill grassland
Elanus leucurus	white-tailed kite	Birds	ABNKC06010	190	1	None	None	G5	S3S4	null	BLM_S- Sensitive, CDFW_FP- Fully Protected, IUCN_LC- Least Concern	Cismontane woodland, Marsh & swamp, Riparian woodland, Valley & foothill grassland, Wetland
Eumops perotis californicus	western mastiff bat	Mammals	AMACD02011	296	2	None	None	G4G5T4	S3S4	null	BLM_S- Sensitive, CDFW_SSC- Species of Special Concern	Chaparral, Cismontane woodland, Coastal scrub, Valley & foothill grassland
Gambelia sila	blunt-nosed leopard lizard	Reptiles	ARACF07010	475	19	Endangered	Endangered	G1	S2	null	CDFW_FP- Fully Protected, IUCN_EN- Endangered	Chenopod scrub
Masticophis flagellum ruddocki	San Joaquin coachwhip	Reptiles	ARADB21021	96	4	None	None	G5T2T3	S3	null	CDFW_SSC- Species of Special Concern	Chenopod scrub, Valley & foothill grassland
Onychomys torridus tularensis	Tulare grasshopper mouse	Mammals	AMAFF06021	104	5	None	None	G5T1T2	S1S2	null	BLM_S- Sensitive, CDFW_SSC- Species of Special Concern	Chenopod scrub
Phrynosoma blainvillii	coast horned lizard	Reptiles	ARACF12100	841	3	None	None	G4	S4	null	BLM_S- Sensitive, CDFW_SSC- Species of Special Concern, IUCN_LC- Least Concern	Chaparral, Cismontane woodland, Coastal bluff scrub, Coastal scrub, Desert wash, Pinon & juniper woodlands, Riparian scrub, Riparian woodland, Valley & foothill grassland
Sorex ornatus relictus	Buena Vista Lake ornate shrew	Mammals	AMABA01102	7	3	Endangered	None	G5T1	S1	null	CDFW_SSC- Species of Special Concern	Marsh & swamp, Riparian scrub
Spea hammondii	western spadefoot	Amphibians	AAABF02020	1444	11	Proposed Threatened	None	G2G3	S3S4	null	BLM_S- Sensitive, CDFW_SSC- Species of Special Concern, IUCN_NT- Near Threatened	Cismontane woodland, Coastal scrub, Valley & foothill grassland, Vernal pool, Wetland
Taxidea taxus	American badger	Mammals	AMAJF04010	648	2	None	None	G5	S3	null	CDFW_SSC- Species of Special Concern, IUCN_LC- Least Concern	Alkali marsh, Alkali playa, Alpine, Alpine dwarf scrub, Bog & fen, Brackish marsh, Broadleaved upland forest, Chaparral, Chenopod scrub, Cismontane woodland, Closed-cone coniferous forest,

												Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub, Desert dunes, Desert wash, Freshwater marsh, Great Basin grassland, Great Basin scrub, Interior dunes, lone formation, Joshua tree woodland, Limestone, Lower montane coniferous forest, Marsh & swamp, Meadow & seep, Mojavean desert scrub, Montane dwarf scrub, North coast coniferous forest, Oldgrowth, Pavement plain, Redwood, Riparian forest, Riparian scrub, Riparian woodland, Salt marsh, Sonoran desert scrub, Sonoran thorn woodland, Ultramafic, Upper montane coniferous forest, Upper Sonoran scrub, Valley & foothill grassland
Xanthocephalus xanthocephalus	yellow-headed blackbird	Birds	ABPBXB3010	13	1	None	None	G5	S3	null	CDFW_SSC-Species of Special Concern, IUCN_LC-Least Concern	Marsh & swamp, Wetland

Appendix E – EFH Mapper Report

EFH Mapper Report

EFH Data Notice

Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional fishery management councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

[West Coast Regional Office](#)

Query Results

Degrees, Minutes, Seconds: Latitude = 35° 21' 17" N, Longitude = 120° 51' 41" W

Decimal Degrees: Latitude = 35.355, Longitude = -119.139

The query location intersects with spatial data representing EFH and/or HAPCs for the following species/management units.

EFH

No additional Essential Fish Habitats (EFH) were identified at the report location.

Pacific Salmon EFH

No Pacific Salmon Essential Fish Habitat (EFH) were identified at the report location.

Atlantic Salmon

No Atlantic Salmon were identified at the report location.

HAPCs

No Habitat Areas of Particular Concern (HAPC) were identified at the report location.

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data.

****For links to all EFH text descriptions see the complete data inventory: [open data inventory -->](#)**

Pacific Coastal Pelagic Species,

Jack Mackerel,

Pacific (Chub) Mackerel,

Pacific Sardine,

Northern Anchovy - Central Subpopulation,

Northern Anchovy - Northern Subpopulation,

Pacific Highly Migratory Species,

Bigeye Thresher Shark - North Pacific,

Bluefin Tuna - Pacific,

Dolphinfish (Dorado or Mahimahi) - Pacific,

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data.

****For links to all EFH text descriptions see the complete data inventory: [open data inventory -->](#)**

Pelagic Thresher Shark - North Pacific,
Swordfish - North Pacific

Appendix F – Staff Report on Burrowing Owl Mitigation

Staff Report on Burrowing Owl Mitigation

State of California

Natural Resources Agency

Department of Fish and Game

March 7, 2012¹

¹ This document replaces the Department of Fish and Game 1995 Staff Report On Burrowing Owl Mitigation.

TABLE OF CONTENTS

INTRODUCTION AND PURPOSE	1
DEPARTMENT ROLE AND LEGAL AUTHORITIES	2
GUIDING PRINCIPLES FOR CONSERVATION	3
CONSERVATION GOALS FOR THE BURROWING OWL IN CALIFORNIA	4
ACTIVITIES WITH THE POTENTIAL TO TAKE OR IMPACT BURROWING OWLS.....	4
PROJECT IMPACT EVALUATIONS.....	5
MITIGATION METHODS.....	8
ACKNOWLEDGEMENTS	15
REFERENCES	15
Appendix A. Burrowing Owl Natural History and Threats.....	20
Appendix B. Definitions	24
Appendix C. Habitat Assessment and Reporting Details	26
Appendix D. Breeding and Non-breeding Season Survey and Reports	28
Appendix E. Draft Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans	31
Appendix F. Mitigation Management Plan and Vegetation Management Goals	33

INTRODUCTION AND PURPOSE

Maintaining California's rich biological diversity is dependent on the conservation of species and their habitats. The California Department of Fish and Game (Department) has designated certain species as "species of special concern" when their population viability and survival is adversely affected by risk factors such as precipitous declines or other vulnerability factors (Shuford and Gardali 2008). Preliminary analyses of regional patterns for breeding populations of burrowing owls (*Athene cunicularia*) have detected declines both locally in their central and southern coastal breeding areas, and statewide where the species has experienced modest breeding range retraction (Gervais et al. 2008). In California, threat factors affecting burrowing owl populations include habitat loss, degradation and modification, and eradication of ground squirrels resulting in a loss of suitable burrows required by burrowing owls for nesting, protection from predators, and shelter (See Appendix A).

The Department recognized the need for a comprehensive conservation and mitigation strategy for burrowing owls, and in 1995 directed staff to prepare a report describing mitigation and survey recommendations. This report, "1995 Staff Report on Burrowing Owl Mitigation," (Staff Report) (CDFG 1995), contained Department-recommended burrowing owl and burrow survey techniques and mitigation measures intended to offset the loss of habitat and slow or reverse further decline of this species. Notwithstanding these measures, over the past 15+ years, burrowing owls have continued to decline in portions of their range (DeSante et al. 2007, Wilkerson and Siegel, 2010). The Department has determined that reversing declining population and range trends for burrowing owls will require implementation of more effective conservation actions, and evaluating the efficacy of the Department's existing recommended avoidance, minimization and mitigation approaches for burrowing owls.

The Department has identified three main actions that together will facilitate a more viable, coordinated, and concerted approach to conservation and mitigation for burrowing owls in California. These include:

1. Incorporating burrowing owl comprehensive conservation strategies into landscape-based planning efforts such as Natural Community Conservation Plans (NCCPs) and multi-species Habitat Conservation Plans (HCPs) that specifically address burrowing owls.
2. Developing and implementing a statewide conservation strategy (Burkett and Johnson, 2007) and local or regional conservation strategies for burrowing owls, including the development and implementation of a statewide burrowing owl survey and monitoring plan.
3. Developing more rigorous burrowing owl survey methods, working to improve the adequacy of impacts assessments; developing clear and effective avoidance and minimization measures; and developing mitigation measures to ensure impacts to the species are effectively addressed at the project, local, and/or regional level (the focus of this document).

This Report sets forth the Department's recommendations for implementing the third approach identified above by revising the 1995 Staff Report, drawing from the most relevant and current knowledge and expertise, and incorporating the best scientific information

available pertaining to the species. It is designed to provide a compilation of the best available science for Department staff, biologists, planners, land managers, California Environmental Quality Act (CEQA) lead agencies, and the public to consider when assessing impacts of projects or other activities on burrowing owls.

This revised Staff Report takes into account the California Burrowing Owl Consortium's Survey Protocol and Mitigation Guidelines (CBOC 1993, 1997) and supersedes the survey, avoidance, minimization and mitigation recommendations in the 1995 Staff Report. Based on experiences gained from implementing the 1995 Staff Report, the Department believes revising that report is warranted. This document also includes general conservation goals and principles for developing mitigation measures for burrowing owls.

DEPARTMENT ROLE AND LEGAL AUTHORITIES

The mission of the Department is to manage California's diverse fish, wildlife and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. The Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitats necessary to maintain biologically sustainable populations of those species (Fish and Game Code (FGC) §1802). The Department, as trustee agency pursuant to CEQA (See CEQA Guidelines, §15386), has jurisdiction by law over natural resources, including fish and wildlife, affected by a project, as that term is defined in Section 21065 of the Public Resources Code. The Department exercises this authority by reviewing and commenting on environmental documents and making recommendations to avoid, minimize, and mitigate potential negative impacts to those resources held in trust for the people of California.

Field surveys designed to detect the presence of a particular species, habitat element, or natural community are one of the tools that can assist biologists in determining whether a species or habitat may be significantly impacted by land use changes or disturbance. The Department reviews field survey data as well as site-specific and regional information to evaluate whether a project's impacts may be significant. This document compiles the best available science for conducting habitat assessments and surveys, and includes considerations for developing measures to avoid impacts or mitigate unavoidable impacts.

CEQA

CEQA requires public agencies in California to analyze and disclose potential environmental impacts associated with a project that the agency will carry out, fund, or approve. Any potentially significant impact must be mitigated to the extent feasible. Project-specific CEQA mitigation is important for burrowing owls because most populations exist on privately owned parcels that, when proposed for development or other types of modification, may be subject to the environmental review requirements of CEQA.

Take

Take of individual burrowing owls and their nests is defined by FGC section 86, and prohibited by sections 3503, 3503.5 and 3513. Take is defined in FGC Section 86 as "hunt, pursue, catch, capture or kill, or attempt to hunt, pursue, catch, capture or kill."

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the United States and Canada, Japan, Mexico, and Russia for the protection of migratory birds, including the burrowing owl (50 C.F.R. § 10). The MBTA protects migratory bird nests from possession, sale, purchase, barter, transport, import and export, and collection. The other prohibitions of the MBTA - capture, pursue, hunt, and kill - are inapplicable to nests. The regulatory definition of take, as defined in Title 50 C.F.R. part 10.12, means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to hunt, shoot, wound, kill, trap, capture, or collect. Only the verb "collect" applies to nests. It is illegal to collect, possess, and by any means transfer possession of any migratory bird nest. The MBTA prohibits the destruction of a nest when it contains birds or eggs, and no possession shall occur during the destruction (see Fish and Wildlife Service, Migratory Bird Permit Memorandum, April 15, 2003). Certain exceptions to this prohibition are included in 50 C.F.R. section 21. Pursuant to Fish & Game Code section 3513, the Department enforces the Migratory Bird Treaty Act consistent with rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act.

Regional Conservation Plans

Regional multiple species conservation plans offer long-term assurances for conservation of covered species at a landscape scale, in exchange for biologically appropriate levels of incidental take and/or habitat loss as defined in the approved plan. California's NCCP Act (FGC §2800 et seq.) governs such plans at the state level, and was designed to conserve species, natural communities, ecosystems, and ecological processes across a jurisdiction or a collection of jurisdictions. Complementary federal HCPs are governed by the Endangered Species Act (7 U.S.C. § 136, 16 U.S.C. § 1531 et seq.) (ESA). Regional conservation plans (and certain other landscape-level conservation and management plans), may provide conservation for unlisted as well as listed species. Because the geographic scope of NCCPs and HCPs may span many hundreds of thousands of acres, these planning tools have the potential to play a significant role in conservation of burrowing owls, and grasslands and other habitats.

Fish and Game Commission Policies

There are a number of Fish and Game Commission policies (see FGC §2008) that can be applied to burrowing owl conservation. These include policies on: Raptors, Cooperation, Endangered and Threatened Species, Land Use Planning, Management and Utilization of Fish and Wildlife on Federal Lands, Management and Utilization of Fish and Wildlife on Private Lands, and Research.

GUIDING PRINCIPLES FOR CONSERVATION

Unless otherwise provided in a statewide, local, or regional conservation strategy, surveying and evaluating impacts to burrowing owls, as well as developing and implementing avoidance, minimization, and mitigation and conservation measures incorporate the following principles. These principles are a summary of Department staff expert opinion and were used to guide the preparation of this document.

1. Use the Precautionary Principle (Noss et al.1997), by which the alternative of increased conservation is deliberately chosen in order to buffer against incomplete knowledge of burrowing owl ecology and uncertainty about the consequences to burrowing owls of potential impacts, including those that are cumulative.
2. Employ basic conservation biology tenets and population-level approaches when determining what constitutes appropriate avoidance, minimization, and mitigation for impacts. Include mitigation effectiveness monitoring and reporting, and use an adaptive management loop to modify measures based on results.
3. Protect and conserve owls in wild, semi-natural, and agricultural habitats (conserve is defined at FGC §1802).
4. Protect and conserve natural nest burrows (or burrow surrogates) previously used by burrowing owls and sufficient foraging habitat and protect auxiliary “satellite” burrows that contribute to burrowing owl survivorship and natural behavior of owls.

CONSERVATION GOALS FOR THE BURROWING OWL IN CALIFORNIA

It is Department staff expert opinion that the following goals guide and contribute to the short and long-term conservation of burrowing owls in California:

1. Maintain size and distribution of extant burrowing owl populations (allowing for natural population fluctuations).
2. Increase geographic distribution of burrowing owls into formerly occupied historical range where burrowing owl habitat still exists, or where it can be created or enhanced, and where the reason for its local disappearance is no longer of concern.
3. Increase size of existing populations where possible and appropriate (for example, considering basic ecological principles such as carrying capacity, predator-prey relationships, and inter-specific relationships with other species at risk).
4. Protect and restore self-sustaining ecosystems or natural communities which can support burrowing owls at a landscape scale, and which will require minimal long-term management.
5. Minimize or prevent unnatural causes of burrowing owl population declines (e.g., nest burrow destruction, chemical control of rodent hosts and prey).
6. Augment/restore natural dynamics of burrowing owl populations including movement and genetic exchange among populations, such that the species does not require future listing and protection under the California Endangered Species Act (CESA) and/or the federal Endangered Species Act (ESA).
7. Engage stakeholders, including ranchers; farmers; military; tribes; local, state, and federal agencies; non-governmental organizations; and scientific research and education communities involved in burrowing owl protection and habitat management.

ACTIVITIES WITH THE POTENTIAL TO TAKE OR IMPACT BURROWING OWLS

The following activities are examples of activities that have the potential to take burrowing owls, their nests or eggs, or destroy or degrade burrowing owl habitat: grading, disking, cultivation, earthmoving, burrow blockage, heavy equipment compacting and crushing burrow tunnels, levee maintenance, flooding, burning and mowing (if burrows are impacted), and operating wind turbine collisions (collectively hereafter referred to as “projects” or “activities”

whether carried out pursuant to CEQA or not). In addition, the following activities may have impacts to burrowing owl populations: eradication of host burrowers; changes in vegetation management (i.e. grazing); use of pesticides and rodenticides; destruction, conversion or degradation of nesting, foraging, over-wintering or other habitats; destruction of natural burrows and burrow surrogates; and disturbance which may result in harassment of owls at occupied burrows.

PROJECT IMPACT EVALUATIONS

The following three progressive steps are effective in evaluating whether projects will result in impacts to burrowing owls. The information gained from these steps will inform any subsequent avoidance, minimization and mitigation measures. The steps for project impact evaluations are: 1) habitat assessment, 2) surveys, and 3) impact assessment. Habitat assessments are conducted to evaluate the likelihood that a site supports burrowing owl. Burrowing owl surveys provide information needed to determine the potential effects of proposed projects and activities on burrowing owls, and to avoid take in accordance with FGC sections 86, 3503, and 3503.5. Impact assessments evaluate the extent to which burrowing owls and their habitat may be impacted, directly or indirectly, on and within a reasonable distance of a proposed CEQA project activity or non-CEQA project. These three site evaluation steps are discussed in detail below.

Biologist Qualifications

The current scientific literature indicates that only individuals meeting the following minimum qualifications should perform burrowing owl habitat assessments, surveys, and impact assessments:

1. Familiarity with the species and its local ecology;
2. Experience conducting habitat assessments and non-breeding and breeding season surveys, or experience with these surveys conducted under the direction of an experienced surveyor;
3. Familiarity with the appropriate state and federal statutes related to burrowing owls, scientific research, and conservation;
4. Experience with analyzing impacts of development on burrowing owls and their habitat.

Habitat Assessment Data Collection and Reporting

A habitat assessment is the first step in the evaluation process and will assist investigators in determining whether or not occupancy surveys are needed. Refer to Appendix B for a definition of burrowing owl habitat. Compile the detailed information described in Appendix C when conducting project scoping, conducting a habitat assessment site visit and preparing a habitat assessment report.

Surveys

Burrowing owl surveys are the second step of the evaluation process and the best available scientific literature recommends that they be conducted whenever burrowing owl habitat or sign (see Appendix B) is encountered on or adjacent to (within 150 meters) a project site

(Thomsen 1971, Martin 1973). Occupancy of burrowing owl habitat is confirmed at a site when at least one burrowing owl, or its sign at or near a burrow entrance, is observed within the last three years (Rich 1984). Burrowing owls are more detectable during the breeding season with detection probabilities being highest during the nestling stage (Conway et al. 2008). In California, the burrowing owl breeding season extends from 1 February to 31 August (Haug et al. 1993, Thompson 1971) with some variances by geographic location and climatic conditions. Several researchers suggest three or more survey visits during daylight hours (Haug and Diduik 1993, CBOC 1997, Conway and Simon 2003) and recommend each visit occur at least three weeks apart during the peak of the breeding season, commonly accepted in California as between 15 April and 15 July (CBOC 1997). Conway and Simon (2003) and Conway et al. (2008) recommended conducting surveys during the day when most burrowing owls in a local area are in the laying and incubation period (so as not to miss early breeding attempts), during the nesting period, and in the late nestling period when most owls are spending time above ground.

Non-breeding season (1 September to 31 January) surveys may provide information on burrowing owl occupancy, but do not substitute for breeding season surveys because results are typically inconclusive. Burrowing owls are more difficult to detect during the non-breeding season and their seasonal residency status is difficult to ascertain. Burrowing owls detected during non-breeding season surveys may be year-round residents, young from the previous breeding season, pre-breeding territorial adults, winter residents, dispersing juveniles, migrants, transients or new colonizers. In addition, the numbers of owls and their pattern of distribution may differ during winter and breeding seasons. However, on rare occasions, non-breeding season surveys may be warranted (i.e., if the site is believed to be a wintering site only based on negative breeding season results). Refer to Appendix D for information on breeding season and non-breeding season survey methodologies.

Survey Reports

Adequate information about burrowing owls present in and adjacent to an area that will be disturbed by a project or activity will enable the Department, reviewing agencies and the public to effectively assess potential impacts and will guide the development of avoidance, minimization, and mitigation measures. The survey report includes but is not limited to a description of the proposed project or proposed activity, including the proposed project start and end dates, as well as a description of disturbances or other activities occurring on-site or nearby. Refer to Appendix D for details included in a survey report.

Impact Assessment

The third step in the evaluation process is the impact assessment. When surveys confirm occupied burrowing owl habitat in or adjoining the project area, there are a number of ways to assess a project's potential significant impacts to burrowing owls and their habitat. Richardson and Miller (1997) recommended monitoring raptor behavior prior to developing management recommendations and buffers to determine the extent to which individuals have been sensitized to human disturbance. Monitoring results will also provide detail necessary for developing site-specific measures. Postovit and Postovit (1987) recommended an analytical approach to mitigation planning: define the problem (impact), set goals (to guide mitigation development), evaluate and select mitigation methods, and monitor the results.

Define the problem. The impact assessment evaluates all factors that could affect burrowing owls. Postovit and Postovit (1987) recommend evaluating the following in assessing impacts to raptors and planning mitigation: type and extent of disturbance, duration and timing of disturbance, visibility of disturbance, sensitivity and ability to habituate, and influence of environmental factors. They suggest identifying and addressing all potential direct and indirect impacts to burrowing owls, regardless of whether or not the impacts will occur during the breeding season. Several examples are given for each impact category below; however, examples are not intended to be used exclusively.

Type and extent of the disturbance. The impact assessment describes the nature (source) and extent (scale) of potential project impacts on occupied, satellite and unoccupied burrows including acreage to be lost (temporary or permanent), fragmentation/edge being created, increased distance to other nesting and foraging habitat, and habitat degradation. Discuss any project activities that impact either breeding and/or non-breeding habitat which could affect owl home range size and spatial configuration, negatively affect onsite and offsite burrowing owl presence, increase energetic costs, lower reproductive success, increase vulnerability to predation, and/or decrease the chance of procuring a mate.

Duration and timing of the impact. The impact assessment describes the amount of time the burrowing owl habitat will be unavailable to burrowing owls (temporary or permanent) on the site and the effect of that loss on essential behaviors or life history requirements of burrowing owls, the overlap of project activities with breeding and/or non-breeding seasons (timing of nesting and/or non-breeding activities may vary with latitude and climatic conditions, which should be considered with the timeline of the project or activity), and any variance of the project activities in intensity, scale and proximity relative to burrowing owl occurrences.

Visibility and sensitivity. Some individual burrowing owls or pairs are more sensitive than others to specific stimuli and may habituate to ongoing visual or audible disturbance. Site-specific monitoring may provide clues to the burrowing owl's sensitivities. This type of assessment addresses the sensitivity of burrowing owls within their nesting area to humans on foot, and vehicular traffic. Other variables are whether the site is primarily in a rural versus urban setting, and whether any prior disturbance (e.g., human development or recreation) is known at the site.

Environmental factors. The impact assessment discusses any environmental factors that could be influenced or changed by the proposed activities including nest site availability, predators, prey availability, burrowing mammal presence and abundance, and threats from other extrinsic factors such as human disturbance, urban interface, feral animals, invasive species, disease or pesticides.

Significance of impacts. The impact assessment evaluates the potential loss of nesting burrows, satellite burrows, foraging habitat, dispersal and migration habitat, wintering habitat, and habitat linkages, including habitat supporting prey and host burrowers and other essential habitat attributes. This assessment determines if impacts to the species will result in significant impacts to the species locally, regionally and range-wide per CEQA Guidelines §15382 and Appendix G. The significance of the impact to habitat depends on the extent of habitat disturbed and length of time the habitat is unavailable (for example: minor – several days, medium – several weeks to months, high - breeding season affecting juvenile survival,

or over winter affecting adult survival).

Cumulative effects. The cumulative effects assessment evaluates two consequences: 1) the project's proportional share of reasonably foreseeable impacts on burrowing owls and habitat caused by the project or in combination with other projects and local influences having impacts on burrowing owls and habitat, and 2) the effects on the regional owl population resulting from the project's impacts to burrowing owls and habitat.

Mitigation goals. Establishing goals will assist in planning mitigation and selecting measures that function at a desired level. Goals also provide a standard by which to measure mitigation success. Unless specifically provided for through other FGC Sections or through specific regulations, take, possession or destruction of individual burrowing owls, their nests and eggs is prohibited under FGC sections 3503, 3503.5 and 3513. Therefore, a required goal for all project activities is to avoid take of burrowing owls. Under CEQA, goals would consist of measures that would avoid, minimize and mitigate impacts to a less than significant level. For individual projects, mitigation must be roughly proportional to the level of impacts, including cumulative impacts, in accordance with the provisions of CEQA (CEQA Guidelines, §§ 15126.4(a)(4)(B), 15064, 15065, and 16355). In order for mitigation measures to be effective, they must be specific, enforceable, and feasible actions that will improve environmental conditions. As set forth in more detail in Appendix A, the current scientific literature supports the conclusion that mitigation for permanent habitat loss necessitates replacement with an equivalent or greater habitat area for breeding, foraging, wintering, dispersal, presence of burrows, burrow surrogates, presence of fossorial mammal dens, well drained soils, and abundant and available prey within close proximity to the burrow.

MITIGATION METHODS

The current scientific literature indicates that any site-specific avoidance or mitigation measures developed should incorporate the best practices presented below or other practices confirmed by experts and the Department. The Department is available to assist in the development of site-specific avoidance and mitigation measures.

Avoiding. A primary goal is to design and implement projects to seasonally and spatially avoid negative impacts and disturbances that could result in take of burrowing owls, nests, or eggs. Other avoidance measures may include but not be limited to:

- Avoid disturbing occupied burrows during the nesting period, from 1 February through 31 August.
- Avoid impacting burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls.
- Avoid direct destruction of burrows through chaining (dragging a heavy chain over an area to remove shrubs), disking, cultivation, and urban, industrial, or agricultural development.
- Develop and implement a worker awareness program to increase the on-site worker's recognition of and commitment to burrowing owl protection.
- Place visible markers near burrows to ensure that farm equipment and other machinery does not collapse burrows.
- Do not fumigate, use treated bait or other means of poisoning nuisance animals in areas where burrowing owls are known or suspected to occur (e.g., sites observed with nesting

owls, designated use areas).

- Restrict the use of treated grain to poison mammals to the months of January and February.

Take avoidance (pre-construction) surveys. Take avoidance surveys are intended to detect the presence of burrowing owls on a project site at a fixed period in time and inform necessary take avoidance actions. Take avoidance surveys may detect changes in owl presence such as colonizing owls that have recently moved onto the site, migrating owls, resident burrowing owls changing burrow use, or young of the year that are still present and have not dispersed. Refer to Appendix D for take avoidance survey methodology.

Site surveillance. Burrowing owls may attempt to colonize or re-colonize an area that will be impacted; thus, the current scientific literature indicates a need for ongoing surveillance at the project site during project activities is recommended. The surveillance frequency/effort should be sufficient to detect burrowing owls if they return. Subsequent to their new occupancy or return to the site, take avoidance measures should assure with a high degree of certainty that take of owls will not occur.

Minimizing. If burrowing owls and their habitat can be protected in place on or adjacent to a project site, the use of buffer zones, visual screens or other measures while project activities are occurring can minimize disturbance impacts. Conduct site-specific monitoring to inform development of buffers (see Visibility and sensitivity above). The following general guidelines for implementing buffers should be adjusted to address site-specific conditions using the impact assessment approach described above. The CEQA lead agency and/or project proponent is encouraged to consult with the Department and other burrowing owl experts for assistance in developing site-specific buffer zones and visual screens.

Buffers. Holroyd et al. (2001) identified a need to standardize management and disturbance mitigation guidelines. For instance, guidelines for mitigating impacts by petroleum industries on burrowing owls and other prairie species (Scobie and Faminow, 2000) may be used as a template for future mitigation guidelines (Holroyd et al. 2001). Scobie and Faminow (2000) developed guidelines for activities around occupied burrowing owl nests recommending buffers around low, medium, and high disturbance activities, respectively (see below).

Recommended restricted activity dates and setback distances by level of disturbance for burrowing owls (Scobie and Faminow 2000).

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

* meters (m)

Based on existing vegetation, human development, and land uses in an area, resource managers may decide to allow human development or resource extraction closer to these area/sites than recommended above. However, if it is decided to allow activities closer than

the setback distances recommended, a broad-scale, long-term, scientifically-rigorous monitoring program ensures that burrowing owls are not detrimentally affected by alternative approaches.

Other minimization measures include eliminating actions that reduce burrowing owl forage and burrowing surrogates (e.g. ground squirrel), or introduce/facilitate burrowing owl predators. Actions that could influence these factors include reducing livestock grazing rates and/or changing the timing or duration of grazing or vegetation management that could result in less suitable habitat.

Burrow exclusion and closure. Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls, or permanently exclude burrowing owls and close burrows after verifying burrows are empty by site monitoring and scoping. Exclusion in and of itself is not a take avoidance, minimization or mitigation method. Eviction of burrowing owls is a potentially significant impact under CEQA.

The long-term demographic consequences of these techniques have not been thoroughly evaluated, and the fate of evicted or excluded burrowing owls has not been systematically studied. Because burrowing owls are dependent on burrows at all times of the year for survival and/or reproduction, evicting them from nesting, roosting, and satellite burrows may lead to indirect impacts or take. Temporary or permanent closure of burrows may result in significant loss of burrows and habitat for reproduction and other life history requirements. Depending on the proximity and availability of alternate habitat, loss of access to burrows will likely result in varying levels of increased stress on burrowing owls and could depress reproduction, increase predation, increase energetic costs, and introduce risks posed by having to find and compete for available burrows. Therefore, exclusion and burrow closure are not recommended where they can be avoided. The current scientific literature indicates consideration of all possible avoidance and minimization measures before temporary or permanent exclusion and closure of burrows is implemented, in order to avoid take.

The results of a study by Trulio (1995) in California showed that burrowing owls passively displaced from their burrows were quickly attracted to adjacent artificial burrows at five of six passive relocation sites. The successful sites were all within 75 meters (m) of the destroyed burrow, a distance generally within a pair's territory. This researcher discouraged using passive relocation to artificial burrows as a mitigation measure for lost burrows without protection of adjacent foraging habitat. The study results indicated artificial burrows were used by evicted burrowing owls when they were approximately 50-100 m from the natural burrow (Thomsen 1971, Haug and Oliphant 1990). Locating artificial or natural burrows more than 100 m from the eviction burrow may greatly reduce the chances that new burrows will be used. Ideally, exclusion and burrow closure is employed only where there are adjacent natural burrows and non-impacted, sufficient habitat for burrowing owls to occupy with permanent protection mechanisms in place. Any new burrowing owl colonizing the project site after the CEQA document has been adopted may constitute changed circumstances that should be addressed in a re-circulated CEQA document.

The current scientific literature indicates that burrow exclusion should only be conducted by qualified biologists (meeting the Biologist's Qualifications above) during the non-breeding

season, before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance and/or scoping. The literature also indicates that when temporary or permanent burrow exclusion and/or burrow closure is implemented, burrowing owls should not be excluded from burrows unless or until:

- A Burrowing Owl Exclusion Plan (see Appendix E) is developed and approved by the applicable local DFG office;
- Permanent loss of occupied burrow(s) and habitat is mitigated in accordance with the Mitigating Impacts sections below. Temporary exclusion is mitigated in accordance with the item #1 under Mitigating Impacts below.
- Site monitoring is conducted prior to, during, and after exclusion of burrowing owls from their burrows sufficient to ensure take is avoided. Conduct daily monitoring for one week to confirm young of the year have fledged if the exclusion will occur immediately after the end of the breeding season.
- Excluded burrowing owls are documented using artificial or natural burrows on an adjoining mitigation site (if able to confirm by band re-sight).

Translocation (Active relocation offsite >100 meters). At this time, there is little published information regarding the efficacy of translocating burrowing owls, and additional research is needed to determine subsequent survival and breeding success (Klute et al. 2003, Holroyd et al. 2001). Study results for translocation in Florida implied that hatching success may be decreased for populations of burrowing owls that undergo translocation (Nixon 2006). At this time, the Department is unable to authorize the capture and relocation of burrowing owls except within the context of scientific research (FGC §1002) or a NCCP conservation strategy.

Mitigating impacts. Habitat loss and degradation from rapid urbanization of farmland in the core areas of the Central and Imperial valleys is the greatest of many threats to burrowing owls in California (Shuford and Gardali, 2008). At a minimum, if burrowing owls have been documented to occupy burrows (see Definitions, Appendix B) at the project site in recent years, the current scientific literature supports the conclusion that the site should be considered occupied and mitigation should be required by the CEQA lead agency to address project-specific significant and cumulative impacts. Other site-specific and regionally significant and cumulative impacts may warrant mitigation. The current scientific literature indicates the following to be best practices. If these best practices cannot be implemented, the lead agency or lead investigator may consult with the Department to develop effective mitigation alternatives. The Department is also available to assist in the identification of suitable mitigation lands.

1. Where habitat will be temporarily disturbed, restore the disturbed area to pre-project condition including decompacting soil and revegetating. Permanent habitat protection may be warranted if there is the potential that the temporary impacts may render a nesting site (nesting burrow and satellite burrows) unsustainable or unavailable depending on the time frame, resulting in reduced survival or abandonment. For the latter potential impact, see the permanent impact measures below.
2. Mitigate for permanent impacts to nesting, occupied and satellite burrows and/or burrowing owl habitat such that the habitat acreage, number of burrows and burrowing owls impacted are replaced based on the information provided in Appendix A. Note: A

minimum habitat replacement recommendation is not provided here as it has been shown to serve as a default, replacing any site-specific analysis and discounting the wide variation in natal area, home range, foraging area, and other factors influencing burrowing owls and burrowing owl population persistence in a particular area.

3. Mitigate for permanent impacts to nesting, occupied and satellite burrows and burrowing owl habitat with (a) permanent conservation of similar vegetation communities (grassland, scrublands, desert, urban, and agriculture) to provide for burrowing owl nesting, foraging, wintering, and dispersal (i.e., during breeding and non-breeding seasons) comparable to or better than that of the impact area, and (b) sufficiently large acreage, and presence of fossorial mammals. The mitigation lands may require habitat enhancements including enhancement or expansion of burrows for breeding, shelter and dispersal opportunity, and removal or control of population stressors. If the mitigation lands are located adjacent to the impacted burrow site, ensure the nearest neighbor artificial or natural burrow clusters are at least within 210 meters (Fisher et al. 2007).
4. Permanently protect mitigation land through a conservation easement deeded to a non-profit conservation organization or public agency with a conservation mission, for the purpose of conserving burrowing owl habitat and prohibiting activities incompatible with burrowing owl use. If the project is located within the service area of a Department-approved burrowing owl conservation bank, the project proponent may purchase available burrowing owl conservation bank credits.
5. Develop and implement a mitigation land management plan to address long-term ecological sustainability and maintenance of the site for burrowing owls (see Management Plan and Artificial Burrow sections below, if applicable).
6. Fund the maintenance and management of mitigation land through the establishment of a long-term funding mechanism such as an endowment.
7. Habitat should not be altered or destroyed, and burrowing owls should not be excluded from burrows, until mitigation lands have been legally secured, are managed for the benefit of burrowing owls according to Department-approved management, monitoring and reporting plans, and the endowment or other long-term funding mechanism is in place or security is provided until these measures are completed.
8. Mitigation lands should be on, adjacent or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls present.
9. Where there is insufficient habitat on, adjacent to, or near project sites where burrowing owls will be excluded, acquire mitigation lands with burrowing owl habitat away from the project site. The selection of mitigation lands should then focus on consolidating and enlarging conservation areas located outside of urban and planned growth areas, within foraging distance of other conserved lands. If mitigation lands are not available adjacent to other conserved lands, increase the mitigation land acreage requirement to ensure a selected site is of sufficient size. Offsite mitigation may not adequately offset the biological and habitat values impacted on a one to one basis. Consult with the Department when determining offsite mitigation acreages.
10. Evaluate and select suitable mitigation lands based on a comparison of the habitat attributes of the impacted and conserved lands, including but not limited to: type and structure of habitat being impacted or conserved; density of burrowing owls in impacted and conserved habitat; and significance of impacted or conserved habitat to the species range-wide. Mitigate for the highest quality burrowing owl habitat impacted first and foremost when identifying mitigation lands, even if a mitigation site is located outside of

a lead agency's jurisdictional boundary, particularly if the lead agency is a city or special district.

11. Select mitigation lands taking into account the potential human and wildlife conflicts or incompatibility, including but not limited to, human foot and vehicle traffic, and predation by cats, loose dogs and urban-adapted wildlife, and incompatible species management (i.e., snowy plover).
12. Where a burrowing owl population appears to be highly adapted to heavily altered habitats such as golf courses, airports, athletic fields, and business complexes, permanently protecting the land, augmenting the site with artificial burrows, and enhancing and maintaining those areas may enhance sustainability of the burrowing owl population onsite. Maintenance includes keeping lands grazed or mowed with weed-eaters or push mowers, free from trees and shrubs, and preventing excessive human and human-related disturbance (e.g., walking, jogging, off-road activity, dog-walking) and loose and feral pets (chasing and, presumably, preying upon owls) that make the environment uninhabitable for burrowing owls (Wesemann and Rowe 1985, Millsap and Bear 2000, Lincer and Bloom 2007). Items 4, 5 and 6 also still apply to this mitigation approach.
13. If there are no other feasible mitigation options available and a lead agency is willing to establish and oversee a Burrowing Owl Mitigation and Conservation Fund that funds on a competitive basis acquisition and permanent habitat conservation, the project proponent may participate in the lead agency's program.

Artificial burrows. Artificial burrows have been used to replace natural burrows either temporarily or long-term and their long-term success is unclear. Artificial burrows may be an effective addition to in-perpetuity habitat mitigation if they are augmenting natural burrows, the burrows are regularly maintained (i.e., no less than annual, with biennial maintenance recommended), and surrounding habitat patches are carefully maintained. There may be some circumstances, for example at airports, where squirrels will not be allowed to persist and create a dynamic burrow system, where artificial burrows may provide some support to an owl population.

Many variables may contribute to the successful use of artificial burrows by burrowing owls, including pre-existence of burrowing owls in the area, availability of food, predators, surrounding vegetation and proximity, number of natural burrows in proximity, type of materials used to build the burrow, size of the burrow and entrance, direction in which the burrow entrance is facing, slope of the entrance, number of burrow entrances per burrow, depth of the burrow, type and height of perches, and annual maintenance needs (Belthoff and King 2002, Smith et al. 2005, Barclay et al. 2011). Refer to Barclay (2008) and (2011) and to Johnson et al. 2010 (unpublished report) for guidance on installing artificial burrows including recommendations for placement, installation and maintenance.

Any long-term reliance on artificial burrows as natural burrow replacements must include semi-annual to annual cleaning and maintenance and/or replacement (Barclay et al. 2011, Smith and Conway 2005, Alexander et al. 2005) as an ongoing management practice. Alexander et al. (2005), in a study of the use of artificial burrows found that all of 20 artificial burrows needed some annual cleaning and maintenance. Burrows were either excavated by predators, blocked by soil or vegetation, or experienced substrate erosion forming a space beneath the tubing that prevented nestlings from re-entering the burrow.

Mitigation lands management plan. Develop a Mitigation Lands Management Plan for projects that require off-site or on-site mitigation habitat protection to ensure compliance with and effectiveness of identified management actions for the mitigation lands. A suggested outline and related vegetation management goals and monitoring success criteria can be found in Appendix E.

Mitigation Monitoring and Reporting

Verify the compliance with required mitigation measures, the accuracy of predictions, and ensure the effectiveness of all mitigation measures for burrowing owls by conducting follow-up monitoring, and implementing midcourse corrections, if necessary, to protect burrowing owls. Refer to CEQA Guidelines Section 15097 and the CEQA Guidelines for additional guidance on mitigation, monitoring and reporting. Monitoring is qualitatively different from site surveillance; monitoring normally has a specific purpose and its outputs and outcomes will usually allow a comparison with some baseline condition of the site before the mitigation (including avoidance and minimization) was undertaken. Ideally, monitoring should be based on the Before-After Control-Impact (BACI) principle (McDonald et al. 2000) that requires knowledge of the pre-mitigation state to provide a reference point for the state and change in state after the project and mitigation have been implemented.

ACKNOWLEDGEMENTS

We thank Jack Barclay, Jeff Lincer, David Plumpton, Jeff Kidd, Carol Roberts and other reviewers for their valuable comments on this report. We also want to acknowledge all the hard work of the Department team, especially T. Bartlett, K. Riesz, S. Wilson, D. Gifford, D. Mayer, J. Gan, L. Connolly, D. Mayer, A. Donlan, L. Bauer, L. Comrack, D. Lancaster, E. Burkett, B. Johnson, D. Johnston, A. Gonzales, S. Morey and K. Hunting.

REFERENCES

- Alexander, A. K., M. R. Sackschewsky, and C. A. Duberstein. 2005. Use of artificial burrows by burrowing owls (*athene cunicularia*) at the HAMMER Facility on the U.S. Department of Energy Hanford Site. Pacific Northwest National Lab-15414. U.S. Department of Energy, DE-AC05-76RL01830, Richland, Washington, USA.
- BIOS. California Department of Fish and Game. The Biogeographic Information Observation System (<http://bios.dfg.ca.gov/>)
- Barclay, J. H. 2008. A simple artificial burrow design for burrowing owls. *Journal of Raptor Research*. 42: 53-57.
- Barclay, J. H. 2012. Albion Environmental, Inc, personal communication.
- Barclay, J. H., K. W. Hunting, J. L. Lincer, J. Linthicum, and T. A. Roberts, editors. 2007. *Proceedings of the California Burrowing Owl Symposium*, 11-12 November 2003, Sacramento, California, USA. Bird Populations Monographs No. 1. The Institute for Bird Populations and Albion Environmental, Inc., Point Reyes Station, CA.
- Barclay, J. H., N. Korfanta, and M. Kauffman. 2011. Long-term population dynamics of a managed burrowing owl colony. *Journal of Wildlife Management* 75: 1295–1306.
- Belthoff, J. R., R. A. King. 2002. Nest-site characteristics of burrowing owls (*athene cunicularia*) in the Snake River Birds of Prey National Conservation Area, Idaho, and applications to artificial burrow installation. *Western North American Naturalist* 62: 112-119.
- Botelho, E. S. 1996. Behavioral ecology and parental care of breeding western burrowing owls (*Speotyto cunicularia hupugaea*) in southern New Mexico, USA. Dissertation, New Mexico State University, Las Cruces, New Mexico, USA.
- Burkett, E. E., and B. S. Johnson. 2007. Development of a conservation strategy for burrowing owls in California. Pages 165-168 *in* J. H. Barclay, K. W. Hunting, J. L. Lincer, J. Linthicum, and T. A. Roberts, editors. *Proceedings of the California Burrowing Owl Symposium*, 11-12 November 2003, Sacramento, California, USA. Bird Populations Monographs No. 1. The Institute for Bird Populations and Albion Environmental, Inc., Point Reyes Station, CA.
- CBOC (California Burrowing Owl Consortium). 1997. Burrowing owl survey protocol and mitigation guidelines. Pages 171-177 *in* Lincer, J. L. and K. Steenhof (editors). 1997. *The burrowing owl, its biology and management*. Raptor Research Report Number 9.
- CDFG (California Department of Fish and Game). 1995. Staff report on burrowing owl mitigation. Unpublished report. Sacramento, California, USA.
- CNDDDB. California Department of Fish and Game. The California Natural Diversity Database (CNDDDB) (<http://www.dfg.ca.gov/biogeodata/cnddb/>), Sacramento, California, USA.
- Catlin, D. H. 2004. Factors affecting within-season and between-season breeding dispersal of Burrowing Owls in California. Thesis, Oregon State University, Corvallis, Oregon, USA

- Catlin, D. H., and D. K. Rosenberg. 2006. Nest destruction increases mortality and dispersal of Burrowing Owls in the Imperial Valley, California. *Southwest Naturalist* 51: 406–409.
- Catlin, D. H., D. K. Rosenberg, and K. L. Haley. 2005. The effects of nesting success and mate fidelity on breeding dispersal in burrowing owls. *Canadian Journal of Zoology* 83:1574–1580.
- Conway, C. J., and J. Simon. 2003. Comparison of detection probability associated with burrowing owl survey methods. *Journal of Wildlife Management* 67: 501-511.
- Conway, C. J., V. Garcia, M. D., and K. Hughes. 2008. Factors affecting detection of burrowing owl nests during standardized surveys. *Journal of Wildlife Management* 72: 688-696.
- Coulombe, H. N. 1971. Behavior and population ecology of the burrowing owl, *Speotyto cunicularia*, in the Imperial Valley of California. *Condor* 73: 162–176.
- Dechant, J. A., M. L. Sondreal, D. H. Johnson, L. D. Igl, C. M. Goldade, P. A. Rabie, and B. R. Euliss. 2003. Effects of management practices on grassland birds: burrowing owl. Northern Prairie Wildlife Research Center, Jamestown, North Dakota. Northern Prairie Wildlife Research Center Online. <<http://www.npwrc.usgs.gov/resource/literatr/grasbird/buow/buow.htm>>.
- DeSante, D. F., E. D Ruhlen, and R. Scaff. 2007. The distribution and relative abundance of burrowing owls in California during 1991–1993: Evidence for a declining population and thoughts on its conservation. Pages 1-41 in J. H. Barclay, K. W. Hunting, J. L. Lincer, J. Linthicum, and T. A. Roberts, editors. *Proceedings of the California Burrowing Owl Symposium*, 11-12 November 2003 Sacramento, California, USA. Bird Populations Monographs No. 1. The Institute for Bird Populations and Albion Environmental, Inc., Point Reyes Station, CA.
- Desmond, M. J., and J. A. Savidge. 1998. Burrowing Owl conservation in the Great Plains. *Proceedings of the Second International Burrowing Owl Symposium*, 29-30 September 1999, Ogden, Utah, USA.
- Desmond, M. J., and J. A. Savidge. 1999. Satellite burrow use by burrowing owl chicks and its influence on nest fate. Pages 128-130 in P. D. Vickery and J. R. Herkert, editors. *Ecology and conservation of grassland birds of the western hemisphere*. Studies in Avian Biology 19.
- Emlen, J. T. 1977. Estimating breeding season bird densities from transects counts. *Auk* 94: 455-468.
- Fisher, J. B., L. A. Trulio, G. S. Biging, and D. Chromczack. 2007. An analysis of spatial clustering and implications for wildlife management: a burrowing owl example. *Environmental Management* 39: 403-11.
- Gervais, J. A., D. K. Rosenberg, and L. A. Comrack. Burrowing Owl (*Athene cunicularia*) in Shuford, W.D. and T. Gardali, editors. 2008. *California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California*. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento, California, USA.
- Gervais, J. A., D. K. Rosenberg, R. G. Anthony. 2003. Space use and pesticide exposure risk of male burrowing owls in an agricultural landscape. *Journal of Wildlife Management* 67: 155-164.
- Green, G.A.; Anthony, R.G. 1989. Nesting success and habitat relationships of burrowing owls in the Columbia Basin, Oregon. *The Condor* 91: 347-354.
- Haug, E. A. 1985. Observations on the breeding ecology of burrowing owls in Saskatchewan.

- Thesis, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.
- Haug, E. A., B. A. Millsap, and M. S. Martell. 1993. Burrowing owl (*Speotyto cunicularia*), *in* A. Poole and F. Gill, editors, *The Birds of North America*, The Academy of Natural Sciences, Philadelphia, Pennsylvania, and The American Ornithologists' Union, Washington, D.C., USA.
- Haug, E. A., and L. W. Oliphant. 1990. Movements, activity patterns, and habitat use of burrowing owls in Saskatchewan. *Journal of Wildlife Management* 54: 27-35.
- Holroyd, G. L., R. Rodriguez-Estrella, and S. R. Sheffield. 2001. Conservation of the burrowing owl in western North America: issues, challenges, and recommendations. *Journal of Raptor Research* 35: 399-407.
- James, P. C., T. J. Ethier, and M. K. Toutloff. 1997. Parameters of a declining burrowing owl population in Saskatchewan. Pages 34-37. *in* J. L. Lincer, and K. Steenhof, editors. *The burrowing owl, its biology and management: including the proceedings of the first international symposium*. 13-14 November 1992, Bellevue, WA, USA. Raptor Research Report Number 9.
- Johnson, D. H., D. C. Gillis, M. A. Gregg, J. L. Rebholz, J. L. Lincer, and J. R. Belthoff. 2010. Users guide to installation of artificial burrows for burrowing owls. Unpublished report. Tree Top Inc., Selah, Washington, USA.
- Klute, D. S., A. W. Ayers, M. T. Green, W. H. Howe, S. L. Jones, J. A. Shaffer, S. R. Sheffield, and T. S. Zimmerman. 2003. Status assessment and conservation plan for the western burrowing owl in the United States. U.S. Department of the Interior, Fish and Wildlife Service, Biological Technical Publication FWS/BTP-R6001-2003, Washington, D.C, USA.
- Koenig, W. D., D. D. Van Vuren, and P. N. Hooge. 1996. Detectability, philopatry, and the distribution of dispersal distances in vertebrates. *Trends in Ecology and Evolution* 11: 514-517.
- LaFever, D. H., K. E. LaFever, D. H. Catlin, and D. K. Rosenberg. 2008. Diurnal time budget of burrowing owls in a resident population during the non-breeding season. *Southwestern Naturalist* 53: 29-33.
- Lincer, J. L., and P. W. Bloom. 2007. The status of the burrowing owl (*Athene cunicularia*) in San Diego County, CA. Pages 90-102 *in* *Proceedings of the California Burrowing Owl Symposium*, 11-12 November 2003, Sacramento, California, USA. Bird Populations Monographs No. 1. The Institute for Bird Populations and Albion Environmental, Inc., Point Reyes Station, CA.
- Lutz, R. S. and D. L. Plumpton. 1999. Philopatry and nest site reuse by burrowing owls: implications for management. *Journal of Raptor Research* 33: 149-153.
- MacCracken, J. G., D. W. Uresk, and R. M. Hansen. 1985a. Vegetation and soils of burrowing owl nest sites in Conata Basin, South Dakota. *Condor* 87: 152-154.
- Manning, J. A., and R. S. A. Kaler. 2011. Effects of survey methods on burrowing owl behaviors. *Journal of Wildlife Management* 75: 525-30.
- McDonald, T. L., W. P. Erickson, and L. L. McDonald. 2000. Analysis of count data from before-after control-impact studies. *Journal of Agricultural, Biological and Environmental Statistics* 5: 262-279.
- Millsap, B. A., and C. Bear. 2000. Density and reproduction of burrowing owls along an urban development gradient. *Journal of Wildlife Management* 64:33-41.
- Nixon, P. A. 2006. Effects of translocation on the Florida burrowing owl (*Athene cunicularia floridana*). Thesis. University of South Florida, Tampa, Florida, USA.
- Noss, R. F., M. A. O'Connell, and D. D. Murphy. 1997. *The science of conservation planning*:

- habitat conservation under the Endangered Species Act. Island Press, Washington D.C., USA.
- Postovit, H. R., and B. C. Postovit. 1987. Impacts and mitigation techniques. Pages 183-213 in Raptor management techniques manual scientific technical series number 10, National Wildlife Federation, Washington, D. C., USA
- Remsen, J. V., Jr. 1978. Bird species of special concern in California: An annotated list of declining or vulnerable bird species. California Department of Fish and Game, Nongame Wildlife. Investigations, Wildlife Management Branch Administrative Report 78-1, Sacramento, California, USA.
- Rich, T. 1984. Monitoring burrowing owl populations: implications of burrow re-use. Wildlife Society Bulletin 12: 178-189.
- Richardson, C. T. and C. K. Miller. 1997. Recommendations for protecting raptors from human disturbance: a review. Wildlife Society Bulletin 25: 634-38.
- Ronan, N. A. 2002. Habitat selection, reproductive success, and site fidelity of burrowing owls in a grassland ecosystem. Thesis, Oregon State University, Corvallis, Oregon, USA.
- Rosenberg, D., 2009 Oregon State University, Corvallis, personal communication.
- Rosenberg, D. K., J. A. Gervais, D. F. DeSante, and H. Ober. 2009. An updated adaptive management plan for the burrowing owl population at NAS Lemoore. The Oregon Wildlife Institute, Corvallis, OR and The Institute for Bird Populations, Point Reyes Station, CA. OWI Contribution No. 201 and IBP Contribution No. 375.
- Rosenberg, D. K., J. A. Gervais, H. Ober, and D. F. DeSante. 1998. An adaptive management plan for the burrowing owl population at Naval Air Station Lemoore, California, USA. Publication 95, Institute for Bird Populations, P.O. Box 1346, Pt. Reyes Station, CA 94956.
- Rosenberg, D. K., and K. L. Haley. 2004. The ecology of burrowing owls in the agroecosystem of the Imperial Valley, California. Studies in Avian Biology 27:120-135.
- Rosenberg, D. K., L. A. Trulio, D. H. Catlin, D. Chromczack, J. A. Gervais, N. Ronan, and K. A. Haley. 2007. The ecology of the burrowing owl in California, unpublished report to Bureau of Land Management.
- Rosier, J. R., N. A., Ronan, and D. K. Rosenberg. 2006. Post-breeding dispersal of burrowing owls in an extensive California grassland. American Midland Naturalist 155: 162–167.
- Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. A manual of California vegetation, Second edition. California Native Plant Society, Sacramento, California, USA.
- Scobie, D., and C. Faminow. 2000. Development of standardized guidelines for petroleum industry activities that affect COSEWIC Prairie and Northern Region vertebrate species at risk. Environment Canada, Prairie and Northern Region, Edmonton, Alberta, Canada.
- Shuford, W. D. and T. Gardali, editors. 2008. California Bird Species of Special Concern: a ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento. Gervais, J. A., D. K. Rosenberg, and L. Comrack. 2008. Burrowing Owl (*Athene cunicularia*).
- Smith, M. D., C. J. Conway, and L. A. Ellis. 2005. Burrowing owl nesting productivity: a comparison between artificial and natural burrows on and off golf courses. Wildlife Society Bulletin 33: 454-462.
- Thelander, C. G., K. S. Smallwood, and L. Rugge. 2003. Bird risk behaviors and fatalities at the Altamont Pass Wind Resource Area, period of performance: March 1998–

- December 2000. U.S. Department of Energy, National Renewable Energy Laboratory, Golden, Colorado, USA.
- Thomsen, L. 1971. Behavior and ecology of burrowing owls on the Oakland Municipal Airport. *Condor* 73: 177-192.
- Thompson, C. D. 1984. Selected aspects of burrowing owl ecology in central Wyoming. Thesis, University of Wyoming, Laramie, Wyoming, USA.
- Trulio, L. 1995. Passive relocation: A method to preserve burrowing owls on disturbed sites. *Journal of Field Ornithology* 66: 99–106.
- U.S. Fish and Wildlife Service (USFWS). 2002. Birds of conservation concern 2002. U.S. Department of Interior, Division of Migratory Bird Management, Arlington, Virginia, USA.
- U.S. Fish and Wildlife Service (USFWS). 2008. Birds of Conservation Concern 2008. U.S. Department of Interior, Division of Migratory Bird Management, Arlington, Virginia, USA.
- Wesemann, T. and M. Rowe. 1985. Factors influencing the distribution and abundance of burrowing owls in Cape Coral, Florida. Pages 129-137 *in* L. W. Adams and D. L. Leedy, editors. Integrating Man and Nature in the Metropolitan Environment. Proceedings National Symposium. on Urban Wildlife, 4-7 November 1986, Chevy Chase, Maryland, USA.
- Wilkerson, R. L. and R. B. Siegel. 2010. Assessing changes in the distribution and abundance of burrowing owls in California, 1993-2007. *Bird Populations* 10: 1-36.
- Zarn, M. 1974. Burrowing owl. U.S. Department of the Interior, Bureau of Land Management. Technical Note T-N-250, Denver, Colorado, USA.

Appendix A. Burrowing Owl Natural History and Threats

Diet

Burrowing owl diet includes arthropods, small rodents, birds, amphibians, reptiles, and carrion (Haug et al. 1993).

Breeding

In California, the breeding season for the burrowing owl typically occurs between 1 February and 31 August although breeding in December has been documented (Thompson 1971, Gervais et al. 2008); breeding behavior includes nest site selection by the male, pair formation, copulation, egg laying, hatching, fledging, and post-fledging care of young by the parents. The peak of the breeding season occurs between 15 April and 15 July and is the period when most burrowing owls have active nests (eggs or young). The incubation period lasts 29 days (Coulombe 1971) and young fledge after 44 days (Haug et al. 1993). Note that the timing of nesting activities may vary with latitude and climatic conditions. Burrowing owls may change burrows several times during the breeding season, starting when nestlings are about three weeks old (Haug et al. 1993).

Dispersal

The following discussion is an excerpt from Gervais et al (2008):

“The burrowing owl is often considered a sedentary species (e.g., Thomsen 1971). A large proportion of adults show strong fidelity to their nest site from year to year, especially where resident, as in Florida (74% for females, 83% for males; Millsap and Bear 1997). In California, nest-site fidelity rates were 32%–50% in a large grassland and 57% in an agricultural environment (Ronan 2002, Catlin 2004, Catlin et al. 2005). Differences in these rates among sites may reflect differences in nest predation rates (Catlin 2004, Catlin et al. 2005). Despite the high nest fidelity rates, dispersal distances may be considerable for both juveniles (natal dispersal) and adults (postbreeding dispersal), but this also varied with location (Catlin 2004, Rosier et al. 2006). Distances of 53 km to roughly 150 km have been observed in California for adult and natal dispersal, respectively (D. K. Rosenberg and J. A. Gervais, unpublished data), despite the difficulty in detecting movements beyond the immediate study area (Koenig et al. 1996).”

Habitat

The burrowing owl is a small, long-legged, ground-dwelling bird species, well-adapted to open, relatively flat expanses. In California, preferred habitat is generally typified by short, sparse vegetation with few shrubs, level to gentle topography and well-drained soils (Haug et al. 1993). Grassland, shrub steppe, and desert are naturally occurring habitat types used by the species. In addition, burrowing owls may occur in some agricultural areas, ruderal grassy fields, vacant lots and pastures if the vegetation structure is suitable and there are useable burrows and foraging habitat in proximity (Gervais et al 2008). Unique amongst North

American raptors, the burrowing owl requires underground burrows or other cavities for nesting during the breeding season and for roosting and cover, year round. Burrows used by the owls are usually dug by other species termed host burrowers. In California, California ground squirrel (*Spermophilus beecheyi*) and round-tailed ground squirrel (*Citellus tereticaudus*) burrows are frequently used by burrowing owls but they may use dens or holes dug by other fossorial species including badger (*Taxidea taxus*), coyote (*Canis latrans*), and fox (e.g., San Joaquin kit fox, *Vulpes macrotis mutica*; Ronan 2002). In some instances, owls have been known to excavate their own burrows (Thompson 1971, Barclay 2007). Natural rock cavities, debris piles, culverts, and pipes also are used for nesting and roosting (Rosenberg et al. 1998). Burrowing owls have been documented using artificial burrows for nesting and cover (Smith and Belthoff, 2003).

Foraging habitat. Foraging habitat is essential to burrowing owls. The following discussion is an excerpt from Gervais et al. (2008):

“Useful as a rough guide to evaluating project impacts and appropriate mitigation for burrowing owls, adult male burrowing owls home ranges have been documented (calculated by minimum convex polygon) to comprise anywhere from 280 acres in intensively irrigated agroecosystems in Imperial Valley (Rosenberg and Haley 2004) to 450 acres in mixed agricultural lands at Lemoore Naval Air Station, CA (Gervais et al. 2003), to 600 acres in pasture in Saskatchewan, Canada (Haug and Oliphant 1990). But owl home ranges may be much larger, perhaps by an order of magnitude, in non-irrigated grasslands such as at Carrizo Plain, California (Gervais et al. 2008), based on telemetry studies and distribution of nests. Foraging occurs primarily within 600 m of their nests (within approximately 300 acres, based on a circle with a 600 m radius) during the breeding season.”

Importance of burrows and adjacent habitat. Burrows and the associated surrounding habitat are essential ecological requisites for burrowing owls throughout the year and especially during the breeding season. During the non-breeding season, burrowing owls remain closely associated with burrows, as they continue to use them as refuge from predators, shelter from weather and roost sites. Resident populations will remain near the previous season’s nest burrow at least some of the time (Coulombe 1971, Thomsen 1971, Botelho 1996, LaFever et al. 2008).

In a study by Lutz and Plumpton (1999) adult males and females nested in formerly used sites at similar rates (75% and 63%, respectively) (Lutz and Plumpton 1999). Burrow fidelity has been reported in some areas; however, more frequently, burrowing owls reuse traditional nesting areas without necessarily using the same burrow (Haug et al. 1993, Dechant et al. 1999). Burrow and nest sites are re-used at a higher rate if the burrowing owl has reproduced successfully during the previous year (Haug et al. 1993) and if the number of burrows isn’t limiting nesting opportunity.

Burrowing owls may use “satellite” or non-nesting burrows, moving young at 10-14 days, presumably to reduce risk of predation (Desmond and Savidge 1998) and possibly to avoid nest parasites (Dechant et al. 1999). Successful nests in Nebraska had more active satellite burrows within 75 m of the nest burrow than unsuccessful nests (Desmond and Savidge

1999). Several studies have documented the number of satellite burrows used by young and adult burrowing owls during the breeding season as between one and 11 burrows with an average use of approximately five burrows (Thompson 1984, Haug 1985, Haug and Oliphant 1990). Supporting the notion of selecting for nest sites near potential satellite burrows, Ronan (2002) found burrowing owl families would move away from a nest site if their satellite burrows were experimentally removed through blocking their entrance.

Habitat adjacent to burrows has been documented to be important to burrowing owls. Gervais et al. (2003) found that home range sizes of male burrowing owls during the nesting season were highly variable within but not between years. Their results also suggested that owls concentrate foraging efforts within 600 meters of the nest burrow, as was observed in Canada (Haug and Oliphant 1990) and southern California (Rosenberg and Haley 2004). James et al. (1997), reported habitat modification factors causing local burrowing owl declines included habitat fragmentation and loss of connectivity.

In conclusion, the best available science indicates that essential habitat for the burrowing owl in California must include suitable year-round habitat, primarily for breeding, foraging, wintering and dispersal habitat consisting of short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey within close proximity to the burrow.

Threats to Burrowing Owls in California

Habitat loss. Habitat loss, degradation, and fragmentation are the greatest threats to burrowing owls in California. According to DeSante et al. (2007), “the vast majority of burrowing owls [now] occur in the wide, flat lowland valleys and basins of the Imperial Valley and Great Central Valley [where] for the most part,...the highest rates of residential and commercial development in California are occurring.” Habitat loss from the State’s long history of urbanization in coastal counties has already resulted in either extirpation or drastic reduction of burrowing owl populations there (Gervais et al. 2008). Further, loss of agricultural and other open lands (such as grazed landscapes) also negatively affect owl populations. Because of their need for open habitat with low vegetation, burrowing owls are unlikely to persist in agricultural lands dominated by vineyards and orchards (Gervais et al. 2008).

Control of burrowing rodents. According to Klute et al. (2003), the elimination of burrowing rodents through control programs is a primary factor in the recent and historical decline of burrowing owl populations nationwide. In California, ground squirrel burrows are most often used by burrowing owls for nesting and cover; thus, ground squirrel control programs may affect owl numbers in local areas by eliminating a necessary resource.

Direct mortality. Burrowing owls suffer direct losses from a number of sources. Vehicle collisions are a significant source of mortality especially in the urban interface and where owls nest alongside roads (Haug et al. 1993, Gervais et al. 2008). Road and ditch maintenance, modification of water conveyance structures (Imperial Valley) and discing to control weeds in fallow fields may destroy burrows (Rosenberg and Haley 2004, Catlin and Rosenberg 2006) which may trap or crush owls. Wind turbines at Altamont Pass Wind Resource Area are known to cause direct burrowing owl mortality (Thelander et al. 2003). Exposure to

pesticides may pose a threat to the species but is poorly understood (Klute et al. 2003, Gervais et al. 2008).

Appendix B. Definitions

Some key terms that appear in this document are defined below.

Adjacent habitat means burrowing owl habitat that abuts the area where habitat and burrows will be impacted and rendered non-suitable for occupancy.

Breeding (nesting) season begins as early as 1 February and continues through 31 August (Thomsen 1971, Zarn 1974). The timing of breeding activities may vary with latitude and climatic conditions. The breeding season includes pairing, egg-laying and incubation, and nestling and fledging stages.

Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls or permanently exclude burrowing owls and excavate and close burrows after confirming burrows are empty.

Burrowing owl habitat generally includes, but is not limited to, short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey.

Burrow surrogates include culverts, piles of concrete rubble, piles of soil, burrows created along soft banks of ditches and canals, pipes, and similar structures.

Civil twilight - Morning civil twilight begins when the geometric center of the sun is 6 degrees below the horizon (civil dawn) and ends at sunrise. Evening civil twilight begins at sunset and ends when the geometric center of the sun reaches 6 degrees below the horizon (civil dusk). During this period there is enough light from the sun that artificial sources of light may not be needed to carry on outdoor activities. This concept is sometimes enshrined in laws, for example, when drivers of automobiles must turn on their headlights (called lighting-up time in the UK); when pilots may exercise the rights to fly aircraft. Civil twilight can also be described as the limit at which twilight illumination is sufficient, under clear weather conditions, for terrestrial objects to be clearly distinguished; at the beginning of morning civil twilight, or end of evening civil twilight, the horizon is clearly defined and the brightest stars are visible under clear atmospheric conditions.

Conservation for burrowing owls may include but may not be limited to protecting remaining breeding pairs or providing for population expansion, protecting and enhancing breeding and essential habitat, and amending or augmenting land use plans to stabilize populations and other specific actions to avoid the need to list the species pursuant to California or federal Endangered Species Acts.

Contiguous means connected together so as to form an uninterrupted expanse in space.

Essential habitat includes nesting, foraging, wintering, and dispersal habitat.

Foraging habitat is habitat within the estimated home range of an occupied burrow, supports suitable prey base, and allows for effective hunting.

Host burrowers include ground squirrels, badgers, foxes, coyotes, gophers etc.

Locally significant species is a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or occurring in a unique habitat type.

Non-breeding season is the period of time when nesting activity is not occurring, generally September 1 through January 31, but may vary with latitude and climatic conditions.

Occupied site or occupancy means a site that is assumed occupied if at least one burrowing owl has been observed occupying a burrow within the last three years (Rich 1984). Occupancy of suitable burrowing owl habitat may also be indicated by owl sign including its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance or perch site.

Other impacting activities may include but may not be limited to agricultural practices, vegetation management and fire control, pest management, conversion of habitat from rangeland or natural lands to more intensive agricultural uses that could result in “take”. These impacting activities may not meet the definition of a project under CEQA.

Passive relocation is a technique of installing one-way doors in burrow openings to temporarily or permanently evict burrowing owls and prevent burrow re-occupation.

Peak of the breeding season is between 15 April and 15 July.

Sign includes its tracks, molted feathers, cast pellets (defined as 1-2” long brown to black regurgitated pellets consisting of non-digestible portions of the owls’ diet, such as fur, bones, claws, beetle elytra, or feathers), prey remains, egg shell fragments, owl white wash, nest burrow decoration materials (e.g., paper, foil, plastic items, livestock or other animal manure, etc.), possible owl perches, or other items.

Appendix C. Habitat Assessment and Reporting Details

Habitat Assessment Data Collection and Reporting

Current scientific literature indicates that it would be most effective to gather the data in the manner described below when conducting project scoping, conducting a habitat assessment site visit and preparing a habitat assessment report:

1. Conduct at least one visit covering the entire potential project/activity area including areas that will be directly or indirectly impacted by the project. Survey adjoining areas within 150 m (Thomsen 1971, Martin 1973), or more where direct or indirect effects could potentially extend offsite. If lawful access cannot be achieved to adjacent areas, surveys can be performed with a spotting scope or other methods.
2. Prior to the site visit, compile relevant biological information for the site and surrounding area to provide a local and regional context.
3. Check all available sources for burrowing owl occurrence information regionally prior to a field inspection. The CNDDDB and BIOS (see References cited) may be consulted for known occurrences of burrowing owls. Other sources of information include, but are not limited to, the Proceedings of the California Burrowing Owl Symposium (Barclay et al. 2007), county bird atlas projects, Breeding Bird Survey records, eBIRD (<http://ebird.org>), Gervais et al. (2008), local reports or experts, museum records, and other site-specific relevant information.
4. Identify vegetation and habitat types potentially supporting burrowing owls in the project area and vicinity.
5. Record and report on the following information:
 - a. A full description of the proposed project, including but not limited to, expected work periods, daily work schedules, equipment used, activities performed (such as drilling, construction, excavation, etc.) and whether the expected activities will vary in location or intensity over the project's timeline;
 - b. A regional setting map, showing the general project location relative to major roads and other recognizable features;
 - c. A detailed map (preferably a USGS topo 7.5' quad base map) of the site and proposed project, including the footprint of proposed land and/or vegetation-altering activities, base map source, identifying topography, landscape features, a north arrow, bar scale, and legend;
 - d. A written description of the biological setting, including location (Section, Township, Range, baseline and meridian), acreage, topography, soils, geographic and hydrologic characteristics, land use and management history on and adjoining the site (i.e., whether it is urban, semi-urban or rural; whether there is any evidence of past or current livestock grazing, mowing, disking, or other vegetation management activities);
 - e. An analysis of any relevant, historical information concerning burrowing owl use or occupancy (breeding, foraging, over-wintering) on site or in the assessment area;
 - f. Vegetation type and structure (using Sawyer et al. 2009), vegetation height, habitat types and features in the surrounding area plus a reasonably sized (as supported with logical justification) assessment area; (Note: use caution in discounting habitat based on grass height as it can be a temporary condition variable by season and conditions (such as current grazing regime) or may be distributed as a mosaic).

- g. The presence of burrowing owl individuals or pairs or sign (see Appendix B);
- h. The presence of suitable burrows and/or burrow surrogates (>11 cm in diameter (height and width) and >150 cm in depth) (Johnson et al. 2010), regardless of a lack of any burrowing owl sign and/or burrow surrogates; and burrowing owls and/or their sign that have recently or historically (within the last 3 years) been identified on or adjacent to the site.

Appendix D. Breeding and Non-breeding Season Surveys and Reports

Current scientific literature indicates that it is most effective to conduct breeding and non-breeding season surveys and report in the manner that follows:

Breeding Season Surveys

Number of visits and timing. Conduct 4 survey visits: 1) at least one site visit between 15 February and 15 April, and 2) a minimum of three survey visits, at least three weeks apart, between 15 April and 15 July, with at least one visit after 15 June. Note: many burrowing owl migrants are still present in southwestern California during mid-March, therefore, exercise caution in assuming breeding occupancy early in the breeding season.

Survey method. Rosenberg et al. (2007) confirmed walking line transects were most effective in smaller habitat patches. Conduct surveys in all portions of the project site that were identified in the Habitat Assessment and fit the description of habitat in Appendix A. Conduct surveys by walking straight-line transects spaced 7 m to 20 m apart, adjusting for vegetation height and density (Rosenberg et al. 2007). At the start of each transect and, at least, every 100 m, scan the entire visible project area for burrowing owls using binoculars. During walking surveys, record all potential burrows used by burrowing owls as determined by the presence of one or more burrowing owls, pellets, prey remains, whitewash, or decoration. Some burrowing owls may be detected by their calls, so observers should also listen for burrowing owls while conducting the survey.

Care should be taken to minimize disturbance near occupied burrows during all seasons and not to “flush” burrowing owls especially if predators are present to reduce any potential for needless energy expenditure or burrowing owl mortality. Burrowing owls may flush if approached by pedestrians within 50 m (Conway et al. 2003). If raptors or other predators are present that may suppress burrowing owl activity, return at another time or later date for a follow-up survey.

Check all burrowing owls detected for bands and/or color bands and report band combinations to the Bird Banding Laboratory (BBL). Some site-specific variations to survey methods discussed below may be developed in coordination with species experts and Department staff.

Weather conditions. Poor weather may affect the surveyor’s ability to detect burrowing owls, therefore, avoid conducting surveys when wind speed is >20 km/hr, and there is precipitation or dense fog. Surveys have greater detection probability if conducted when ambient temperatures are >20° C, <12 km/hr winds, and cloud cover is <75% (Conway et al. 2008).

Time of day. Daily timing of surveys varies according to the literature, latitude, and survey method. However, surveys between morning civil twilight and 10:00 AM and two hours before sunset until evening civil twilight provide the highest detection probabilities (Barclay pers. comm. 2012, Conway et al. 2008).

Alternate methods. If the project site is large enough to warrant an alternate method, consult current literature for generally accepted survey methods and consult with the Department on the proposed survey approach.

Additional breeding season site visits. Additional breeding season site visits may be necessary, especially if non-breeding season exclusion methods are contemplated. Detailed information, such as approximate home ranges of each individual or of family units, as well as foraging areas as related to the proposed project, will be important to document for evaluating impacts, planning avoidance measure implementation and for mitigation measure performance monitoring.

Adverse conditions may prevent investigators from determining presence or occupancy. Disease, predation, drought, high rainfall or site disturbance may preclude presence of burrowing owls in any given year. Any such conditions should be identified and discussed in the survey report. Visits to the site in more than one year may increase the likelihood of detection. Also, visits to adjacent known occupied habitat may help determine appropriate survey timing.

Given the high site fidelity shown by burrowing owls (see Appendix A, Importance of burrows), conducting surveys over several years may be necessary when project activities are ongoing, occur annually, or start and stop seasonally. (See Negative surveys).

Non-breeding Season Surveys

If conducting non-breeding season surveys, follow the methods described above for breeding season surveys, but conduct at least four (4) visits, spread evenly, throughout the non-breeding season. Burrowing owl experts and local Department staff are available to assist with interpreting results.

Negative Surveys

Adverse conditions may prevent investigators from documenting presence or occupancy. Disease, predation, drought, high rainfall or site disturbance may preclude presence of burrowing owl in any given year. Discuss such conditions in the Survey Report. Visits to the site in more than one year increase the likelihood of detection and failure to locate burrowing owls during one field season does not constitute evidence that the site is no longer occupied, particularly if adverse conditions influenced the survey results. Visits to other nearby known occupied sites can affirm whether the survey timing is appropriate.

Take Avoidance Surveys

Field experience from 1995 to present supports the conclusion that it would be effective to complete an initial take avoidance survey no less than 14 days prior to initiating ground disturbance activities using the recommended methods described in the Detection Surveys section above. Implementation of avoidance and minimization measures would be triggered by positive owl presence on the site where project activities will occur. The development of avoidance and minimization approaches would be informed by monitoring the burrowing owls.

Burrowing owls may re-colonize a site after only a few days. Time lapses between project activities trigger subsequent take avoidance surveys including but not limited to a final survey conducted within 24 hours prior to ground disturbance.

Survey Reports

Report on the survey methods used and results including the information described in the Summary Report and include the reports within the CEQA documentation:

1. Date, start and end time of surveys including weather conditions (ambient temperature, wind speed, percent cloud cover, precipitation and visibility);
2. Name(s) of surveyor(s) and qualifications;
3. A discussion of how the timing of the survey affected the comprehensiveness and detection probability;
4. A description of survey methods used including transect spacing, point count dispersal and duration, and any calls used;
5. A description and justification of the area surveyed relative to the project area;
6. A description that includes: number of owls or nesting pairs at each location (by nestlings, juveniles, adults, and those of an unknown age), number of burrows being used by owls, and burrowing owl sign at burrows. Include a description of individual markers, such as bands (numbers and colors), transmitters, or unique natural identifying features. If any owls are banded, request documentation from the BBL and bander to report on the details regarding the known history of the banded burrowing owl(s) (age, sex, origins, whether it was previously relocated) and provide with the report if available;
7. A description of the behavior of burrowing owls during the surveys, including feeding, resting, courtship, alarm, territorial defense, and those indicative of parents or juveniles;
8. A list of possible burrowing owl predators present and documentation of any evidence of predation of owls;
9. A detailed map (1:24,000 or closer to show details) showing locations of all burrowing owls, potential burrows, occupied burrows, areas of concentrated burrows, and burrowing owl sign. Locations documented by use of global positioning system (GPS) coordinates must include the datum in which they were collected. The map should include a title, north arrow, bar scale and legend;
10. Signed field forms, photos, etc., as appendices to the field survey report;
11. Recent color photographs of the proposed project or activity site; and
12. Original CNDDDB Field Survey Forms should be sent directly to the Department's CNDDDB office, and copies should be included in the environmental document as an appendix. (<http://www.dfg.ca.gov/bdb/html/cnddb.html>).

Appendix E. Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans

Whereas the Department does not recommend exclusion and burrow closure, current scientific literature and experience from 1995 to present, indicate that the following example components for burrowing owl artificial burrow and exclusion plans, combined with consultation with the Department to further develop these plans, would be effective.

Artificial Burrow Location

If a burrow is confirmed occupied on-site, artificial burrow locations should be appropriately located and their use should be documented taking into consideration:

1. A brief description of the project and project site pre-construction;
2. The mitigation measures that will be implemented;
3. Potential conflicting site uses or encumbrances;
4. A comparison of the occupied burrow site(s) and the artificial burrow site(s) (e.g., vegetation, habitat types, fossorial species use in the area, and other features);
5. Artificial burrow(s) proximity to the project activities, roads and drainages;
6. Artificial burrow(s) proximity to other burrows and entrance exposure;
7. Photographs of the site of the occupied burrow(s) and the artificial burrows;
8. Map of the project area that identifies the burrow(s) to be excluded as well as the proposed sites for the artificial burrows;
9. A brief description of the artificial burrow design;
10. Description of the monitoring that will take place during and after project implementation including information that will be provided in a monitoring report.
11. A description of the frequency and type of burrow maintenance.

Exclusion Plan

An Exclusion Plan addresses the following including but not limited to:

1. Confirm by site surveillance that the burrow(s) is empty of burrowing owls and other species preceding burrow scoping;
2. Type of scope and appropriate timing of scoping to avoid impacts;
3. Occupancy factors to look for and what will guide determination of vacancy and excavation timing (one-way doors should be left in place 48 hours to ensure burrowing owls have left the burrow before excavation, visited twice daily and monitored for evidence that owls are inside and can't escape i.e., look for sign immediately inside the door).
4. How the burrow(s) will be excavated. Excavation using hand tools with refilling to prevent reoccupation is preferable whenever possible (may include using piping to stabilize the burrow to prevent collapsing until the entire burrow has been excavated and it can be determined that no owls reside inside the burrow);
5. Removal of other potential owl burrow surrogates or refugia on site;
6. Photographing the excavation and closure of the burrow to demonstrate success and sufficiency;

7. Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take;
8. How the impacted site will continually be made inhospitable to burrowing owls and fossorial mammals (e.g., by allowing vegetation to grow tall, heavy disking, or immediate and continuous grading) until development is complete.

Appendix F. Mitigation Management Plan and Vegetation Management Goals

Mitigation Management Plan

A mitigation site management plan will help ensure the appropriate implementation and maintenance for the mitigation site and persistence of the burrowing owls on the site. For an example to review, refer to Rosenberg et al. (2009). The current scientific literature and field experience from 1995 to present indicate that an effective management plan includes the following:

1. Mitigation objectives;
2. Site selection factors (including a comparison of the attributes of the impacted and conserved lands) and baseline assessment;
3. Enhancement of the conserved lands (enhancement of reproductive capacity, enhancement of breeding areas and dispersal opportunities, and removal or control of population stressors);
4. Site protection method and prohibited uses;
5. Site manager roles and responsibilities;
6. Habitat management goals and objectives:
 - a. Vegetation management goals,
 - i. Vegetation management tools:
 1. Grazing
 2. Mowing
 3. Burning
 4. Other
 - b. Management of ground squirrels and other fossorial mammals,
 - c. Semi-annual and annual artificial burrow cleaning and maintenance,
 - d. Non-natives control – weeds and wildlife,
 - e. Trash removal;
 - a. Property analysis record or other financial analysis to determine long-term management funding,
 - b. Funding schedule;
7. Financial assurances:
 - a. Property analysis record or other financial analysis to determine long-term management funding,
 - b. Funding schedule;
8. Performance standards and success criteria;
9. Monitoring, surveys and adaptive management;
10. Maps;
11. Annual reports.

Vegetation Management Goals

- Manage vegetation height and density (especially in immediate proximity to burrows). Suitable vegetation structure varies across sites and vegetation types, but should generally be at the average effective vegetation height of 4.7 cm (Green and Anthony 1989) and <13 cm average effective vegetation height (MacCracken et al. 1985a).
- Employ experimental prescribed fires (controlled, at a small scale) to manage vegetation structure;

- Vegetation reduction or ground disturbance timing, extent, and configuration should avoid take. While local ordinances may require fire prevention through vegetation management, activities like disking, mowing, and grading during the breeding season can result in take of burrowing owls and collapse of burrows, causing nest destruction. Consult the take avoidance surveys section above for pre-management avoidance survey recommendations;
- Promote natural prey distribution and abundance, especially in proximity to occupied burrows; and
- Promote self-sustaining populations of host burrowers by limiting or prohibiting lethal rodent control measures and by ensuring food availability for host burrowers through vegetation management.

Refer to Rosenberg et al. (2009) for a good discussion of managing grasslands for burrowing owls.

Mitigation Site Success Criteria

In order to evaluate the success of mitigation and management strategies for burrowing owls, monitoring is required that is specific to the burrowing owl management plan. Given limited resources, Barclay et al. (2011) suggests managers focus on accurately estimating annual adult owl populations rather than devoting time to estimating reproduction, which shows high annual variation and is difficult to accurately estimate. Therefore, the key objective will be to determine accurately the number of adult burrowing owls and pairs, and if the numbers are maintained. A frequency of 5-10 years for surveys to estimate population size may suffice if there are no changes in the management of the nesting and foraging habitat of the owls.

Effective monitoring and evaluation of off-site and on-site mitigation management success for burrowing owls includes (Barclay, pers. comm.):

- Site tenacity;
- Number of adult owls present and reproducing;
- Colonization by burrowing owls from elsewhere (by band re-sight);
- Evidence and causes of mortality;
- Changes in distribution; and
- Trends in stressors.