

<b>DOCKETED</b>	
<b>Docket Number:</b>	24-OPT-03
<b>Project Title:</b>	Soda Mountain Solar
<b>TN #:</b>	257902
<b>Document Title:</b>	Appendix D1 Biological Resources Technical Report
<b>Description:</b>	This report describes how biological resources surveys were performed, and how, based on the results of the surveys, biological resources may be potentially affected by the construction, operation, maintenance, and decommissioning of the project. Desert bighorn sheep ( <i>Ovis canadensis nelsoni</i> ) information and analysis is not covered in this report.
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<b>Submission Date:</b>	7/22/2024 5:19:38 PM
<b>Docketed Date:</b>	7/23/2024

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# Soda Mountain Solar Project Biological Resources Technical Report, San Bernardino County, California

JUNE 2024

PREPARED FOR

**Soda Mountain Solar, LLC**

PREPARED BY

**SWCA Environmental Consultants**

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**SODA MOUNTAIN SOLAR PROJECT  
BIOLOGICAL RESOURCES TECHNICAL REPORT,  
SAN BERNARDINO COUNTY, CALIFORNIA**

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## EXECUTIVE SUMMARY

On December 14, 2007, the project applicant, Soda Mountain Solar, LLC, filed a right-of-way (ROW) grant application with the federal Bureau of Land Management (BLM) to construct, operate, maintain, and decommission the Soda Mountain Solar Project (project) (BLM Case File Number CACA-049584). The BLM issued a Record of Decision (ROD) to approve a revised configuration of the application and associated amendment to the CDCA Plan in March 2016. Despite the project receiving a ROD from BLM and recommendation from the County planning staff to approve the project, the San Bernardino County Board of Supervisors declined to certify the project Environmental Impact Report (EIR).

The applicant is pursuing completion of project review pursuant to the California Environmental Quality Control Act (CEQA based on a revised project). The project proposes to construct, operate, maintain, and decommission a proposed 300-MW photovoltaic solar facility located on approximately 2,670 acres. The disturbance area for the project would be up to 2,670 acres.

This Biological Resources Technical Report (report) was prepared by SWCA Environmental Consultants (SWCA) to analyze the project. This report describes how biological resources surveys were performed, and how, based on the results of the surveys, biological resources may be potentially affected by the construction, operation, maintenance, and decommissioning of the project. Desert bighorn sheep (*Ovis canadensis nelsoni*) information and analysis is not covered in this report. Survey data for desert bighorn sheep near the study area will be provided separately by CDFW and included in the EIR. Analyses will be based on CDFW-specific methodologies designed to understand how to reach the CDFW's long-term management goals.

A comprehensive literature and database search was performed to identify biological resources that may occur in the study area. Following the desktop review, field surveys were performed to assess existing habitat conditions in the study area. The field surveys included surveys for special-status species, and were performed according to existing protocols, guidelines, and methodologies, and in coordination with CDFW. Five native vegetation communities were identified on-site, including two sensitive vegetation communities. These vegetation communities include Creosote Bush – White Bursage Scrub (*Ambrosia dumosa*), Creosote Bush Scrub, Rigid Spineflower – Hairy Desert Sunflower, Cheesebush – Sweetbrush Scrub, and California Joint Fir -Longleaf Joint-fir Scrub. Rare plant surveys confirmed the presence of one special-status plant species—Utah vine milkweed (*Funastrum utahense*).

The project is not located within a wildlife connectivity area as mapped by the California Essential Habitat Connectivity Project (Spencer et al. 2010). Washes present in the study area are landscape features that are the most likely to represent wildlife movement corridors locally; however, there is no evidence that they provide avenues for concentrations of wildlife. Further, there is no riparian vegetation to support concentrations of wildlife. However, the project is located within the known range of desert bighorn sheep. Thus, it is possible that desert bighorn sheep utilize habitat within the project area as movement corridors.

Six special-status animals and/or their diagnostic sign were observed during the surveys: desert tortoise (*Gopherus agassizii*), burrowing owl (*Athene cunicularia*), loggerhead shrike (*Lanius ludovicianus*), desert kit fox (*Vulpes macrotis arsipus*), American badger (*Taxidea taxus*), and desert bighorn sheep. Impacts to desert tortoise, burrowing owl, loggerhead shrike, desert kit fox, and American badger will be reduced to less than significant through the implementation of the mitigation measures described here. Impacts to these species—with the exclusion of an analysis of bighorn sheep—will be reduced to less than significant through the implementation of the mitigation measures described herein.

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## **ACRONYMS AND ABBREVIATIONS**

ACEC	Area of Critical Environmental Concern
AMMP	Avian Monitoring and Mitigation Program
amsl	above mean sea level
APM	applicant-proposed measure
applicant	Soda Mountain Solar, LLC
BA	Biological Assessment
BBCS	bird and bat conservation strategy
BESS	battery energy storage system
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	best management practice
bmsl	below mean sea level
BO	Biological Opinion
Caltrans	California Department of Transportation
CATEX	Categorical Exclusion
CBD	Center for Biological Diversity and the Mountain Lion Foundation
CDCA	California Desert Conservation Area
CDFW	California Department of Fish and Wildlife
CDNPA	California Desert Native Plants Act
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CMA	Conservation and Management Action
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	San Bernardino County
CRPR	California Rare Plant Rank
DFA	Development Focus Area
DRECP	Desert Renewable Energy Conservation Plan
DTTP	Desert Tortoise Translocation Plan
EA	Environmental Assessment
EIR	Environmental Impact Report
EIS	Environmental Impact Statement

ESA	Endangered Species Act
EPR	Eastern Peninsular Range
ESU	evolutionary significant unit
FGC	Fish and Game Code
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of No Significant Impact
I-15	Interstate 15
IPaC	Information for Planning and Consultation
ITP	Incidental Take Permit
IWMP	Integrated Weed Management Plan
kV	kilovolt
LADWP	Los Angeles Department of Water and Power
LSAA	Lake and Streambed Alteration Agreement
LUPA	land use plan amendment
m	meter(s)
MBTA	Migratory Bird Treaty Act
MM	mitigation measure
mph	miles per hour
MW	megawatt(s)
NEPA	National Environmental Policy Act
NFWF	National Fish and Wildlife Foundation
NMFS	National Marine Fisheries Service
NPPA	Native Plant Protection Act
OHV	off-highway vehicle
PAR	Property Analysis Record
project	Soda Mountain Solar Project
PV	photovoltaic
report	Biological Resources Technical Report
ROD	Record of Decision
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SWCA	SWCA Environmental Consultants
USC	United States Code
USFWS	U.S. Fish and Wildlife Service

USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
VPL	Variance Process Land
WEAP	Worker Environmental Awareness Program

# 1 INTRODUCTION

This Biological Resources Technical Report (report) was prepared by SWCA Environmental Consultants (SWCA) in support of the proposed Soda Mountain Solar Project (project). SWCA was retained by Soda Mountain Solar, LLC (the applicant), to conduct field and desktop studies to provide the technical basis for the assessment of potential impacts to biological resources that may result from implementation of the project. In addition to a description of the existing conditions, this report describes how biological resources may be potentially affected by the construction, operation, and maintenance of the project. It provides the evidence upon which the required evaluation of feasibility, environmental analysis, and findings of fact in relation to biological resources can be made. This report may be used to support the environmental documentation and evaluation of the project pursuant to the California Environmental Quality Act (CEQA) and to inform relevant applications including the Lake and Streambed Alteration Agreement (LSAA) and Incidental Take Permit (ITP). This report examines biological resources only. Potentially regulated surface aquatic resources are evaluated in a separate aquatic resources delineation report for the project and are not covered in this report.

## 1.1 Project Background

Soda Mountain Solar, LLC, filed a right-of-way (ROW) grant application with the Bureau of Land Management (BLM) to construct, operate, maintain, and decommission the project (Case File Number CACA-049584) on December 14, 2007. The BLM considered the effects of granting the ROW as required by the National Environmental Policy Act (NEPA). The ROW grant triggered the need for a land use plan amendment (LUPA) to identify the site in the California Desert Conservation Area (CDCA) Plan of 1980 (CDCA Plan) as a suitable site for the solar project. The CDCA Plan Amendment also required analysis of potential impacts under NEPA.

As part of the original project proposal, Soda Mountain Solar, LLC, applied for groundwater well permits with the County of San Bernardino (County) on August 2, 2012. The groundwater well permit applications triggered the need for environmental analysis under CEQA. The BLM and the County jointly prepared a proposed amendment to the CDCA Plan and Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) under NEPA and CEQA.

The BLM also submitted a Biological Assessment (BA) to the U.S. Fish and Wildlife Service (USFWS) on December 10, 2013, as part of a request for formal consultation pursuant to Section 7 of the federal Endangered Species Act (ESA). The BA provided an analysis of the project's potential impacts to two ESA-listed species: Mohave tui chub (*Siphateles bicolor mohavensis*) and desert tortoise (*Gopherus agassizii*). The USFWS provided the BLM with a draft Biological Opinion (BO) on October 23, 2015, and issued a final BO on January 13, 2016. The USFWS concurred with the BLM's determination that the project may affect, but is not likely to adversely affect, the Mohave tui chub. The BO also indicated that the project would not jeopardize the continued existence of the desert tortoise. The USFWS estimated that a maximum of 10 large and 68 small desert tortoises could occur in the area. The BO authorized incidental take of desert tortoise up to this level and listed minimization measures and measures to offset adverse effects on the desert tortoise to be implemented.

The BLM and the County published the CDCA Plan Amendment and Final EIS/EIR document on June 12, 2015. The BLM issued a Record of Decision (ROD) to approve the agency-preferred alternative/selected alternative to the CDCA in March 2016. Compared with the original project analyzed in the EIS/EIR, the approved project as described in the ROD removed the North Solar Array, reduced

ground disturbance by approximately 500 acres, reduced impacts to visual resources, and included future efforts to restore bighorn sheep (*Ovis canadensis nelsoni*) connectivity.

After publication of the CDCA Plan Amendment and Final EIS/EIR Soda Mountain Solar, LLC, also filed revised groundwater well permit applications with the County on May 12, 2016. The County held a hearing on adoption of the EIR and approval of the groundwater permits on August 23, 2016. Despite the project receiving a ROD from the BLM, and recommendation from the County planning staff to approve the project, the County Board of Supervisors declined to certify the EIR.

The applicant is pursuing completion of project review pursuant to CEQA based on a revised project. This report covers the project as currently proposed, and is intended to support environmental review under CEQA. The revised project is comparable to that approved in the ROD; solar arrays are only planned for installation south of Interstate 15 (I-15), and the boundary of the project south of I-15 matches the approved project in the ROD.

## **1.2 Project Description**

### **1.2.1 Project Location**

The project is located entirely on federally owned land managed by the BLM. The approximate 2,670-acre project area is located approximately 7 miles southwest of the community of Baker in unincorporated San Bernardino County, California, approximately 50 miles northeast of Barstow (Figure 1). The project area is located in portions of Sections 1 and 11–14, Township 12 North, Range 7 East; Sections 25 and 36, Township 13 North, Range 7 East; Sections 6, 7, 8, and 18, Township 13 North, Range 8 East, San Bernardino Meridian, California. The project would occupy area in the alluvial valley dividing the northern and southern portions of the Soda Mountains in the Mojave Desert.

Primary access to the project area is from a northbound exit off I-15. The project area is bounded directly to the east by the Mojave National Preserve (administered by the National Park Service) and the Razor Off-Highway Vehicle (OHV) recreation area (administered by BLM) at the southeast corner. I-15 the former Arrowhead Trail Highway, runs along the western boundary of the project area, with Razor Road Services Shell Oil gas station located off I-15 southwest of the project area, along the access road to the project area (Figure 2). Two high-voltage electrical transmission lines are west of I-15. They include a 115-kilovolt (kV) sub-transmission line owned by Southern California Edison and the Marketplace-Adelanto 500-kV transmission line is owned by the Los Angeles Department of Water and Power (LADWP). Approximately six storm drain culverts cross under I-15 adjacent to the project area.

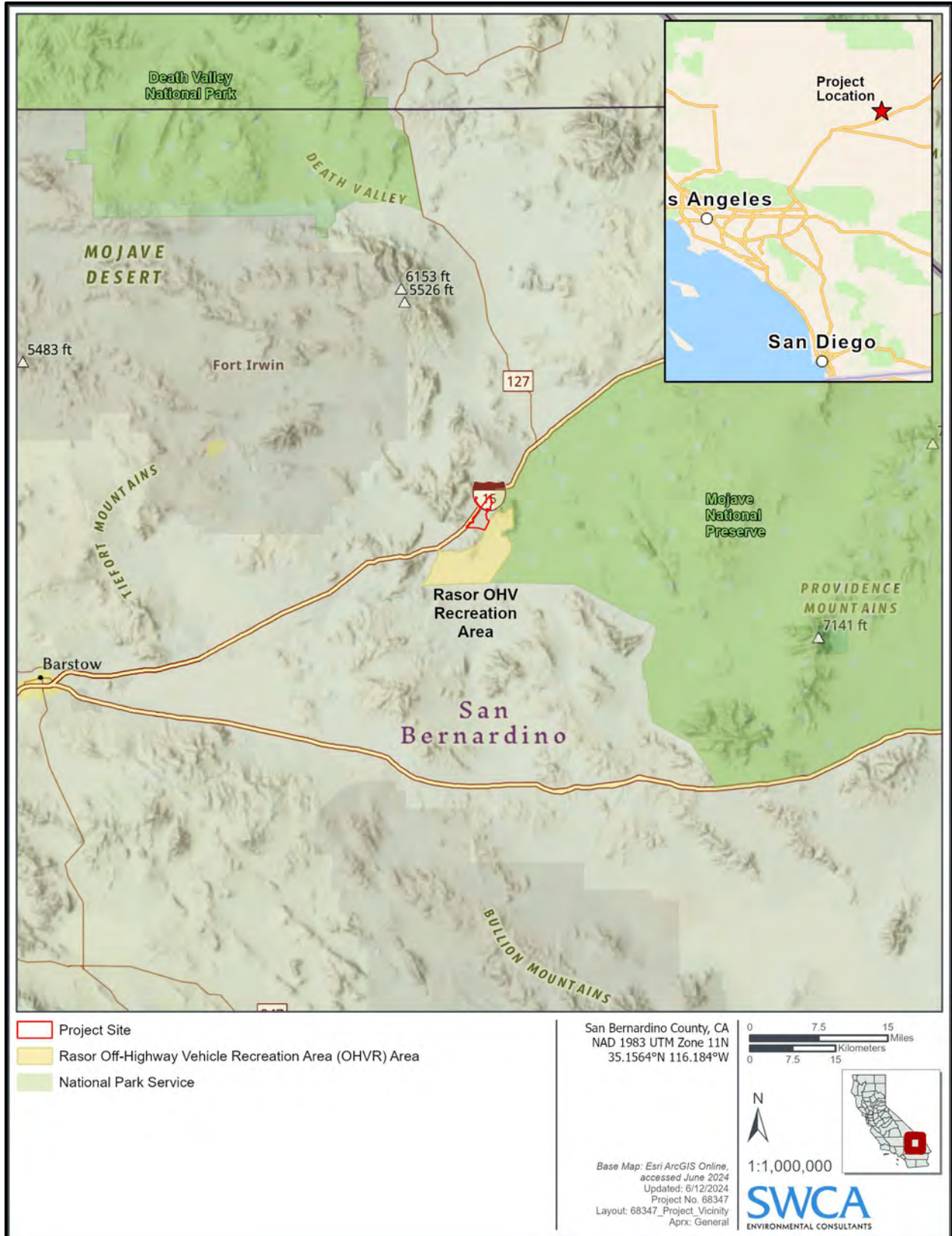


Figure 1. Soda Mountain Solar Project vicinity map.



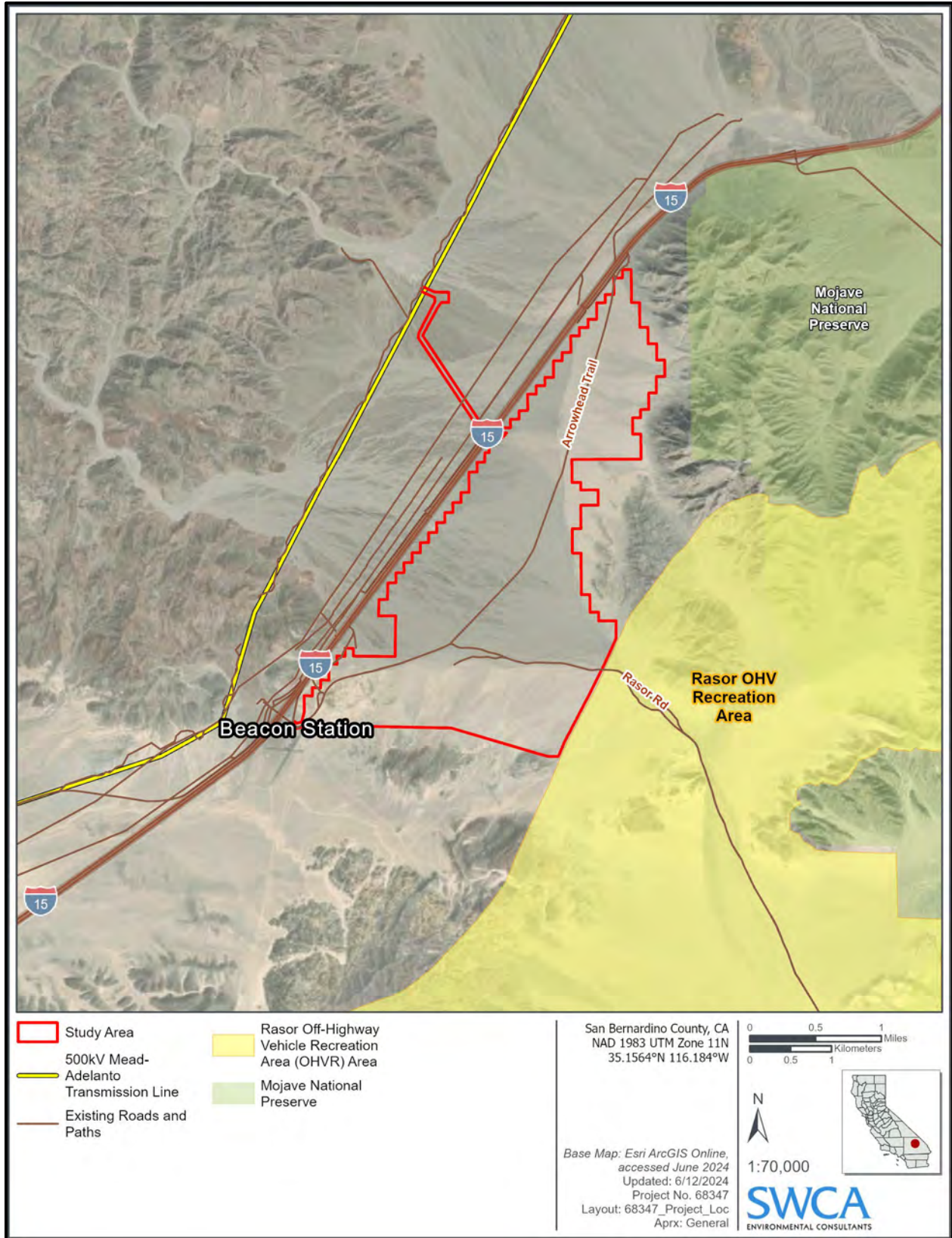


Figure 2. Soda Mountain Solar Project study area.

## **1.2.2 Existing Conditions**

The project area is composed of rural desert land and is almost entirely undeveloped. Razor Road, an unimproved BLM public access road, runs from the southwest corner of the site and forks to the north and east-southeast within the project area. One section of the road continues from west to east through the project to the Razor Road OHV area, and the other fork runs north through the project area. Elevations within the project area fall between approximately 1,200 and 1,600 feet above mean sea level (amsl). The project is immediately surrounded by the Soda Mountains, with I-15 directly west; the southern portion of the project area is bounded by Razor Road, including a gas station, and the Razor OHV area (see Figure 1).

The project would occupy the alluvial valley dividing the northern and southern portions of the Soda Mountains in the Mojave Desert. The project is located in the Mojave Desert Air Basin and within a sub-basin of the Soda Lake Valley Groundwater Basin.

## **1.2.3 Summary of Project Components**

The applicant proposes to construct, operate, maintain, and decommission a proposed 300-megawatt (MW) photovoltaic (PV) solar facility located on approximately 2,670 acres. The approximate disturbance acreage for the project would be up to 2,670 acres. The project components are as follows:

1. The solar plant site (i.e., all facilities that create a footprint in and around the field of solar panels, including the solar field consisting of solar power arrays identified as the East Array and South Arrays 1, 2, and 3), operation and maintenance buildings and structures, stormwater infrastructure, and related infrastructure and improvements.
2. A substation and switchyard for interconnection to the existing transmission system.
3. Approximately 300 MW of battery energy storage system (BESS) across 18 acres.

The project would operate 24 hours per day year-round and would generate electricity during daylight hours when the sun is shining. The project would generate and deliver solar-generated power to the regional electrical grid through an interconnection with the existing Marketplace-Adelanto 500-kV transmission line operated by LADWP.

## **1.3 Regional Overview**

The project is located within the central Mojave Desert, a region that occurs between the southern, low-elevation, hot Sonoran Desert and the northern, high-elevation, relatively cool Great Basin. This approximately 25,000-square-mile region occurs in southeastern California and portions of Arizona, Nevada, and Utah. The Mojave Desert's western boundary is formed by the convergence of the Tehachapi and San Gabriel Mountains, and its southern boundary extends east of the San Bernardino Mountains to the Salton Sea, where it transitions into the Sonoran Desert. Most of the Mojave Desert lies at roughly 3,000 to 6,000 feet amsl, and it is therefore considered a high desert. However, the Mojave Desert encompasses a broad elevation range, including peaks that exceed 11,000 feet amsl and Death Valley, which has the lowest recorded elevation in North America, at 282 feet below mean sea level (bmsl).

Much of the Mojave Desert consists of typical mountain and basin topography where basin-to-mountain transition zones support high levels of biodiversity and endemic species. Flatter portions of the desert floor are characterized by expansive playas, dry lakes, and other ephemeral waters interspersed with dunes. This geomorphology is referred to as pan and dune complexes, which are characterized by yucca

species (*Yucca* spp.), saltbush species (*Atriplex* spp.), and Great Basin sagebrush (*Artemisia tridentata*). Fine wind-blown sand from dry lakebeds and river channels can create hummocks and dunes that support unique species of insects, plants, and reptiles. Slopes and bajadas in the region are covered with creosote bush (*Larrea tridentata*), saltbush, bursage (*Ambrosia* spp.), and bladdersage (*Salazaria mexicana*). In years with sufficient rainfall, the desert floor vegetation communities will include an abundance of annual wildflowers. Most cactus species are found in areas with coarse, sandy soils, and higher elevations support blackbrush (*Coleogyne ramosissima*), Mojave yucca (*Y. schidigera*), and banana yucca (*Y. baccata*).

## 1.4 Regional Climate and Weather

The Mojave Desert is characterized by hot summer temperatures (average daily highs above 100 degrees Fahrenheit) and low annual precipitation (approximately 5 inches). Daily temperature ranges of 40 degrees Fahrenheit can occur, with lows in the winter below or near freezing. Precipitation extremes are also common, with variations of 80% in annual precipitation and occasional high-volume storm events. Summer monsoons can drop more precipitation on a site in one event than the mean yearly precipitation for that location. High winds can occur, with velocities that regularly exceed 50 miles per hour (mph) in some areas and that can reach 100 mph on rare occasions (U.S. Geological Survey [USGS] 2004).

Deserts in general are defined by low levels of precipitation, and the Mojave Desert's latitude and location east of the southern Sierra Nevada and north of the Transverse Ranges result in a rain shadow on the desert side of the mountains where precipitation is far less than on the coastal side. During the summer, the western edge of the Mojave Desert is heavily influenced by the dry southwest airflows resulting in typically very dry weather. The influence of the southwest winds diminishes toward the eastern Mojave Desert, and the central portion of the Mojave Desert experiences a more continental influence and monsoon weather patterns (USGS 2004).

## 2 REGULATORY OVERVIEW

This report characterizes the biological resources that would potentially be affected by construction, operation, and maintenance of the project. The following discussion reviews these policies and how they pertain to project implementation.

### 2.1 Federal Regulations

#### 2.1.1 National Environmental Policy Act

NEPA was enacted by the federal government in 1970 (42 United States Code [USC] 4321 et seq.). NEPA applies to most government actions that might affect natural resource management. NEPA requires the federal government to evaluate potential environmental impacts of proposed federal actions. Under NEPA, federal project proponents must consider reasonable alternatives to projects that may lessen the environmental impacts. Environmental review under NEPA can involve three levels of analysis: 1) Categorical Exclusion (CATEX) determination; 2) Environmental Assessment (EA)/Finding of No Significant Impact (FONSI); or 3) EIS.

A federal action may be categorically excluded from a detailed environmental analysis if the federal action does not "individually or cumulatively have a significant effect on the human environment" (40 Code of Federal Regulations [CFR] 1508.4). If a federal agency determines that a CATEX does not apply to, or sufficiently address, a proposed action, that agency must then prepare an EA. The EA

determines whether a federal action has the potential to cause significant environmental effects. An EA is typically brief and addresses the need for the project, describes project alternatives, evaluates impacts, and provides reference sources consulted. An EIS is the most rigorous and detailed level of project environmental review and is prepared for proposed major federal actions determined to significantly affect the quality of the human environment. The NEPA environmental review process provides opportunities for public comment, which is often required before decisions about natural resource use can be made.

The USFWS provided BLM with a draft BO on October 23, 2015, and issued a final BO on January 13, 2016. The BLM issued a ROW for the Soda Mountain Solar Project on March 25, 2016, as part of the ROD. The NEPA requirements for the environmental analysis of the project were completed through the preparation of an EIS (BLM 2016c).

## **2.1.2 Federal Land Policy and Management Act of 1976**

The Federal Land Policy and Management Act (FLPMA) provides the BLM's overarching mandate to manage the lands and resources under its stewardship based on the principles of multiple use and sustained yield. Multiple use is a concept that directs management of lands and resource values in a way that best meets the present and future needs of Americans and is defined as "a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources" (FLPMA 03[c]). In processing a LUPA, BLM must also comply with the BLM planning regulations (43 CFR 1600) and the BLM's *Land Use Planning Handbook* (BLM 2005).

## **2.1.3 Endangered Species Act**

The U.S. Congress passed the ESA in 1973 to identify and protect endangered species and species threatened with extinction (federally listed species). The ESA authorizes listing of entire species as threatened or endangered, as well as smaller taxonomic units: subspecies and distinct population segments (only for vertebrates); all are referred to herein as "species" for convenience. The ESA operates in conjunction with NEPA to help protect the ecosystems upon which endangered and threatened species depend.

Section 9 of the ESA prohibits the "take" of endangered or threatened wildlife species. The legal definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 USC 1532 [19]). Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns (50 CFR 17.3). Harassment is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns (50 CFR 17.3). Actions that result in take can result in civil or criminal penalties. "Incidental take" is defined by the ESA as take that is incidental to, and not for the purpose of, carrying out an otherwise lawful activity.

Under ESA Section 7, all federal agencies must ensure that any actions they carry out, fund, or authorize through permits or regulatory approval are not likely to jeopardize the continued existence of a listed species, or destroy or adversely modify its designated critical habitat. The ESA defines critical habitat as habitat deemed essential to the survival of a federally listed species, and the federal government is required to designate "critical habitat" for any species it lists under the ESA regulations. A critical habitat designation does not set up a preserve or refuge, and applies only when federal funding, permits, or projects are involved. Critical habitat requirements do not apply to activities on private land and those that do not involve a federal agency.

The USFWS and National Marine Fisheries Service (NMFS) can authorize take of listed species under Sections 7 and 10 of the ESA.

Section 7 mandates that all federal agencies consult with the USFWS for terrestrial species and/or NMFS for marine species to ensure that federal agency actions do not jeopardize the continued existence of a listed species or adversely modify critical habitat for listed species. Any anticipated adverse effects must be assessed to determine potential effects of the project on listed species and critical habitat. If the project may adversely affect a listed species or its habitat, the USFWS or NMFS would need to prepare a BO as part of the ITP process. The BO may recommend “reasonable and prudent alternatives” to the project to avoid jeopardizing or adversely modifying habitat, including “take” limits.

Section 10(a)(1)(B) of the ESA authorizes issuance of permits to allow “incidental take” of listed species. Non-federal entities that may incidentally take ESA-listed species can follow this process to obtain take authorization. To obtain an ITP, an applicant must submit a habitat conservation plan and conduct an assessment on the impacts of the action, outlining steps to minimize and mitigate permitted take impacts to listed species.

In some instances, non-federal entities may obtain take authorization under the Section 7 when a federal nexus, such as federal funding or permitting (e.g., through the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act), is available. In such cases, the federal agency taking action consults with the USFWS as described above.

#### **2.1.4 Migratory Bird Treaty Act**

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA), which provides federal protection to all migratory birds, including nests and eggs on all lands (public or private). The MBTA prohibits anyone without a permit “to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof.” The Migratory Bird Treaty Reform Act of 2004 further defined species protected under the act and excluded all non-native species. The list of protected migratory birds includes nearly all bird species native to the United States.

If birds, nests, or eggs are present at the project area and cannot be avoided, they must be relocated before construction begins, which would require an MBTA permit from the USFWS. However, Section 1 of the Interim Empty Nest Policy of the USFWS, Region 2, states that if the nest is completely inactive at the time of destruction or movement, a permit is not required to comply with the MBTA. If an active nest is observed before or during construction, measures should be taken to protect the nest from destruction and to avoid a possible violation of the MBTA.

#### **2.1.5 Bald and Golden Eagle Protection Act**

The Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668–668c), enacted in 1940 and amended several times since, prohibits anyone, without a permit issued by the Secretary of the Interior, from “taking” bald eagles (*Haliaeetus leucocephalus*), including their parts, nests, or eggs. In 1962, Congress amended the act to cover golden eagles (*Aquila chrysaetos*).

The act provides criminal penalties for persons who “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any

golden eagle], alive or dead, or any part, nest, or egg thereof.” The act defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.”

Under USFWS rules (16 USC 22.3; *Federal Register* 72:31132, June 5, 2007), “disturb” means “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.” In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle’s return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death, or nest abandonment.

## **2.1.6 California Desert Conservation Area Plan**

The CDCA encompasses 25 million acres in southern California and was designated by Congress in 1976 through the FLPMA. BLM manages approximately 10 million of the 25 million acres in the CDCA. Congress directed BLM to prepare and implement a comprehensive long-range plan for the management, use, development, and protection of public lands within the CDCA. The CDCA Plan is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The CDCA Plan provides overall regional guidance for BLM-administered lands in the CDCA and establishes long-term goals for protection and use of the California desert.

### **2.1.6.1 DESERT RENEWABLE ENERGY CONSERVATION PLAN**

In September 2016, BLM adopted the Desert Renewable Energy Conservation Plan (DRECP) LUPA to the CDCA Plan, Bishop Resource Management Plan, and Bakersfield Resource Management Plan (BLM 2016). The DRECP LUPA addresses solar, wind, geothermal energy generation, and transmission projects on 10.8 million acres of BLM-administered lands in the desert regions of southern California.

The BLM DRECP LUPA establishes several land use classifications, including Development Focus Areas (DFAs), Variance Process Lands (VPLs), Recreation Management Areas, General Public Lands, and various conservation land use designations. In DFAs, renewable energy projects are incentivized and permitting is streamlined. VPLs are carried over from the Western Solar Plan<sup>1</sup> designations and have moderate to low ecological value and uncertain renewable energy potential. Renewable energy projects may be implemented on VPLs, but they must first be evaluated under a variance process and then approved by BLM to proceed through NEPA environmental review. BLM Conservation Areas include National Landscape Conservation System lands, Areas of Critical Environmental Concern (ACECs), and Wildlife Allocations. Recreation Management Areas are designated for recreation actions. This designation includes Extensive Recreation Management Areas, which entail management specifically to address recreation use and demand; and Special Recreation Management Areas, which are high-priority areas for recreation and have unique value and importance for recreation. General Public Lands are BLM-administered lands that do not have any of the above designations.

The DRECP LUPA includes a list of over 200 Conservation and Management Actions (CMAs) that prescribe avoidance, minimization, and compensatory mitigation actions that are applicable to new projects on BLM-administered lands in the DRECP plan area. The CMAs address siting, design, preconstruction, construction, maintenance, implementation, operation, and decommissioning activities of

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<sup>1</sup> The BLM’s 2012 Approved Resource Management Plan Amendment/ROD for Solar Energy Development in Six Southwestern States.

renewable energy projects. The applicability of each CMA to a particular project depends on the BLM land designation(s) at the project area, project type, and resources present at the site.

The majority of the project area is located on DRECP General Public Lands, and the gen-tie route is within an ACEC. The project ROD was issued before the DRECP was adopted, and mitigation requirements for the project as described in the ROD are written as project-specific mitigation measures (MMs) rather than CMAs.

### **2.1.7 Bureau of Land Management Sensitive Species**

BLM sensitive species are species designated by the BLM State Director. This list includes species that may be federally listed, proposed, or candidate species, or state-listed species. The BLM's policy is to "ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered" (BLM 2014). Several BLM offices maintain a list of sensitive plant and wildlife species that are to be considered as part of the management activities carried out by BLM on the lands that it administers.

### **2.1.8 Noxious Weed Act of 1974**

The Noxious Weed Act of 1974 (7 USC 2801 et seq.), under the authority of the Secretary of Agriculture, establishes a federal program to control the spread of noxious weeds. The Noxious Weed Act gives the Secretary of Agriculture authorization to work with other federal, state, and local agencies; agricultural organizations; and private individuals to implement measures to control, eradicate, and/or prevent the spread of noxious weeds.

### **2.1.9 Executive Order 13112**

Executive Order 13112, issued by President Clinton on February 3, 1999, promotes the prevention and introduction of invasive species and provides for their control and minimizes the economic, ecological, and human health impacts that invasive species cause through the creation of the Invasive Species Council and Invasive Species Management Plan.

## **2.2 State Regulations**

### **2.2.1 California Environmental Quality Act**

CEQA was adopted in 1970 and applies to discretionary actions directly undertaken, financed, or permitted by state or local government lead agencies. CEQA requires that a project's effects on environmental resources must be analyzed and assessed using criteria determined by the lead agency. CEQA defines a rare species in a broader sense than the definitions of threatened, endangered, or California species of concern. Under this definition, the California Department of Fish and Wildlife (CDFW) can request additional consideration of species not otherwise protected.

#### **2.2.1.1 CEQA SIGNIFICANCE CRITERIA**

Section 15064.7 of the State CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency will use in determining the significance of environmental effects caused by projects or actions under its review. Appendix G of the State CEQA Guidelines provides thresholds to evaluate impacts that would normally be considered significant. Based on these guidelines, impacts to biological resources would normally be considered significant if the project would:



- a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations, or by CDFW or USFWS;
- c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;<sup>2</sup>
- d) 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 impedes the use of native wildlife nursery sites;
- e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- f) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

An evaluation of whether an impact to biological resources would be significant must consider both the resource itself and how that resource fits into a regional or local context. Significant impacts would be those that would diminish or result in the loss of an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. The evaluation of impacts considers direct impacts, indirect impacts, and cumulative impacts, as well as temporary and permanent impacts.

## **2.2.2 California Endangered Species Act**

The CDFW administers the California Endangered Species Act (CESA), which prohibits the “taking” of listed species except as otherwise provided by state law. Section 86 of the California Fish and Game Code (FGC) defines “take” as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” Under certain circumstances, the CESA applies these take prohibitions to species accepted as candidates for listing. Pursuant to the requirements of the CESA, state lead agencies (as defined under CEQA Public Resources Code 21067) are required to consult with CDFW to ensure that any action or project is not likely to jeopardize the continued existence of any endangered or threatened species or result in destruction or adverse modification of essential habitat.

Additionally, CDFW encourages informal consultation on any proposed project that may impact a candidate species because they are temporarily assigned the same protections as a state-listed endangered or threatened species. CDFW also designates certain vertebrate species as “Species of Special Concern” due to declining populations, limited ranges, and/or continuing threats making them more vulnerable to extinction (CDFW 2024a).

## **2.2.3 California Fish and Game Code**

### **2.2.3.1 FULLY PROTECTED SPECIES**

Several sections of the California FGC provide protection from take for a variety of species, referred to as fully protected species. Section 5050 lists protected amphibians and reptiles, and Section 3515 prohibits

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<sup>2</sup> Threshold c. is not included in the impacts analysis section of this report because it pertains to state and federal wetlands. Waters and wetlands of the U.S. and the state are addressed in a separate jurisdictional delineation report.



take of fully protected fish species. Eggs and nests of fully protected birds are under Section 3511. Migratory nongame birds are protected under Section 3800, and mammals are protected under Section 4700. Senate Bill No. 147 authorizes CDFW to issue ITPs for fully protected species under limited circumstances, including PV solar projects and appurtenant infrastructure (California Legislative Information 2023).

### **2.2.3.2 NESTING BIRDS AND RAPTORS**

Section 3503 of the California FGC states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 provides protection for all birds of prey, including their eggs and nests.

### **2.2.3.3 MIGRATORY BIRD PROTECTION**

Take or possession any migratory non-game bird as designated in the MBTA is prohibited by Section 3513 of the California FGC.

### **2.2.3.4 DESERT KIT FOX**

Under Section 460 of the California FGC, desert kit fox (*Vulpes macrotis arsipus*) may not be taken at any time. Under Sections 4000-4003 of the California FGC, it is unlawful to conduct activities that would result in the taking, possessing, or destroying of any fur-bearing mammals, including kit foxes, without prior authorization from CDFW.

### **2.2.3.5 NATIVE PLANT PROTECTION ACT**

The Native Plant Protection Act (NPPA) of 1977 (California FGC Section 1900-1913) directed the California FGC to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and protect endangered and rare plants from take. The NPPA thus includes measures to preserve, protect, and enhance rare and endangered native plants.

CESA has largely superseded NPPA for all plants designated as endangered by the NPPA. The NPPA nevertheless provides limitations on take of rare and endangered species as follows: "no person will import into this state, or take, possess, or sell within this State" any rare or endangered native plant, except in compliance with provisions of the CESA. Individual landowners are required to notify CDFW at least 10 days in advance of changing land uses to allow CDFW to salvage any rare or endangered native plant material.

## **2.2.4 California Desert Native Plants Act**

The California Desert Native Plants Act (CDNPA) protects non-listed California desert native plants from unlawful harvesting on public and private lands in the Counties of Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego (California Food and Agriculture Code, Sections 80001-80006, Division 23). Several desert plants are protected under this act, including all species in the agave and cactus families.

## 2.3 Local Regulations

### 2.3.1 San Bernardino County Policy Plan

The San Bernardino County Policy Plan contains the long-term goals and policies that will guide County decisions, investments, and improvements toward achieving the countywide vision. The plan represents a unique approach to county planning. It serves as the County's General Plan for the unincorporated areas, which is mandated by state law, but it also includes policy direction for adult and child supportive services, healthcare, public safety, and other regional services the County administers in both incorporated and unincorporated areas. The following policies identified in the Natural Resources element of the San Bernardino Policy Plan are relevant to this analysis (San Bernardino County 2020).

**Goal NR-5 Biological Resources** – An interconnected landscape of open spaces and habitat areas that promotes biodiversity and healthy ecosystems, both for their intrinsic value and for the value placed on them by residents and visitors.

**Policy NR-5.1 Coordinated habitat planning.** [The County will participate] in landscape-scale habitat conservation planning and coordinate with existing or proposed habitat conservation and natural resource management plans for private and public lands to increase certainty for both the conservation of species, habitats, wildlife corridors, and other important biological resources and functions; and for land development and infrastructure permitting.

**Policy NR-5.2 Capacity for resource protection and management.** [The County will coordinate] with public and nongovernmental agencies to seek funding and other resources to protect, restore, and maintain open space, habitat, and wildlife corridors for threatened, endangered, and other sensitive species.

**Policy NR-5.3 Multiple-resource benefits.** [The County will prioritize] conservation actions that demonstrate multiple resource preservation benefits, such as biology, climate change adaptation and resiliency, hydrology, cultural, scenic, and community character.

**Policy NR-5.4 Off-base recovery efforts.** [The County will coordinate] with military installations to facilitate off-base recovery of threatened and endangered species and landscape-scale conservation.

**Policy NR-5.5 Mitigation and future responsibilities.** [The County will require] that new development satisfy habitat conservation responsibilities without shifting conservation responsibilities onto military property.

**Policy NR-5.6 Mitigation banking.** [The County will support] the proactive assemblage of lands to protect biological resources and facilitate development through private or public mitigation banking. We require public and private conservation lands or mitigation banks to ensure that easement and fee title agreements provide funding methods sufficient to manage the land in perpetuity.

**Policy NR-5.7 Development review, entitlement, and mitigation.** [The County will comply] with state and federal regulations regarding protected species of animals and vegetation through the development review, entitlement, and environmental clearance processes.

**Policy NR-5.8 Invasive species.** [The County will require] the use of non-invasive plant species with new development and encourage the management of existing invasive plant species that degrade ecological function.

### 2.3.2 San Bernardino County Development Code

Division 8 (Resource Management and Conservation) provides regulations and guidelines for the management and conservation of natural resources in the unincorporated areas of the County on property or combinations of property under private or public ownership.

Section 88.01.060 (Native Desert Plant Protection) provides regulations for the removal of specified native desert plants to preserve and protect the plants and to provide for the conservation and wise use of desert resources. This section requires a Tree or Plant Removal Permit to remove the following plants:

- Smoketrees (*Psoralea argophylla*) and mesquites (*Prosopis* spp.) with a stem measuring 2 inches or more in diameter, or 6 feet or more in height
- All species of the family Agavaceae
- Creosote rings (*Larrea tridentata*) with diameters of 10 feet or more
- All Joshua trees (*Yucca brevifolia*)
- Any part, living or dead, of desert ironwood (*Olneya* spp.), mesquites, or palo verdes (*Parkinsonia* spp.)

Section 88.01.080 (Regulated Riparian Plants) provides for the protection of riparian plants and habitats. San Bernardino County defines riparian vegetation as vegetation within 200 feet of the bank of a stream. Any removal of riparian vegetation requires a Tree or Plant Removal Permit and is subject to environmental review.

## 3 METHODS

This section of the report describes the methodologies and information sources used to target, describe, and evaluate the biological resources observed in the study area and project vicinity. For this report, the study area is defined as the 2,670-acre proposed project area and the proposed gen-tie route (approximately 35.75 acres) (see Figure 2). A comprehensive literature and database search was performed to identify biological resources that may occur in the study area and/or within 10-miles of the project. These sources included species records from wildlife studies completed at or near the project, published literature, databases, coordination with CDFW, and SWCA biologists' professional judgment based on past work in the Mojave Desert. Following the desktop review, field surveys were performed to assess existing habitat conditions in the study area. The field surveys included surveys for special-status species, and were performed according to existing protocols, guidelines, and methodologies, and in coordination with CDFW. SWCA biologists worked cooperatively with CDFW to draft the *Biological and Aquatic Resources Work Plan* (SWCA 2022) for the project. The work plan described the scope, methods, and schedule for determining biological and aquatic resources associated with the current site conditions, project design, and relevant regulatory requirements, which are included in the following sections. Species and resources survey methods described in the work plan included:

- Mojave fringe-toed lizard, Coachella Valley Fringe-toed Lizard Survey Protocol (USFWS 2007).
- Desert tortoise, *Preparing for Any Action that May Occur within the Range of the Mojave Desert Tortoise* (*Gopherus agassizii*) (USFWS 2019a).
- Burrowing owl (*Athene cunicularia*), desert kit fox, and American badger (*Taxidea taxus*), *Staff Report on Burrowing Owl Mitigation* (CDFW 2012).
- Rare and invasive plants, *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018).

- Avian use survey protocol adapted from the 2013 Panorama Environmental, Inc. *Biological Resources Technical Report for the Soda Mountain Solar Project* (Appendix A).

Certain species may occur in and around the project area but were not included in the work plan:

- Crotch's bumble bee (*Bombus crotchii*) and bat surveys were not included in the November 2022 work plan. However, In February 2023 CDFW recommended bat surveys and stated that focused bumble bee surveys would be required to determine the presence or absence of Crotch's bumble bee..
- Desert bighorn sheep surveys were conducted by CDFW as part of a separate effort. CDFW desert bighorn sheep monitoring results relevant to populations near the project area will be reviewed in coordination with the CDFW project environmental specialist.
- Surveys for golden eagle were not conducted due to the potential for the aircraft used in aerial surveys to disrupt desert bighorn sheep behavior and the relatively low potential for the project to impact golden eagle. The on-site avian use surveys afforded an opportunity to document golden eagle use of the project area and planned ground-based raptor surveys will provide additional opportunities to observe and document golden eagle use of the project area. Local data on golden eagles was obtained from the USFWS.

### **3.1 Database and Literature Review**

A desktop-based review was conducted to identify biological resources of interest near the study area. Species occurrences from the CDFW California Natural Diversity Database (CNDDDB) RareFind 5 and the California Native Plant Society's (CNPS's) Rare Plant Inventory were queried to identify special-status plant and wildlife species requiring analysis (CDFW 2024b; CNPS 2023a). The CNDDDB data search extended 10 miles from the project boundary (Figure 3). The CNPS data search centered on the nine USGS 7.5-minute quadrangles containing and surrounding the study area: West of Soda Lake (study area), West of Baker, Red Pass Lake, Baker, Cronese Lakes, Soda Lake North, Crucero Hill, Soda Lake South, and Cave Mountain. The following list includes all the resources considered in the desktop review.

- 2013 Panorama Environmental, Inc. *Biological Resources Technical Report for the Soda Mountain Solar Project* (see Appendix A)
- Calflora: Information on California plants for education, research and conservation (Calflora 2024)
- California Herps: A Guide to the Amphibians and Reptiles of California (Nafis 2023).
- CNPS Rare Plant Inventory (CNPS 2023a)
- *Caltrans Bat Mitigation: A Guide to Developing Feasible and Effective Solutions* (H.T. Harvey & Associates 2019)
- *Caltrans Log of Bridges on State Highways, District 8* (California Department of Transportation [Caltrans] 2018)
- CDFW CNDDDB – accessed 10/26/22, 9/20/23, 10/12/23 and 5/14/24 (CDFW 2024b)

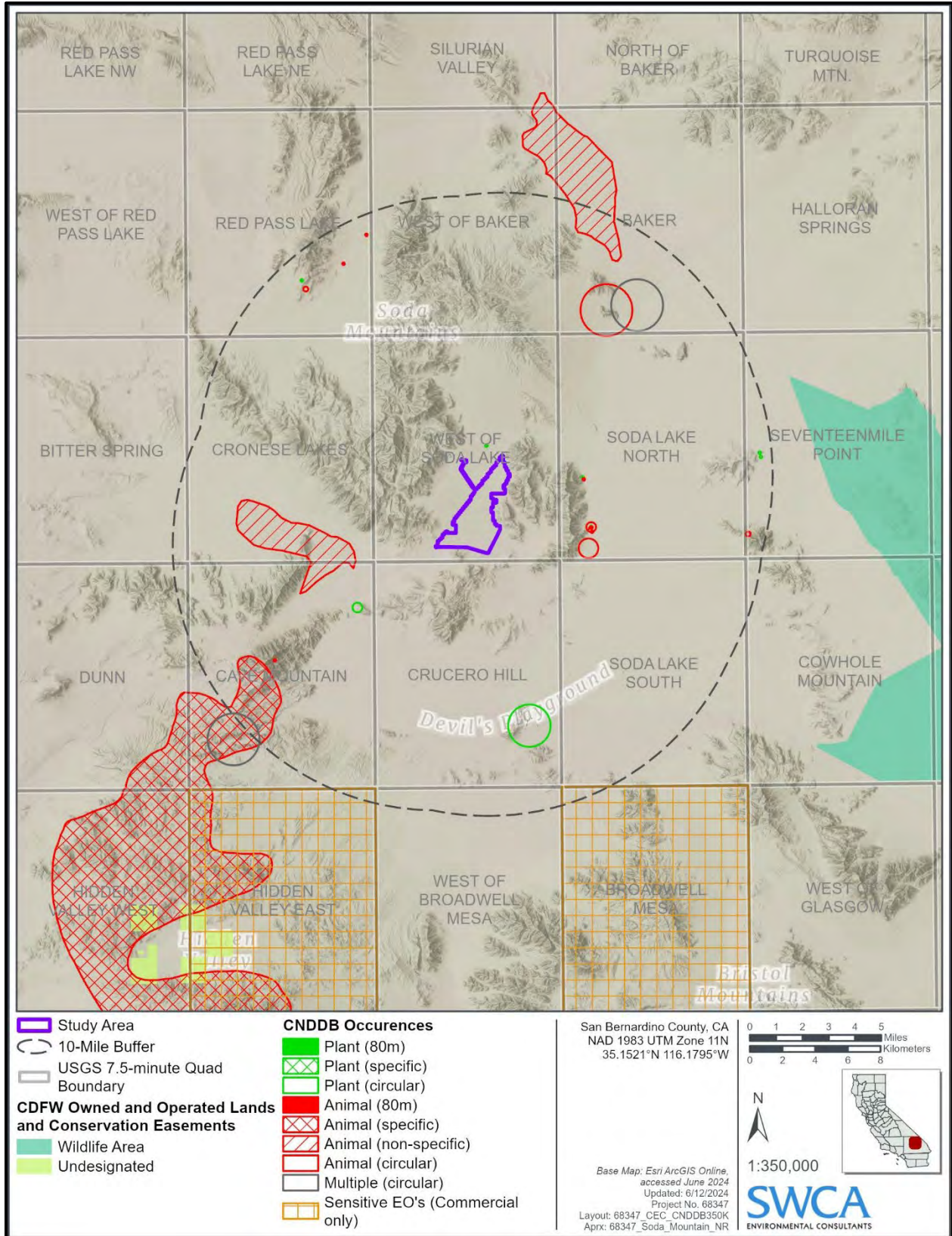


Figure 3. Results of 10-mile CNDDDB occurrence query.

- CDFW Vegetation Maps and Data (CDFW 2023a)
- California Wildlife Habitat Relationships data and maps (CDFW 2023b)
- Consortium of California Herbaria Database (Consortium of California Herbaria 2023)
- *Birds of the World* (Cornell Lab of Ornithology 2022)
- DRECP Gateway (Conservation Biology Institute 2023)
- eBird's web-based bird database (eBird 2024)
- iNaturalist Mojave National Preserve, US, CA
- National Park Service, Mojave National Preserve species checklists (National Park Service 2022)
- *Soda Mountain Solar Project Proposed Plan Amendment/Final Environmental Impact Statement/Environmental Impact Report* (BLM 2015)
- *Special Animals Including California Species of Special Concern* (CDFW 2023c)
- *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2023d)
- BLM Designation of Sensitive Species (BLM 2019)
- USFWS Information for Planning and Consultation (IPaC) species list (USFWS 2023a, Appendix B)
- USFWS Critical Habitat Portal (USFWS 2023b)
- USFWS Environmental Conservation Online System (USFWS 2023c)
- USGS soils data (Natural Resources Conservation Service 2024)

### **3.1.1 Vegetation and Habitat Mapping**

Desktop vegetation and existing habitat maps were reviewed prior to the field verification during the rare plant survey. Vegetation communities within the study area were classified using *A Manual of California Vegetation Online* (CNPS 2023b). Sensitive vegetation communities are defined by CDFW as those “communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of Projects” (CDFW 2010). Vegetation communities with a State Rank of 1, 2, or 3 are considered sensitive by CDFW. Also, SWCA biologists surveyed for DRECP Special Vegetation Features which include yucca clones, creosote rings, saguaro cactus, Joshua tree woodland, microphyll woodland, and crucifixion thorn stands (BLM 2016c).

The vegetation community map of the study area and gen-tie route was refined during a focused rare plant survey performed in April and May 2023. Vegetation types within a 10-mile buffer around the survey area were mapped using the vegetation layer for the DRECP. Potential to occur for special-status species within the 10-mile buffer were analyzed based on the results of the CNDDDB inquiry and the DRECP vegetation communities. Field surveys were not conducted within the 1000-foot buffer. A mapbook at a scale of 1:6,000 showing sensitive biological resource location(s) in relation to the project area is included as Appendix C.

### **3.1.2 Special-Status Species Potential for Occurrence**

Special-status species evaluated in this study include plants and animals included in one or more of the following categories:

- Species designated as Sensitive Species by the BLM (BLM 2019)

- Species listed or proposed for listing as threatened or endangered under the federal ESA (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals], and various notices in the *Federal Register* [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under ESA (*Federal Register* 67:40657, June 13, 2002).
- Species listed or proposed for listing by the State of California as threatened or endangered under the CESA (14 California Code of Regulations 670.5).
- Species that meet the definitions of rare or endangered under the CEQA (State CEQA Guidelines Section 15380).
- Plants listed as rare under the California Native Plant Protection Act (California FGC Section 1900 et seq.).
- Plants assigned a California Rare Plant Rank (CRPR) 1A, 1B, 2A, 2B, 3, or 4 by the CNPS (2023b).
- Animal species of special concern as listed by CDFW (2024a).
- Animals fully protected in California (FGC Sections 3511 [birds], 4700 [mammals], 5050 [amphibians and reptiles], and 5515 [fish]).
- Invertebrates listed on the California Special Animals List (CDFW 2023c).
- DRECP LUPA Focus Species, microphyll woodland, crucifixion thorn stands (BLM 2016d)

Potential for occurrence of special-status species within the study area and the immediate vicinity was assessed following the database searches and field survey based on on-site habitat conditions. During the pre-field desktop assessment, each species was assigned to one of the categories listed below:

- **Present:** Species has been documented within the study area by a reliable observer. The presence of bird species was distinguished further into those that 1) nest in the study area, 2) forage in the study area, and/or 3) occur in the study area only as transients during migration or other dispersal events.
- **High Potential:** The species has been documented in the vicinity (within 5 miles of the study area based on recent [within 20 years] CNDDDB or other records or based on professional expertise specific to the area or species), and there is suitable habitat within the study area that makes the probability of the species occurring there high. Alternatively, high-quality suitable habitat is present within the study area, and the study area is within the known range of the species. Bird species in this category were differentiated based on their occurrence within the study area as breeding, foraging only, and/or transients.
- **Moderate Potential:** Species is known to occur within the study area based on CNDDDB or other records within 40 years, or based on professional expertise specific to the area or species, and there is moderate quality habitat at the study area. Alternatively, there is moderate-quality habitat in the part of the study area that falls within the known range of the species.
- **Low Potential:** The study area is within the species' currently known range, but vegetation communities, soils, etc., do not resemble those known to be used by the species; or conditions appear suitable, but the study area is beyond the species' currently known range; or the species was recorded more than 40 years ago within the study area.
- **Absent:** There is no suitable habitat for the species within the study area, or the area is located well outside the known range of the species. Alternatively, a species was surveyed for during the appropriate season with unequivocal negative results for species occurrence.



Following the completion of the 2023 field surveys, the potential for occurrence was further refined to present or absent for species that were the target of a focused presence/absence survey.

## 3.2 Field Surveys

Following the initial database and literature review, field surveys were performed during the 2023 season. The surveys encompassed vegetation mapping, habitat suitability assessments, focused surveys for special -status animals and plants, and avian and bat use. Each survey was performed during the appropriate survey season for the relevant biological resource. Species-specific surveys were performed using methodologies based on the most current guidelines published by CDFW and/or USFWS, or using methodologies specifically adapted to the project in collaboration with CDFW. CDFW will provide species analysis for desert bighorn sheep. Table 1 details the field surveys included in this report.

**Table 1. Field Survey Dates and Personnel**

<b>Field Survey</b>	<b>Date</b>	<b>Personnel</b>
Reconnaissance-level survey	December 30, 2021	Pauline Roberts <b>and Maisie Borg</b>
Rare plant survey	April 10– May 2, 2023	Ryan Myers, Paris Krause, Lauren Strong, Minerva Lara, Luis Aguilar, Tamara Kramer, and Chennie Castanon
Crotch's bumble bee survey 1	May 22–26, 2023	Sharif Durzi, Christina Torres, Nate Kolberg and Rebecca Wang
Crotch's bumble bee survey 2	June 14–16, 2023	Sharif Durzi, Christina Torres, Lee BenVau, and Marisol Sanchez
Crotch's bumble bee survey 3	July 16–18, 2023	Sharif Durzi, Christina Torres, Lee BenVau, and Marisol Sanchez
Crotch's bumble bee survey 4	August 14–16, 2023	Sharif Durzi, Lee BenVau, and Marisol Sanchez
Desert tortoise survey	April 5– May 5, 2023	SWCA biologists: Gigi Wagnon, Bridget Manjarrez, Lauren Strong, Amy Parlette, Minerva Lara, Alex Jamal, Chennie Castanon, Tamara Kramer, and Danielle Parsons
Desert tortoise survey (continued)	May 22– May 26, 2023	Aardvark Biological Services LLC biologists: Chip Cochran, Jeremy Wright, Youssef Attallah, Alexandria Hamilton, Marty Lewis, Matt Martin, Ben Delancey, Miguel Moutsis, Thomas Nhu, Dalton Stanfield, Sarah Mendez, Karyn Seruka, and Gary Thorunbrugh
Mojave fringe-toed lizard survey 1	March 26, 2023	Danny Cuellar and Par Singhaseni
Mojave fringe-toed lizard survey 2	July 11, 2023	Danny Cuellar and Par Singhaseni
Avian use survey – winter	January 24–26, 2023	Gigi Wagnon
Avian use survey – spring	March 23–24, 2023	Gigi Wagnon and Bridget Manjarrez
Avian use survey – summer	July 12–14, 2023	Lauren Strong
Avian use survey – fall	TBD	Gigi Wagnon
Burrowing owl, desert kit fox, and American badger burrow survey	March 27– April 5, 2023	Bridget Manjarrez, Par Singhaseni, Lauren Strong, Gigi Wagnon, and Amy Parlette
Burrowing owl, desert kit fox, and American badger burrow survey (continued)	May 8–12, 2023	Gigi Wagnon and Bridget Manjarrez
Burrowing owl, desert kit fox, and American badger burrow survey (continued)	May 22–25, 2023	Parker Richardson and Kristen Burgess
Burrowing owl follow-up survey 1	June 5–6, 2023	Omar Moquit and Marcus Goncalves



Field Survey	Date	Personnel
Burrowing owl follow-up survey 2	July 6, 2023	Gigi Wagnon and Parker Richardson
Burrowing owl follow-up survey 3	July 24, 2023	Omar Moquit and Marisol Sanchez
Bat survey habitat assessment	June 27–28, 2023	Mason Townley and Omar Moquit
Bat survey nighttime acoustic survey 1	July 23–26, 2023	Mason Townley, Minerva Lara, Tamara Kramer, and Bridget Manjarrez
Bat survey nighttime acoustic survey 2	August 14–17, 2023	Mason Townley, Minerva Lara, Gigi Wagnon, and Bridget Manjarrez
Bat survey nighttime acoustic survey 3	August 28–31, 2023	Mason Townley, Minerva Lara, Tamara Kramer, and Marisol Sanchez

### 3.2.1 Reconnaissance-level Survey

A reconnaissance-level survey was performed by SWCA biologists Pauline Roberts and Maisie Borg on December 30, 2021. The purpose of the survey was to document current habitat conditions in comparison with the site conditions documented in the 2013 Panorama Environmental, Inc. *Biological Resources Technical Report for the Soda Mountain Solar Project* (see Appendix A). A combined windshield and pedestrian survey was conducted; the windshield survey was conducted by driving slowly (between 5 to 10 mph) along Razor Road and the unnamed road that runs north-south within the study area. The biologists documented plant and wildlife species observations, including tracks, scat, remains, and burrows or dens. Additional details can be found in *Soda Mountain Solar Site Visit* (Appendix D).

### 3.2.2 Rare Plant Survey and Vegetation Mapping

Focused pedestrian surveys for special-status plants with potential to occur in the study area were performed consistent with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018). Point and polygon data were recorded using GPS equipment with submeter accuracy. Confirmation of current year germination and/or life cycle stage (e.g., blooming or fruiting) was obtained by visiting local reference populations prior to conducting field surveys. Reference populations are known locations of rare plant species, typically visited during the blooming period when characteristics for identification are present. Based on the habitat conditions observed during the December 2021 reconnaissance visit and a preliminary desktop review performed by SWCA in December 2022, one spring survey was deemed sufficient to fulfill survey requirements because all the special-status plants that might potentially occur would be detectable and identifiable during that time.

A team of seven SWCA biologists surveyed the entire study area from April 10 to May 2, 2023, to search for special-status plants throughout the entire study area (see Figure 2). SWCA performed focused rare plant surveys for the following eight species: small-flowered androstephium (*Androstephium breviflorum*), Borrego milkvetch (*Astragalus lentiginosus* var. *borreganus*), Emory's crucifixion-thorn (*Castela emoryi*), Harwood's eriastrum (*Eriastrum harwoodii*), Utah vine milkweed (*Funastrum utahense*), ribbed cryptantha (*Johnstonella costata*), winged cryptantha (*Johnstonella holoptera*), and desert winged rockcress (*Sibara deserti*). SWCA biologists also surveyed for DRECP Special Vegetation Features which include yucca clones, creosote rings, saguaro cactus, Joshua tree woodland, microphyll woodland, crucifixion thorn stands (BLM 2016c). The survey was timed to coincide with the appropriate blooming species for the rare plants that might occur, specifically April and May. Alkaline meadows and seeps were determined not present. Therefore, a summer or fall rare plant survey was not performed for alkali marsh aster (*Almutaster pauciflorus*).

In addition to the rare plant survey, the biologists mapped vegetation communities and documented all native and non-native plants identified in the study area (see Appendix C, Table C-1). Vegetation communities were mapped to the alliance level as described in *A Manual of California Vegetation Online* (CNPS 2023b). Vegetation communities were mapped to the association level for sensitive vegetation communities. Additional details pertaining to the rare plant survey can be found in *Rare Plant Survey and Vegetation Mapping Report for the Soda Mountain Solar Project* (Appendix E).

### **3.2.3 Crotch's Bumble Bee Survey**

Prior to the field surveys, a desktop assessment for Crotch's bumble bee was performed, which included a review of the nesting, foraging, and overwintering requirements for the species. In addition, data collected from the earlier spring 2023 surveys were used to assess areas that were likely to contain suitable habitat for Crotch's bumble bee and co-occurring pollinator species. The methods for focused surveys for Crotch's bumble bee was developed in coordination with CDFW and were based on the USFWS's *Survey Protocols for the Rusty Patched Bumble bee (Bombus affinis) Version 2.2* (USFWS 2019b). On June 6, 2023, CDFW published new survey guidance for Crotch's bumble bee, *Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species* (CDFW 2023e). However, SWCA maintained use of the CDFW-approved in-progress methods for consistency. The purpose of the surveys was to identify the availability of nesting, foraging, and overwintering habitat, and to search for Crotch's bumble bee within the study area.

Teams of three to four SWCA biologists performed four focused surveys during the colony active period (April–August) to allow for the highest probability of detection. Surveys were performed May 22–26, June 14–16, July 16–18, and August 14–26, 2023 (see Table 1). The surveys were focused in areas with the highest abundance of plants that may provide nectar for foraging bumble bees, specifically along the largest washes (Figure 4). Nectar plants were recorded using a handheld GPS unit. No bumble bees were captured or handled during survey efforts. See *Crotch's Bumble Bee Focused Survey Report for the Soda Mountain Solar Project* (Appendix F) for additional details.

### **3.2.4 Desert Tortoise Survey**

Qualified SWCA and Aardvark Biological Services, LLC, biologists performed protocol desert tortoise surveys between April 5 and May 26, 2023 (see Table 1). The surveys were performed in accordance with the USFWS's *Preparing for Any Action that May Occur within the Range of the Mojave Desert Tortoise (Gopherus agassizii)* (USFWS 2019a). The purpose of the surveys was to determine the presence of desert tortoise, assess the habitat quality and conditions, and identify potential burrows on-site.

A team of four biologists walked parallel transects spaced approximately 10 m apart throughout the entire study area (see Figure 2). Live desert tortoise and sign, including carcasses, scat, burrows, pellets, and drinking depressions, were recorded using handheld GPS units. Surveys were performed during the spring and when temperatures were below 95 degrees Fahrenheit, when tortoises were most likely to be observed aboveground. Each potential desert tortoise burrow was assigned a condition class as described in the *Desert Tortoise (Mojave Population) Field Manual* (USFWS 2009). The condition classifications are as follows:

- Class 1: currently active, with desert tortoise or recent desert tortoise sign
- Class 2: good condition, definitely desert tortoise; no evidence of recent use
- Class 3: deteriorated condition that includes collapsed burrows; definitely desert tortoise
- Class 4: good condition; possibly desert tortoise
- Class 5: deteriorated condition that includes collapsed burrows; possibly desert tortoise

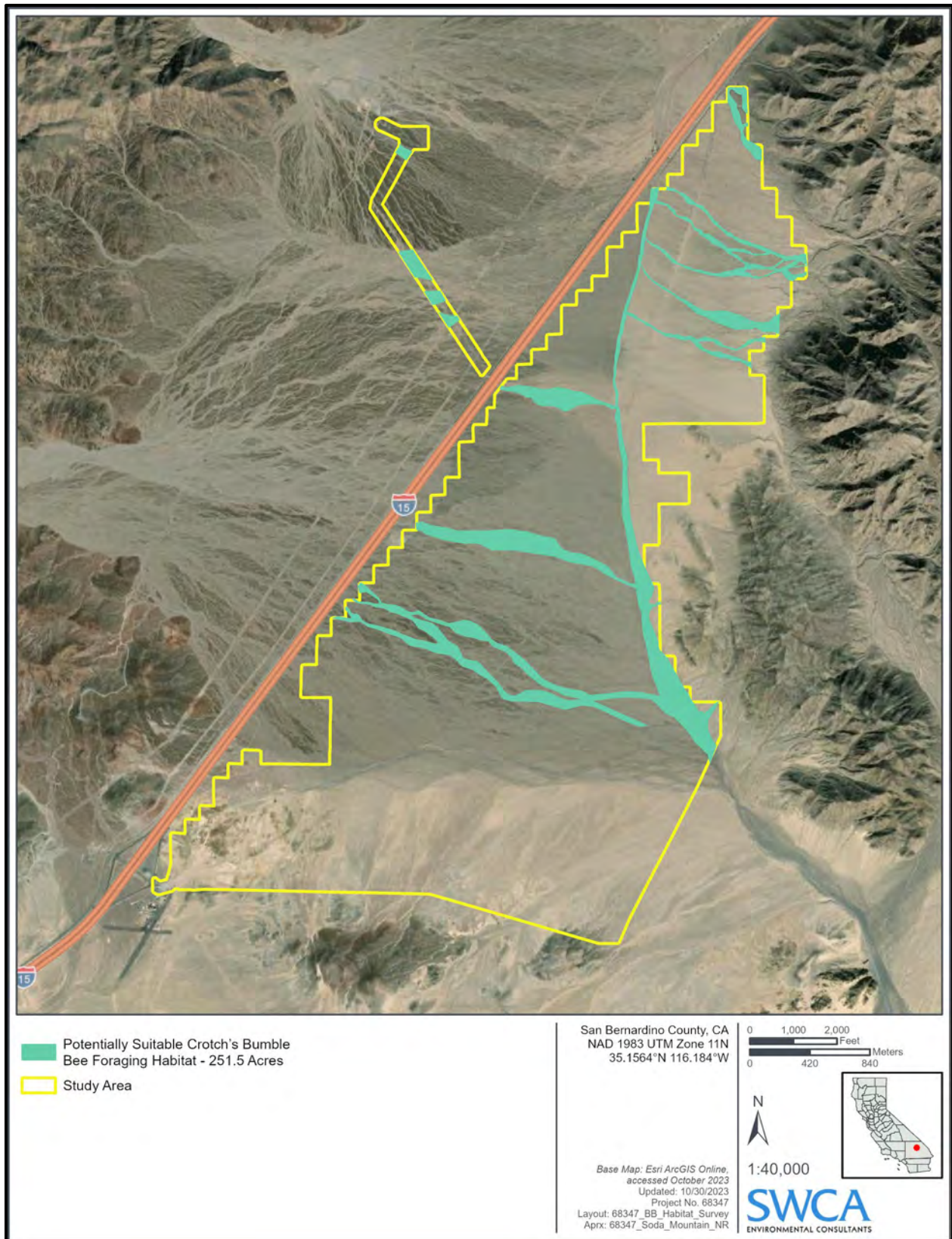


Figure 4. Potentially suitable Crotch's bumble bee foraging habitat based on the desktop assessment.

Additional details for the desert tortoise surveys can be found in *Desert Tortoise Survey Report for the Soda Mountain Solar Project* (Appendix G).

### **3.2.5 Mojave Fringe-toed Lizard Survey**

The desktop review of the 2013 Biological Resources Technical Report shows that surveys were performed for Mojave fringe-toed lizard (*Uma scoparia*) in 2009 and 2012. Areas with suitable habitat were mapped in the report along a wash that is outside and to the southeast of the current project study area. There is currently no survey protocol for Mojave fringe-toed lizard; therefore, the survey methodology was based on a combination of the *Coachella Valley Fringe-toed Lizard (Uma inornata) Survey Protocol* (USFWS 2007) and the BLM-recommended methods used during the 2009 and 2012 surveys for the project. This survey protocol was established for the federally and state-endangered Coachella Valley fringe-toed lizard, which occurs in similar habitat conditions but in a geographically distinct area.

Based on the vegetation mapping and data from the rare plant survey, the project area remained largely unchanged since the surveys in 2009 and 2012. SWCA mapped two small areas of aeolian sand deposits (2.1 acres and 4.8 acres) within washes in the southern portion of the project area. These sand deposits were not identified in the 2013 Biological Resources Technical Report (see Appendix A). This area may be suitable for Mojave fringe-toed lizard, but it is they are not connected to other nearby sand deposits. Given the lack of connectivity and small size, Mojave fringe-toed lizard populations are unlikely to persist in these locations. Mojave fringe-toed lizard surveys were not conducted in these areas.

Two survey replicates were performed in 2023 during the Mojave fringe-toed lizard active season (March–October) during appropriate weather conditions (see Table 1). Ideal weather conditions include little to no wind, and non-shade ground temperatures between 82.4 and 122.0 degrees Fahrenheit (28–50 degrees Celsius). The surveys were focused outside of the study area where suitable habitat was previously mapped in the 2013 Biological Resources Technical Report. In addition, the biologists also surveyed the wash south of the study area where a population of Mojave fringe-toed lizards had been previously documented (Figure 5). The biologists walked 10-meter (m) transects throughout areas with suitable habitat. Binoculars were used to observe lizards at a distance to confirm the species. Detections of Mojave fringe-toed lizard were recorded using a GPS unit.

Additional details for the Mojave fringe-toed lizard survey can be found in *Mojave Fringe-Toed Lizard Survey Report for the Soda Mountain Solar Project* (Appendix H).

### **3.2.6 Avian Use Surveys**

SWCA biologists conducted four replicate avian use surveys during each quarter in 2023. The avian use surveys used point-count methodology to tally all birds detected by sight and sound by a single observer at a fixed position, which can be used to evaluate avian use and diversity in an area. The surveys were conducted solo or in pairs by Gigi Wagnon, Bridget Manjarrez, and Lauren Strong. Winter avian use surveys were performed January 14–26 during the non-breeding season. Spring avian use surveys were performed March 23 and 24, 2023, during spring migration. Summer avian use surveys were performed July 12, 13, and 14, 2023, during the breeding season. Fall avian use surveys were performed October 9, 10, and 11, 2023, during fall migration.



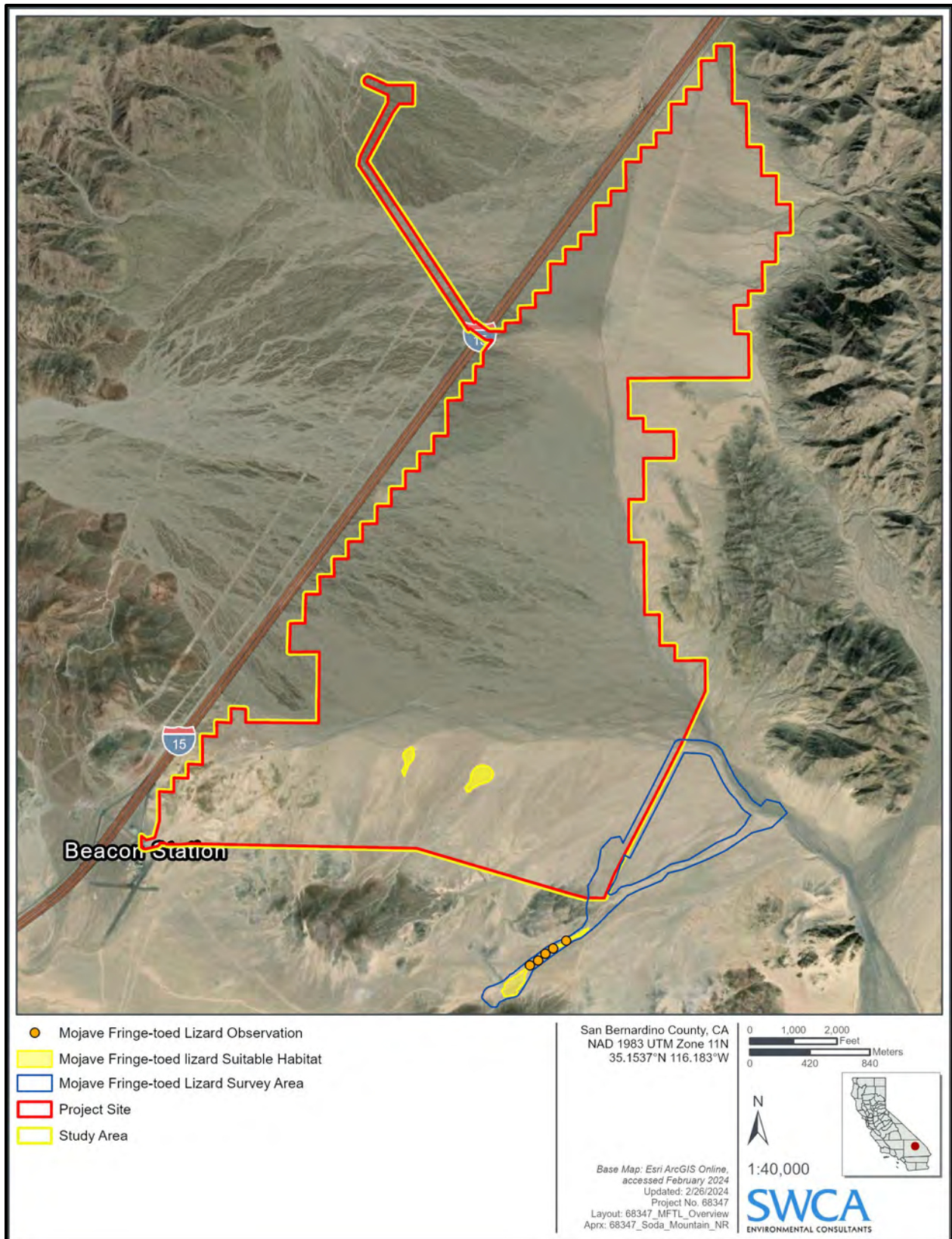


Figure 5. Mojave fringe-toed lizard suitable habitat.

Survey methods were developed in coordination with CDFW. In total, 24 point-count locations within the study area were selected along existing roads in 2023 (Figure 6). Each survey consisted of a 20-minute unlimited-radius point count at each point-count location. Pursuant to coordination with CDFW in early 2024, 22 new point-count locations were surveyed in the spring of 2024 to cover more representative habitat within the study area and the gen-tie (see Figure 6). The methods for the 22 new point count locations included two replicate 10-minute unlimited-radius surveys at each location on April 29–30, 2024 and May 20–21, 2024.

Incidental observations of birds and other wildlife outside the formal survey periods were documented to supplement the comprehensive species list for the project area. Patterns of use that may be relevant to the project, such as large flocks or concentrated movement around specific landscape features, will also be recorded during the spring 2024 surveys. For additional details, please see the following reports:

- *Winter Avian Use Survey Report for the Soda Mountain Solar Project* (Appendix I),
- *Spring Avian Use Survey Report for the Soda Mountain Solar Project* (Appendix J),
- *Summer Avian Use Survey Report for the Soda Mountain Solar Project* (Appendix K),
- *Fall Avian Use Survey Report for the Soda Mountain Solar Project* (Appendix L), and
- *Spring Avian Use and Raptor Survey Report for the Soda Mountain Solar Project* (Appendix M).

### **3.2.7 Burrowing Owl, Desert Kit Fox, American Badger Survey**

SWCA biologists conducted surveys for burrowing owl, desert kit fox, and American badger burrows in the study area in three survey efforts from March 27 to April 5, May 8 to May 12, and May 22 to May 25, 2023 (see Table 1). The study area included the 2,670-acre project area and the gen-tie route (approximately 35.75 acres) including a 150-m buffer around the study area. A burrow survey and subsequent burrowing owl breeding season surveys consisted of a total of six visits.

The purpose of the burrow survey was to determine suitable areas capable of supporting burrowing owl and record all potentially suitable burrows within the entire study area. In addition, the burrow survey also focused on identifying burrows of other fossorial species, specifically desert kit fox and American badger. The survey methodology followed that outlined in the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). During the survey, a team of two to four biologists walked parallel transects spaced approximately 20 m apart through the entire study area. All burrows and dens were thoroughly examined, photographed, and recorded using a handheld GPS unit.

Following the burrow surveys, three burrowing owl breeding season surveys were performed during peak breeding season for burrowing owls, between April 15 and July 24. The purpose of the breeding season surveys was to determine the occupancy status of each potential burrowing owl burrow. The occupancy status for desert kit fox and American badger potential burrows or dens was also evaluated. Each burrow identified during the burrow survey was revisited during the breeding-season surveys. Biologists documented signs of occupancy, such as fresh signs of digging, feathers, whitewash, pellets, prey remains, and other signs that would indicate the presence of these species. Burrows and dens that were collapsed or had extensive debris and dirty cobwebs in the entrance after repeated visits were determined to be inactive. Additional details on the methods can be found in *Burrowing Owl, Desert Kit Fox, and American Badger Survey Report for the Soda Mountain Solar Project* (Appendix N).



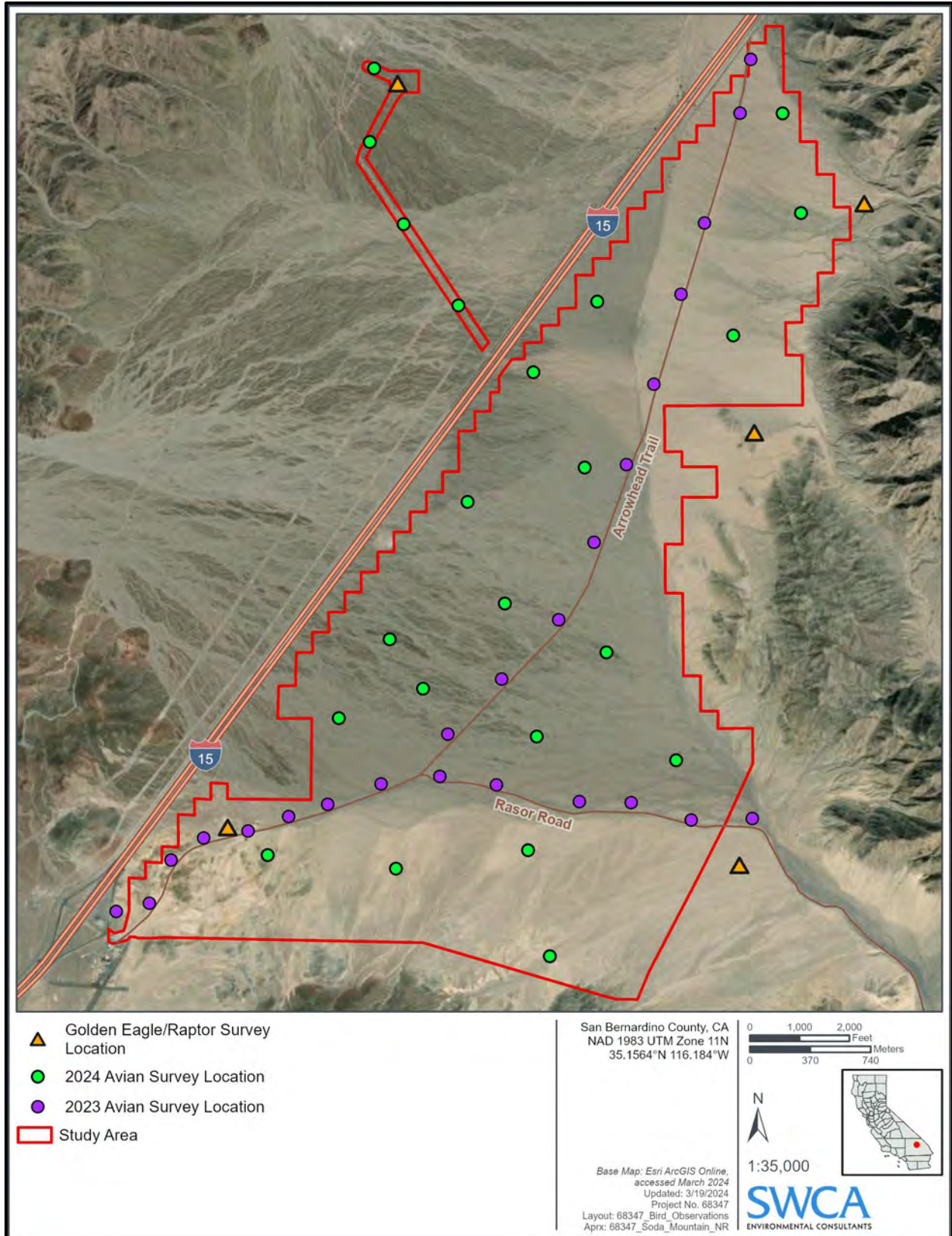


Figure 6. Raptor and avian point-count locations, spring 2024.

### **3.2.8 Bat Survey**

The purpose of this survey was to document the suitability, potential habitat use, and suitability of areas within and near the study area and the surrounding landscape of structures, both natural and constructed, as potential maternity, hibernacula, and/or nocturnal roost sites for bats. The survey was performed in accordance with *Caltrans Bat Mitigation: A Guide to Developing Feasible and Effective Solutions* (H.T. Harvey & Associates 2019), *A Plan for the North American Bat Monitoring Program (NABat)* (Loeb et al. 2015), and *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins 2016). The surveys consisted of an initial daytime habitat assessment survey and three subsequent rounds of nighttime acoustic surveys consisting of dusk roost emergence and activity transect surveys.

A team of two SWCA biologists performed a daytime habitat assessment survey on July 27 and 28, 2023. The primary objective was to identify structures or environmental features within and immediately beyond the study area that could serve as suitable roosting, foraging, or commuting habitat for bats. In addition, the survey aimed to identify suitable locations for conducting nighttime transect surveys, focusing on areas that would account for all representative habitat types within the study area. Attention was focused on rock crevices, tree cavities, and human-made structures, where the biologists searched for specific signs indicating the presence of bats such as guano, insect carapaces, urine staining, or deceased specimens to determine the status of potential roost locations.

Following the daytime habitat assessment survey, a team of four SWCA biologists performed three nighttime acoustic surveys with the primary objective to confirm roost status, determine roost size, capture entry and exit roosts, and determine the use of the study area by bats. Surveys were performed from July 23 through August 31, 2023 (see Table 1). Nighttime acoustic surveys took place at four potential roosting locations within stormwater culverts passing underneath I-15 directly outside the study area, and along five transects within the study area (Figure 7). Transects were distributed along areas that encompassed characteristics important for bat foraging and roosting, including rocky crevices, tree cavities, and human-made structures known to harbor suitable roosting features. Bat calls were recorded using acoustic monitoring equipment including two Wildlife Acoustics Echo Meter Touch units with

built-in species identifiers (connected to Android Galaxy tablets), a Pettersson u384 Ultrasonic Microphone (connected to a Lenovo IdeaPad laptop running BatSound), and an Anabat Scout standalone unit. Calls were analyzed to species level. All potential roost locations were recorded using a GPS unit. The *Bat Survey Report for the Soda Mountain Solar Project* (Appendix O) provides additional details.

### **3.2.9 Raptor Surveys**

Following technical document review for the project in early 2024, CDFW requested raptor observation surveys to detect golden eagles and other large birds within and adjacent to the project area. Accordingly, a qualified biologist visited five raptor observation points no earlier than 10:00 a.m. for 1-hour observation periods (see Figure 6). All large birds (raptors, ravens, etc.) detected within 800 m of the biologist were documented, along with their flight paths and behavior consistent with the methodological recommendations of the CDFW and the USFWS Eagle Conservation Plan Guidance (USFWS 2013). The raptor observation points were selected to afford a clear view of the mountains surrounding and the open valley/location of the project. The raptor survey point locations were visited twice for 1 hour each, concurrent with the point counts.

Incidental observations of birds and other wildlife outside the formal survey periods were documented to supplement the comprehensive species list for the project area. Patterns of use that may be relevant to the project, such as large flocks or concentrated movement around specific landscape features, were also recorded. The *Spring Avian and Raptor Survey Report for the Soda Mountain Solar Project* (see Appendix M) provides additional details.



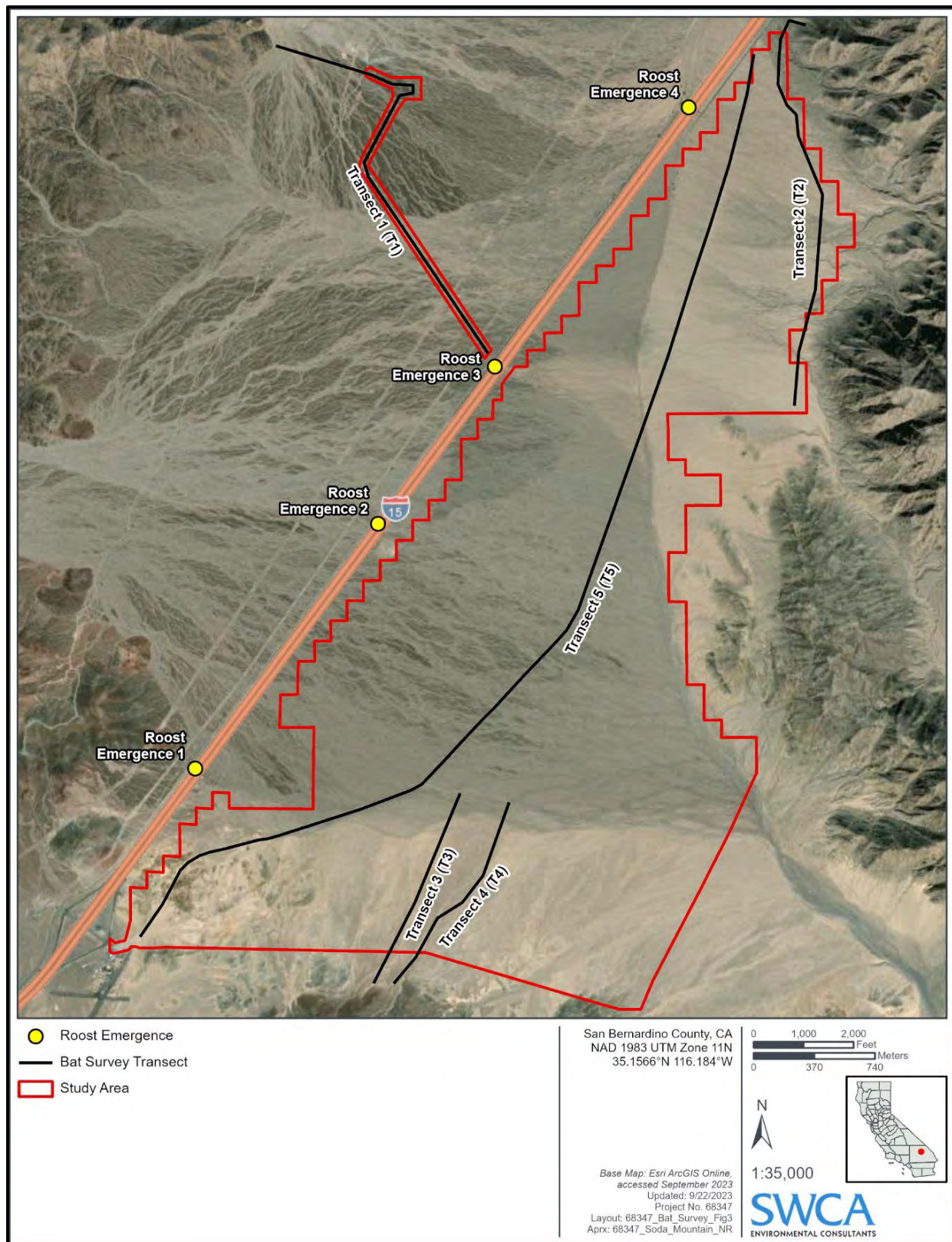


Figure 7. Locations of roost emergence and transect surveys within the Soda Mountain Solar Project study area.

## 4 RESULTS

This section describes the results of the biological surveys led by SWCA in 2023 for vegetation communities, burrowing owl, desert kit fox, American badger, Mojave desert tortoise, Mojave fringe-toed lizard, rare plants, Crotch's bumble bee, avian use, and bats. The detailed methods, results, and species observed can be found in each respective technical memorandum. Monitoring data for desert bighorn sheep will be provided separately by CDFW.

### 4.1 Site Conditions

The habitat types within the study area were best described as Mojavean desert scrub and desert wash scrub. Soils were mostly composed of sand interspersed with gravel and cobble. One major unpaved road, Razor Road, bisects the study area. Although the project area is not within an OHV area, vehicle tracks and disturbance were observed in many parts of the study area. Trash dumps were present, mostly along the road edges and near I-15. In addition, non-native and invasive plant species were prevalent throughout the study area. Non-native and invasive species observed included Mediterranean grass (*Schismus arabicus*), foxtail barley (*Hordeum murinum*), and red brome (*Bromus madritensis* ssp. *rubens*). Non-native and invasive plant species often outcompete native plants and can increase fire risk in the desert.

A loose dog (*Canis lupus familiaris*) was observed at the entrance to the study area, close to the Shell gas station (Appendix P, Photograph P-5). Free-roaming dogs are known to injure and kill native wildlife such as kit fox and can reduce densities of birds and small mammals (e.g., Banks and Bryant 2007; Lenth et al. 2008; Woodroffe 1999; reviewed by Young et al. 2011). Representative site photographs are provided in Appendix P. A list of biological resources with the potential to occur within 10-miles of the project is included in Appendix Q.

### 4.2 Vegetation Communities

Vegetation in the study area and along the gen-tie options consists of intermittent native shrubs. Five vegetation communities were identified on-site as defined in *A Manual of California Vegetation Online* (CNPS 2023b): Rigid Spineflower – Hairy Desert Sunflower (*Chorizanthe rigida* – *Geraea canescens* Desert Pavement Sparsely Vegetated Alliance), California Joint Fir – Longleaf Joint-fir Scrub (*Ephedra californica* – *Ephedra trifurca* Shrubland Alliance), Cheesebush – Sweetbush Scrub (*Ambrosia salsola* – *Bebbia juncea* Shrubland Alliance), Creosote Bush Scrub (*Larrea tridentata* Shrubland Alliance), and Creosote Bush – White Bursage Scrub (*Larrea tridentata* – *Ambrosia salsola* Shrubland Alliance) (Table 2; Figure 8). Additionally, maintained dirt roads and other disturbed sites were mapped as Developed/Disturbed landcover type.

Sensitive vegetation communities are defined by CDFW as those “communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of Projects” (CDFW 2010). Vegetation communities with a State Rank of 1, 2, or 3 are considered sensitive by CDFW. No sensitive alliance-level vegetation communities were mapped on-site. However, two sensitive associations were identified on-site: Rigid Spineflower – Hairy Desert Sunflower (*Chorizanthe rigida* – *Geraea canescens* Desert Pavement Association) and California Joint Fir – Longleaf Joint-fir Scrub (*Ephedra californica* – *Ephedra trifurca* Shrubland Alliance). Neither of these associations mapped on-site have a state rank rarity (see Table 2). No DRECP Special Vegetation Features were observed.

**Table 2. Vegetation Communities and Land Cover Types**

Vegetation Community	Global Rank*	State Rank†	Acres within the Study Area‡
Creosote Bush – White Bursage Scrub Larrea tridentata – Ambrosia dumosa Shrubland Alliance	G5	S5	2,459
Creosote Bush Scrub Larrea tridentata Shrubland Alliance	G5	S5	145
Rigid Spineflower – Hairy Desert Sunflower Chorizanthe rigida – Gerarea canescens Desert Pavement Sparsely Vegetated Alliance, (Chorizanthe rigida – Gerarea canescens Desert Pavement Association)	G4	S4 (Sensitive Association)	32
Cheesebush – Sweetbush Scrub Ambrosia salsola – Bebbia juncea Shrubland Alliance	G4	S4	8.2
California Joint Fir – Longleaf Joint-fir Ephedra californica – Ephedra trifurca Shrubland Alliance, (Ephedra californica – Ambrosia salsola Association)	G5	S4 (Sensitive Association)	1.2
Developed/Disturbed	N/A	N/A	25

\*Global Rank (NatureServe 2024):

G4 = Over 100 viable occurrences worldwide/statewide and/or more than 32,000 acres

G5 = Demonstrably secure because of its worldwide/statewide abundance

†State Rank (NatureServe 2024):

S4 = Over 100 viable occurrences worldwide/statewide and/or more than 32,000 acres

S5 = Demonstrably secure because of its worldwide/statewide abundance

Many ephemeral washes flow through the study area and are generally dominated by Creosote Bush – White Bursage Scrub, Cheesebush – Sweetbush Scrub, and California Joint Fir – Longleaf Joint-fir Scrub. See Photographs P-7 through P-11 in Appendix P for representative photographs of each vegetation community.



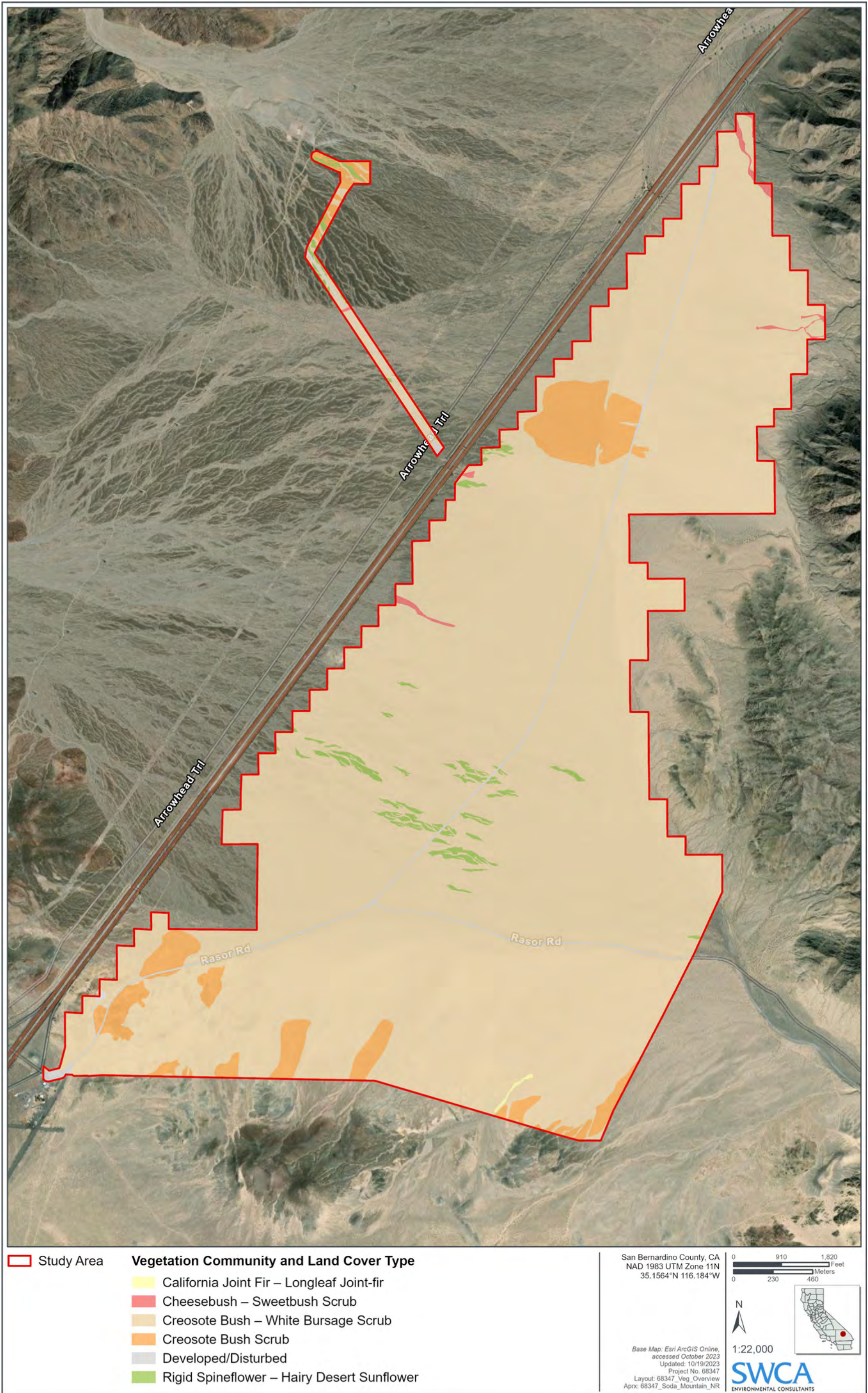


Figure 8. Overview of vegetation community and land cover types.



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#### **4.2.1 Creosote Bush – White Bursage Scrub (*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance)**

Creosote Bush – White Bursage Scrub is characterized by an open to intermittent canopy that may be two-tiered. The herbaceous layer is open to intermittent, with seasonal annuals. The alliance is typically found in the minor washes and rills, alluvial fans, bajadas, and upland slopes. The soils may be well-drained, alluvial, colluvial, and sandy. Creosote bush and white bursage (*Ambrosia dumosa*) are codominant in the shrub canopy with allscale saltbush (*Atriplex polycarpa*), desert holly (*Atriplex hymenelytra*), silky dalea (*Dalea mollissima*), silver cholla (*Cylindropuntia echinocarpa*), branched pencil cholla (*Cylindropuntia ramosissima*), and cottontop cactus (*Echinocactus polycephalus*). Creosote Bush – White Bursage Scrub was the dominant vegetation community found in the study area and characterized the majority of the upland habitat. Approximately 2,459 acres of the study area are classified as Creosote Bush – White Bursage Scrub.

#### **4.2.2 Creosote Bush Scrub (*Larrea tridentata* Shrubland Alliance)**

Creosote Bush Scrub is characterized by an open to intermittent canopy with an herbaceous layer that includes seasonal annuals and perennial grasses. The alliance is typically found on alluvial fans, bajadas, upland slopes, and along minor intermittent washes. Soils typically are well-drained. Creosote bush is dominant or codominant in the shrub canopy with white bursage scrub, cheesebush (*Ambrosia salsola*), desert holly, and allscale saltbush. Creosote Bush Scrub characterized upland habitat in the northwestern and southern portions of the study area. Approximately 145 acres of the study area are classified as Creosote Bush Scrub.

#### **4.2.3 Rigid Spineflower – Hairy Desert Sunflower (*Chorizanthe rigida* – *Geraea canescens* Desert Pavement Sparsely Vegetated Alliance [*Chorizanthe rigida* – *Geraea canescens* Desert Pavement Association])**

Rigid Spineflower – Hairy Desert Sunflower is characterized by a sparse to intermittent herbaceous layer with an open to sparse shrub layer with less than 5% perennial cover. The association is typically found in broad alluvial fans and lower slopes in the desert. Soils may be sandy and gravelly, with various rocks and gravel along with interstitial fine sediments. Devil's spineflower (*Chorizanthe rigida*) is dominant or codominant in the shrub canopy with hairy desert sunflower (*Geraea canescens*) with sparse herbs including trailing windmills (*Allionia incarnata*), pincushions (*Chaenactis* spp.), desert plantain (*Plantago ovata*), brittle spineflower (*Chorizanthe brevicornu* var. *brevicornu*), beavertail cactus (*Opuntia basilaris* var. *basilaris*), and sparse shrubs including creosote bush. Approximately 32 acres of the study area were classified as Rigid Spineflower – Hairy Desert Sunflower.

#### **4.2.4 Cheesebush – Sweetbush Scrub (*Ambrosia salsola* – *Bebbia juncea* Shrubland Alliance)**

Cheesebush – Sweetbush Scrub is characterized by an open or intermittent canopy with an herbaceous layer that is sparse or seasonally present. The alliance is typically found on intermittently flooded channels, arroyos, and washes in valleys, flats, and rarely flooded low-gradient deposits. Soils are alluvial, sandy, and gravelly. Cheesebush is dominant or codominant in the shrub canopy with sweetbush scrub (*Bebbia juncea*), woolly brickellia (*Brickellia incana*), desert senna (*Senna armata*), brittlebush (*Encelia farinosa*), little leaved ratany (*Krameria erecta*), and Thurber's sandpaper plant (*Petalonyx thurberi* ssp. *thurberi*). Cheesebush – Sweetbush Scrub was found occasionally in the major ephemeral

washes in the eastern portion of the study area. Approximately 8.2 acres of the study area are classified as Cheesebush – Sweetbush Scrub.

#### **4.2.5 California Joint Fir – Longleaf Joint-fir Scrub (*Ephedra californica* – *Ephedra trifurca* Shrubland Alliance [*Ephedra californica* – *Ambrosia salsola* Association])**

California Joint Fir – Longleaf Joint-fir Scrub is characterized by an open to intermittent canopy with an herbaceous layer that is sparse to intermittent with seasonal annuals and perennial grasses. The association is typically found on intermittently flooded arroyos, washes, and adjacent alluvial fans in transmontane settings. Soils may be coarse to medium sands, loamy sands, and sandy clay loams. California joint fir (*Ephedra californica*) is either dominant or codominant in the shrub canopy with white bursage scrub and creosote bush. California Joint Fir – Longleaf Joint-fir Scrub was occasionally found associated within an ephemeral wash in the southeastern portion of the study area. Approximately 1.2 acres of the study area are classified as California Joint Fir – Longleaf Joint-fir Scrub.

#### **4.2.6 Disturbed/Developed**

This land cover type is not a vegetation community but rather a descriptor for areas mostly devoid of vegetation due to anthropogenic activities and that have little to no potential to support native species. Disturbed/developed areas included maintained dirt roads and other disturbed sites. Approximately 25 acres of the study area have been classified as Disturbed/Developed.

### **4.3 Plants**

Plant growth was good in spring 2023 due to substantial rainfall in winter-spring 2022-2023. Common native shrubs frequently encountered were white bursage, burrobrush, desert holly, allscale saltbush, wooly brickellia, rayless encelia (*Encelia frutescens*), California joint fir, little leaved ratany, and creosote bush. Common herbaceous species included pincushions, devil’s spineflower, desert dodder (*Cuscuta denticulata*), Booth’s desert primrose (*Eremothera boothii* ssp. *desertorum*), desert lily (*Hesperocallis undulata*), snake’s-head (*Malacothrix coulteri*), desert dandelion (*Malacothrix glabrata*), distant phacelia (*Phacelia distans*), desert plantain, desert nest straw (*Stylocline micropoides*), and other non-native herbs and grasses. All of the plant taxa identified during the spring rare plant survey can be found in the rare plant technical memorandum (see Appendix F). A fully updated list of plant taxa observed, including those documented incidentally, is included in Appendix R.

#### **4.3.1 Special-Status Plants**

Queries of the databases and lists, along with a literature review, identified a total of 12 special-status plant taxa that have been documented within the 9-quad records search area (CDFW 2024b). Eight special-status plants were determined to have a low, moderate, or high potential to occur based on the desktop review. Four species do not have habitat within the study area, or the study area is not within the known range for the species, and were not considered to have potential to occur.

The results of the field surveys were used to inform the presence/absence determinations of each species that had been identified as having potential to occur (Table 3). Given the good rainfall, it was assumed that all plants with seedbank on site germinated and bloomed within the typical period. Therefore, it was also assumed that the survey detected all species which, if present, would have been identifiable during the spring period when the survey was conducted (April 10-May 2). Finally, it was therefore inferred that all spring-blooming or spring-identifiable plants not found during the survey were absent (see Table 3).

The survey confirmed the presence of one rare plant species, Utah vine milkweed (Figure 9). The preliminary (pre-field) potential for occurrence determinations and additional detailed information can be found in *Rare Plant Survey and Vegetation Mapping Results for the Soda Mountain Solar Project* (see Appendix E). Table 3 shows the final determination based on the findings of the field survey.

**Table 3. Potential for Special-Status Plants to Occur based on Desktop Review and Survey Results within the Study Area**

Species	Status*	Life Form and Habitat Description†	Blooming Period	Habitat Suitability
Alkali marsh aster ( <i>Almutaster pauciflorus</i> )	CRPR 2B.2	Perennial herb. Occurs in alkaline meadows and seeps. Elevational range: 239 to 800 m amsl.	June–October	Absent. Suitable habitat is not present in the study area. The species was not observed during the spring 2023 surveys.
Small-flowered androstephium ( <i>Androstephium breviflorum</i> )	CRPR 2B.2	Perennial bulbiferous herb. Occurs in desert dunes and sandy to rocky soil in Mojavean desert scrub. Elevational range: 219 to 800 m amsl.	March–April	Absent. Some aeolian sand habitat is present in the southern portion of the study area. The species was not observed during the spring 2023 surveys. The nearest CNDDDB record of this species is 4 miles southwest of the study area.
Borrego milkvetch ( <i>Astragalus lentiginosus</i> var. <i>borreganus</i> )	CRPR 4.3	Annual herb. Occurs in sandy soils within Mojavean desert scrub and Sonoran desert scrub. Elevational range: 30 to 895 m amsl.	February–May	Absent. Suitable habitat is present in the study area. No milkvetch ( <i>Astragalus</i> sp.) species were found during the spring 2023 surveys. The nearest recent record is 3 miles to the west of the study area.
Black grama ( <i>Bouteloua eriopoda</i> )	CRPR 4.2	Perennial stoloniferous herb. Occurs in Joshua tree woodland and pinyon-juniper woodland. Elevational range: 900 to 1,900 m amsl.	May–August	Absent. Suitable habitat is not present in the study area. The species was not observed during the spring 2023 surveys.
Emory's crucifixion-thorn ( <i>Castela emoryi</i> )	CRPR 2B.2	Perennial deciduous shrub. Occurs in gravelly soils within Mojavean desert scrub, washes, playas, and Sonoran desert scrub. Elevational range: 90 to 725 m amsl.	(April) June–July (September–October)	Absent. There is suitable habitat in gravelly washes throughout the study area. The species was not observed on-site during the April 2023 surveys. Species is a distinct perennial shrub and is identifiable outside of the blooming period. The nearest CNDDDB record is located 1 mile northeast of the proposed gentle route (within 1,000 feet of the study area), originally documented during the botanical surveys in 2009 and 2012.
Harwood's eriastrum ( <i>Eriastrum harwoodii</i> )	CRPR 1B.2, BLMS	Annual herb. Occurs in desert dunes. Elevational range: 124 to 914 m amsl.	March–June	Absent. Marginally suitable aeolian sand habitat is located in the southern portion of the study area. The species was not observed on-site during the April 2023 surveys. The nearest CNDDDB occurrence is located 6 miles southeast of the study area.
Utah vine milkweed ( <i>Funastrum utahense</i> )	CRPR 4.2	Perennial herb. Occurs in gravelly (sometimes) and occasionally sandy soils within Mojavean desert scrub and Sonoran desert scrub. Elevational range: 100 to 1,435 m amsl.	(March) April–June (September–October)	Present. Several individuals were found in and adjacent to the study area along the margins of ephemeral washes.



Species	Status*	Life Form and Habitat Description†	Blooming Period	Habitat Suitability
Wright's jaffueliobryum moss ( <i>Jaffueliobryum wrightii</i> )	CRPR 2B.3	Moss. Occurs in dry openings, rock crevices, and carbonate substrates within alpine dwarf scrub, Mojavean desert scrub, and pinyon-juniper woodland. Elevational range: 160 to 2,500 m amsl.	n/a	Absent. Suitable habitat is not present within the study area. The nearest records are 3 miles from the study area.
Ribbed cryptantha ( <i>Johnstonella costata</i> )	CRPR 4.3	Annual herb. Occurs in sandy soils within desert dunes, Mojavean desert scrub, and Sonoran desert scrub. Elevational range: 28 m bmsl to 500 m amsl.	February–May	Absent. Suitable habitat is present throughout the study area. The species was not observed during the spring 2023 surveys. The nearest record is 4.5 miles west of the study area.
Winged cryptantha ( <i>Johnstonella holoptera</i> )	CRPR 4.3	Annual herb. Occurs in gravelly to rocky soils, washes, slopes, ridges Mojavean desert scrub, and Sonoran desert scrub. Elevational range: 100 to 1,690 m amsl.	March–April	Absent. Suitable habitat is present throughout the study area. The species was not observed during the spring 2023 surveys. The nearest record is 7 miles northeast of the study area.
Cooper's rush ( <i>Juncus cooperi</i> )	CRPR 4.3	Perennial herb. Occurs in meadows and seeps. Elevational range: 100 m bmsl to 1,769 m amsl.	April–May (August)	Absent. Suitable habitat is not present in the study area. The species was not observed during the spring 2023 surveys.
Desert winged rockcress ( <i>Sibara deserti</i> )	CRPR 4.3	Annual herb. Occurs in washes, steep hillsides, dry flats, scree, calcareous rubble, rocky bluffs, and exposed crevices in Mojavean desert scrub. Elevational range: 344 to 1,300 m amsl.	March–April	Absent. Suitable habitat is present in the study area. The species was not observed during the spring 2023 surveys. The nearest record is 7 miles northeast of the study area.

\* Ranks for the species included in this list are sourced from CNDDDB. Impacts to plants with CRPR 1 and 2 must be considered pursuant to CEQA and are treated as sensitive.

CRPR Ranking:

1B: Rare, threatened, or endangered in California and elsewhere.

2B: Rare, threatened, or endangered in California, but more common elsewhere.

4: Watch List Plants of limited distribution.

0.2: Fairly threatened in California.

0.3: Not very threatened in California

BLMS: Bureau of Land Management sensitive.

† Habitat descriptions are adapted from the CNPS Rare Plant Inventory Ecology and Life History notes, and consist of the general and microhabitat descriptions of the corresponding element.

#### 4.3.1.1 ALKALI MARSH ASTER

Alkali marsh aster is a CRPR 2B.2 perennial herb that flowers between June and October. CRPR 2B.2 species are rare, threatened, or endangered in California, but more commonly found elsewhere, and are fairly threatened in California. Alkali marsh aster is known to occur in alkaline meadows and seeps at elevations between 239 and 800 m amsl. This species is threatened by road and trail work and hydrology changes. The nearest CNDDDB record is from 2012 and is 3.6 miles to the east of the project within an isolated pond along Zzyzx Field Station.

Based on the desktop review and lack of habitat suitability on the project, the initial potential for this species to occur was determined to be absent. Alkali marsh aster was not observed during the 2023 rare plant survey. The survey was performed in April and May 2023, which is outside of the blooming period of this species. Considering both the habitat assessment and rare plant survey results, this species is considered absent from the study area.

#### **4.3.1.2 SMALL-FLOWERED ANDROSTEPHIUM**

Small-flowered androstephium is a CRPR 2B.2 perennial bulbiferous herb that flowers between March and April. CRPR 2B.2 species are rare, threatened, or endangered in California, but more commonly found elsewhere, and are fairly threatened in California. Small-flowered androstephium occurs in desert dunes and sandy to rocky soil in Mojavean desert scrub, at elevations between 219 and 800 m amsl. This species is threatened by development, habitat alteration, military operations, non-native plants, solar and wind energy projects, and vehicles. The nearest record was documented in 1998 approximately 4 miles southwest of the project off Basin Road in Crucero. At the nearest CNDDDB record, approximately 10 individuals of the target species were found on a west-facing slope with a sparse coverage of creosote bush, white bursage, and desert lily. The substrate included mostly aeolian sands interspersed with gravel. Only one plant was found to be flowering; the remaining were in bud or in a vegetative state. There is high-quality habitat located in aeolian sands present in the southern portion of the project.

Based on the desktop review and habitat suitability, the initial potential for this species to occur was determined to be high. Small-flowered androstephium was not observed during the 2023 rare plant survey. The survey was performed in April and May 2023, which was an appropriate blooming period for this species. Considering both the habitat assessment and rare plant survey results, this species is considered absent in the study area.

#### **4.3.1.3 BORREGO MILKVETCH**

Borrego milkvetch is a CRPR 4.3 annual herb that flowers between February and May. CRPR 4.3 species are watch-list plants of limited distribution and are not very threatened in California. Borrego milkvetch occurs in sandy soils within Mojavean desert scrub and Sonoran desert scrub, at elevations between 30 and 895 m amsl. The nearest record, less than 40 years old, was documented in 2011 approximately 3.0 miles west of the project. There is moderate-quality habitat located in southern portion of the project.

Based on the desktop review and habitat suitability, the initial potential for this species to occur was determined to be moderate. Neither Borrego milkvetch nor any *Astragalus* species was observed during the 2023 rare plant survey. The survey was performed in April and May 2023, which is at the end of the average blooming period for Borrego milkvetch. This species would have been identifiable by flowering parts and/or fruit or leaflet morphology. Considering both the habitat assessment and rare plant survey results, and the determination of moderate habitat suitability, this species is considered absent from the study area.

#### **4.3.1.4 BLACK GRAMA**

Black grama (*Bouteloua eriopoda*) is a CRPR 4.3 perennial stoloniferous herb that flowers between May and August. CRPR 4.3 species are watch-list plants of limited distribution and are not very threatened in California. Black grama occurs in Joshua tree woodland and pinyon-juniper woodland, at elevations between 900 and 1,900 m amsl. There is not suitable habitat in the study area, and the project is below the known elevational range. The nearest record was documented in 1998, approximately 11 miles to the southwest.

Based on the desktop review and habitat suitability, the initial potential for this species to occur was determined to be absent. Black grama was not observed during the 2023 rare plant survey. The survey was performed in April and May 2023, which was an appropriate blooming period for this species. Considering both the habitat assessment and rare plant survey results, this species is considered absent from the study area.

#### **4.3.1.5 EMORY'S CRUCIFIXION-THORN**

Emory's crucifixion-thorn is a CRPR 2B.2 perennial deciduous shrub that flowers between June and July, and sometimes between April and October. CRPR 2B.2 species are rare, threatened, or endangered in California, but more commonly found elsewhere, and are fairly threatened in California. Emory's crucifixion-thorn is known to occur in gravelly soils within Mojavean desert scrub, washes, playas, and Sonoran desert scrub, at elevations between 90 and 725 m amsl. This species is threatened by development, habitat alteration, military operations, non-native plants, solar and wind energy projects, and vehicles. There is some high-quality habitat located within the gen-tie route. The nearest record from 2012 is located less than 1 mile east of the gen-tie. At the Emory's crucifixion-thorn reference site, approximately five individual shrubs of the target species were found along the margins of a drainage growing with creosote bush and white bursage. None of the plants were blooming; however, the distinct shrub is identifiable at any phenological stage. Suitable habitat occurs in the study area, and individuals were found during rare plant surveys performed in 2009 and 2012 (see Appendix A).

Based on the desktop review and habitat suitability and previous occurrence records for the original north array, the initial potential for this species to occur was determined to be high. Emory's crucifixion-thorn was not observed during the 2023 rare plant survey. The survey was performed in April and May 2023, which is within the average blooming period of this species. Furthermore, this species is easily identifiable based on life form, unique morphology (e.g., thorns), and lack of co-occurrence of other plants of the same genus. Considering both the habitat assessment and rare plant survey results, this species is considered absent from the study area.

#### **4.3.1.6 HARWOOD'S ERIASTRUM**

Harwood's eriastrum is a CRPR 1B.2 annual herb that flowers between March and June. CRPR 1B.2 species are rare, threatened, or endangered in California and elsewhere, and are fairly threatened in California. In addition, this species is ranked as sensitive by the BLM. Harwood's eriastrum is found in desert dunes at elevations between 124 to 914 m amsl. This species is threatened by development, habitat alteration, military operations, non-native plants, solar and wind energy projects, and vehicles. There is marginally suitable habitat located in aeolian sands present in the southern portion of the project. The nearest CNDDDB record of this species is from 2008, approximately 8 miles to the south.

Based on the desktop review and habitat suitability, the initial potential for this species to occur was determined to be low. Harwood's eriastrum was not observed during the 2023 rare plant survey. The survey was performed in April and May 2023, which was an appropriate blooming period for this species. Considering both the habitat assessment and rare plant survey results, this species is considered absent from the study area.

#### **4.3.1.7 UTAH VINE MILKWEED**

Utah vine milkweed is a CRPR 4.3 perennial herb that flowers between April and June, and sometimes between March and October. CRPR 4.3 species are watch-list plants of limited distribution and are not very threatened in California. Utah vine milkweed occurs in gravelly and occasionally sandy soils within Mojavean desert scrub and Sonoran desert scrub at elevations between 100 and 1,435 m amsl. Suitable habitat occurs in the northern portion of the project area along ephemeral washes, and individuals were found during rare plant surveys performed in 2009 and 2012 (see Appendix A).

Based on the desktop review and habitat suitability, the initial potential for this species to occur was determined to be high. Utah vine milkweed was observed flowering during the 2023 rare plant survey within the study area. The survey was performed in April and May 2023, which was an appropriate

blooming period for this species. Considering both the habitat assessment and rare plant survey results, this species is considered present in the study area. Three individuals were documented to occur within the study area along the gen-tie route.

Three Utah vine milkweed individuals were near the proposed gen-tie route northwest of the study area (see Figure 9; Appendix P: Photograph P-6). These locations are consistent with the locations of the observations made during the 2009 and 2012 surveys. The plants were generally found at the interface of Creosote Bush – White Bursage Scrub (*Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance) and Cheesebush – Sweetbush Scrub (*Ambrosia salsola* – *Bebbia juncea* Shrubland Alliance), along the margins of an ephemeral wash. Additional individuals were found outside of the study area.

#### **4.3.1.8 WRIGHT’S JAFFUELIQBRYUM MOSS**

Wright’s jaffueliobryum moss (*Jaffueliobryum wrightii*) is a CRPR 2B.3 moss that reproduces via spores, given sufficient precipitation. CRPR 2B.3 species are rare, threatened, or endangered in California, but more commonly found elsewhere, and not very threatened in California. Wright’s jaffueliobryum moss occurs in dry openings, rock crevices, and carbonate substrates within alpine dwarf scrub, Mojavean desert scrub, and pinyon-juniper woodland at elevations between 160 and 2,500 m amsl. There is not suitable habitat in the study area. The nearest record of this species is from 2003, approximately 3 miles to the east.

Based on the desktop review and lack of habitat suitability, the initial potential for this species to occur was determined to be absent. Wright’s jaffueliobryum moss was not observed during the 2023 rare plant survey. This species can be identified year-round. Considering both the habitat assessment and rare plant survey results, this species is considered absent from the study area.

#### **4.3.1.9 RIBBED CRYPTANTHA**

Ribbed cryptantha is a CRPR 4.3 annual herb that flowers between February and May. CRPR 4.3 species are watch-list plants of limited distribution and are not very threatened in California. Ribbed cryptantha occurs in sandy soils within desert dunes, Mojavean desert scrub, and Sonoran desert scrub at elevations between 28 m bmsl to 500 m amsl. There is suitable habitat in the study area. The nearest record of this species is from 2011, approximately 4.5 miles to the west.

Based on the desktop review and habitat suitability, the initial potential for this species to occur was determined to be high. Ribbed cryptantha was not observed during the 2023 rare plant survey. Considering both the habitat assessment and rare plant survey results, this species is considered absent from the study area.

#### **4.3.1.10 WINGED CRYPTANTHA**

Winged cryptantha is a CRPR 4.3 annual herb that flowers between March and April. CRPR 4.3 species are watch list plants of limited distribution and are not very threatened in California. This species occurs in gravelly to rocky soils, washes, slopes, ridges Mojavean desert scrub, and Sonoran desert scrub at elevations between 100 to 1,690 m amsl. There is suitable habitat present throughout the study area. The nearest record of this species is 7 miles northeast of the study area.

Based on the desktop review and habitat suitability, the initial potential for this species to occur was determined to be moderate. Winged cryptantha was not observed during the 2023 rare plant survey. Considering both the habitat assessment and rare plant survey results, this species is considered absent from the study area.

#### **4.3.1.11 COOPER'S RUSH**

Cooper's rush (*Juncus cooperi*) is a CRPR 4.3 perennial herb that flowers between April and May, and sometimes until August. CRPR 4.3 species are watch-list plants of limited distribution and are not very threatened in California. Cooper's rush occurs in meadows and seeps, at elevations between 100 m bmsl and 1,769 m amsl. There is no suitable habitat for this species in the study area. The nearest CNDDDB record of this species is from 2006, approximately 3 miles to the east.

Based on the desktop review and lack of habitat suitability, the initial potential for this species to occur was determined to be absent. Cooper's rush was not observed during the 2023 rare plant survey. Considering both the habitat assessment and rare plant survey results, this species is considered absent from the study area.

#### **4.3.1.12 DESERT WINGED ROCKCRESS**

Desert winged rockcress is a CRPR 4.3 annual herb that flowers between March and April. CRPR 4.3 species are watch-list plants of limited distribution and are not very threatened in California. Desert winged rockcress occurs in washes, steep hillsides, dry flats, scree, calcareous rubble, rocky bluffs, and exposed crevices in Mojavean desert scrub, at elevations between 344 and 1,300 m amsl. Suitable Mojavean desert scrub is present in the study area. The nearest record of this species is from 2008, approximately 7 miles to the northeast.

Based on the desktop review and habitat suitability, the initial potential for this species to occur was determined to be moderate. Desert winged rockcress was not observed during the 2023 rare plant survey. Considering both the habitat assessment and rare plant survey results, this species is considered absent from the study area.



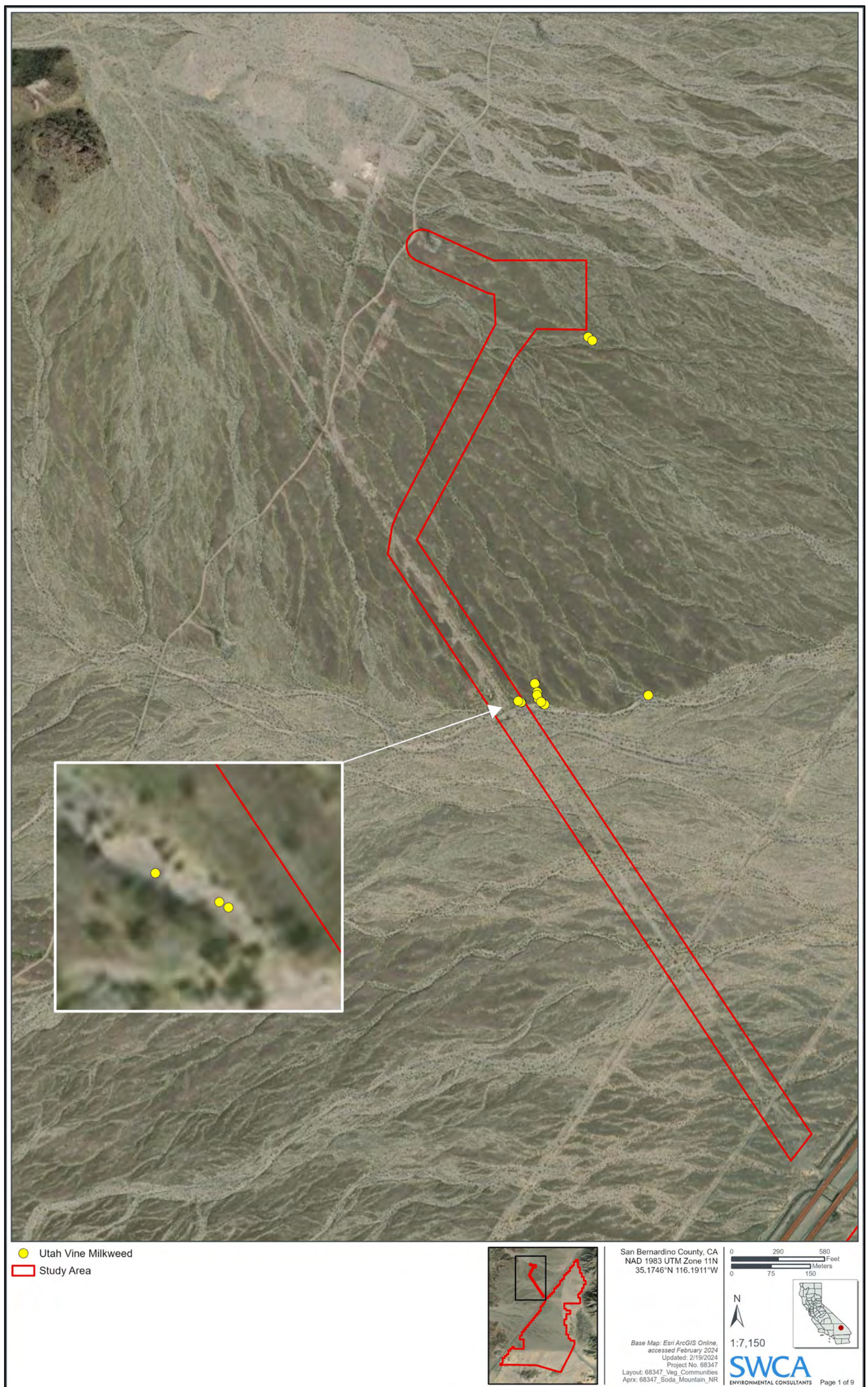


Figure 9. Utah vine milkweed individuals found within and near the study area.



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## 4.4 Wildlife

Wildlife observations during the surveys were sparse, though more wildlife was observed after April when activity levels increase for many mammals and reptiles, and spring bird migration occurred. The birds most frequently encountered were typical of the Mojave Desert: common raven (*Corvus corax*), horned lark (*Eremophila alpestris*), black-throated sparrow (*Amphispiza bilineata*) and Brewer's sparrow (*Spizella breweri*). Six species of mammals were observed directly: white-tailed antelope squirrel (*Ammospermophilus leucurus*), black-tailed jackrabbit (*Lepus californicus*), kangaroo rat (*Dipodomys* spp.), coyote (*Canis latrans*), desert kit fox, and feral dog. The reptiles most commonly encountered were western side-blotched lizard (*Uta stansburiana elegans*), desert horned lizard (*Phrynosoma platyrhinos calidiarum*), desert iguana (*Dipsosaurus dorsalis dorsalis*), and western zebra-tailed lizard (*Callisaurus draconoides*). A list of wildlife species observed during field surveys can be found in Appendix R.

### 4.4.1 Wildlife Movement and Migratory Corridors

Wildlife movement corridors are defined on both a regional and local basis. Regionally, the study area lies between the northern and southern portion of the Soda Mountains within the Mojave Desert. The Wildlands Conservancy and BLM drafted *A Linkage Network for the California Deserts* to present an analysis of potential threats and impacts to wildlife mobility from development on public lands, including industrial-scale renewable energy development. Least-cost modeling evaluates the relative cost for a species to move between targeted “Landscape Blocks” (more specifically, potential cores and patches of breeding habitat within each block) based on how each species is affected by various landscape characteristics (Penrod et al. 2012). In *A Linkage Network for the California Deserts*, the Wildlands Conservancy and BLM identified a least-cost corridor for desert tortoise to the north, east, and west, and a low-cost corridor for American badger to the east and west (Figure 10) (Penrod et al. 2012). The project is centrally located among these corridors but is not within or adjacent to any of them. I-15 runs directly north and west of the project, which creates barriers to wildlife movement for some species that have limited home ranges or low dispersal ability and may reduce the movement of wide-ranging species such as American badger, desert kit fox, and coyote. There are no terrain features such as canyons to concentrate wildlife movement.

Caltrans and CDFW commissioned the California Essential Habitat Connectivity Project because these agencies consider a functional network of connected wildlands to be essential to the continued support of California’s diverse natural communities in the face of human development and climate change (Spencer et. al 2010).

On a local basis, the study area currently provides unrestricted wildlife movement, as there are no fences or other obstructions to wildlife passage. Migratory birds may utilize the study area and vicinity for breeding, nesting, and foraging, or as transient rest sites during migration flights. Desert kit fox, American badger, and coyote may travel across the study area in search of prey opportunities, and to access higher-quality habitat in the area for both prey and cover. Desert bighorn sheep may traverse the study area to travel between the southern and northern Soda Mountains.





Figure 10. Least-cost corridors from *A Linkage Network for the California Deserts* (Penrod et al. 2012). Red star added to indicate the project location.

#### 4.4.2 Special-Status Wildlife

Based on the results of the literature and database review, 22 species of special-status wildlife were found to have occurrences within the literature and records query area. These species were evaluated for their potential to occur in the study area based on considerations of local records, habitat conditions, and environmental requirements, and a presence/absence determination was made for most based on field survey results (Table 4) (CDFW 2024b). After this assessment, eight species were considered to have the potential to occur at the project area, each of which is discussed in detail below. Six special-status animals and/or their diagnostic sign were observed during the surveys: desert tortoise, burrowing owl, loggerhead shrike (*Lanius ludovicianus*), desert kit fox, American badger, and desert bighorn sheep (Appendix P: Photograph P-29). Individuals of burrowing owl, desert kit fox, and loggerhead shrike were observed directly.

**Table 4. Potential for Special-Status Wildlife to Occur based on Desktop Review and Survey Results within the Study Area**

Common Name (Species Name)	Special-Status *	Range or Habitat Requirements	Presence in the Study Area
<b>Invertebrates</b>			
Crotch's bumble bee ( <i>Bombus crotchii</i> )	SCE	Found in coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include <i>Antirrhinum</i> , <i>Phacelia</i> , <i>Clarkia</i> , <i>Dendromecon</i> , <i>Eschscholzia</i> , and <i>Eriogonum</i> .	Absent. Suitable foraging and nesting habitat is present within the study area. The nearest CNDDDB record is approximately 40 miles north and almost 30 years old. The study area is outside of the known range for this species. Not detected during focused surveys for this species.
Monarch butterfly – California overwintering population ( <i>Danaus plexippus</i> pop. 1)	FC	This population of monarch butterfly roosts along the coast of California to Mexico. Roosts are located in wind-protected tree groves, typically eucalyptus ( <i>Eucalyptus</i> spp.), Monterey pine ( <i>Pinus radiata</i> ), or cypress ( <i>Cupressus</i> spp.), near nectar and water sources.	Absent. There are no CNDDDB records for monarchs within the search query. However, this species was included in the results of an IPaC search query (Appendix B). The study area is outside of the known wintering range for this species; thus, focused surveys were not conducted for this monarch population.
Baker's desertsnailed ( <i>Eremarionta rowelli bakerensis</i> )	SA	Inhabits the north slope of a small range of limestone hills approximately 0.5 mile south of Baker, San Bernardino County. Found in rockslides.	Absent. Suitable habitat is not present within the study area and does not fall within the known range for this species.
<b>Fish</b>			
Saratoga Springs pupfish ( <i>Cyprinodon nevadensis nevadensis</i> )	SSC	Inhabits a wide variety of habitats; prefers marshes with grassy bottom and substrate consisting of mud and sand. Tends to avoid temperatures exceeding 35°C. Active late January through late November.	Absent. Suitable habitat is not present within the study area. The nearest CNDDDB record is 3.4 miles east of the study area, associated with an isolated natural spring.

Common Name (Species Name)	Special-Status *	Range or Habitat Requirements	Presence in the Study Area
Mohave tui chub ( <i>Siphateles bicolor mohavensis</i> )	FE, SE	Formerly found in deep pools and slough-like areas of the Mojave River, this species now occurs only in highly modified refuge sites in San Bernardino County.	Absent. Suitable habitat is not present within the study area. The nearest CNDDDB record is 3.4 miles east of the study area, associated with an isolated natural spring.
<b>Reptiles</b>			
Southwestern pond turtle ( <i>Actinemys pallida</i> )	Proposed FT, SSC, BLMS	Found in ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches, with abundant vegetation, and either rocky or muddy bottoms, in woodland, forest, and grassland. In streams, prefers pools to shallower areas. Logs, rocks, cattail mats, and exposed banks are required for basking. May enter brackish water and even seawater. Active February through November and during warm periods of winter in warmer climates.	Absent. Suitable habitat is not present within the study area. The nearest CNDDDB record is over 12 miles from the study area.
Desert tortoise ( <i>Gopherus agassizii</i> )	FT, SE	Mojave population of desert tortoise lives in a variety of environments from sandy flats to rocky foothills, including alluvial fans, washes, and canyons. Arid land with usually sparse vegetation.	Present. Suitable habitat is present within the study area. The study area is more than 9 miles from the nearest CNDDDB record and 7 miles from critical habitat. Fresh scat and potential burrows were observed on-site during protocol surveys for the species; no live tortoises were observed.
Mojave fringe-toed lizard ( <i>Uma scoparia</i> )	SSC, BLMS	Prefers sparsely vegetated arid areas with fine wind-blown sand, including dunes, flats with sandy hummocks formed around the bases of vegetation, washes, and the banks of rivers. Needs fine, loose sand for burrowing. Active February through November.	Low. The nearest CNDDDB record is approximately 3.8 miles west of the study area. Suitable habitat is located just outside the southeastern edge of the study area, where this species was observed during focused surveys. Two areas (2.1 and 4.8 acres) containing aeolian sands are located within the project area. These areas are considered suitable habitat for Mojave fringe-toed lizard. However, there is no connectivity to the known population. Focused surveys were not completed for these areas in 2009, 2012, and 2023. Due to the small size of the areas, and lack of connectivity to known populations, it has been determined that Mojave fringe-toed lizard has a low potential to occur within the study area.

Common Name (Species Name)	Special-Status *	Range or Habitat Requirements	Presence in the Study Area
<b>Birds</b>			
Golden eagle ( <i>Aquila chrysaetos</i> )	BGEPA, FP, BLMS	Nests in a wide variety of habitats from near sea level to 3,630 feet. Nesting habitat includes tundra, shrublands, grasslands, woodland-brushlands, and coniferous forests. Nesting habitat is often associated with either cliffs or trees, although some nests are built on the ground.	Low. Suitable nesting habitat is not present within the study area; however, suitable foraging habitat is present. The nearest CNDDDB record is approximately 8 miles southwest of the study area, which documented a nesting pair in 2011. There is low potential for golden eagle to forage in the study area.
Burrowing owl ( <i>Athene cunicularia</i> )	SSC, BLMS	Found in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent on burrowing mammals, most notably the California ground squirrel ( <i>Otospermophilus beecheyi</i> ).	Present. Suitable foraging and nesting habitat occur within the study area. No CNDDDB records occur within 20 miles of the study area. However, the nearest eBird record of this species is approximately 3.5 miles west of the study area. One individual and multiple potential burrows were observed on-site during focused surveys for the species.
Yellow-breasted chat ( <i>Icteria virens</i> )	SSC	Found in a variety of dense, shrubby, open habitats, ranging from second-growth old fields in eastern North America, to arid riparian and shrubland in western North America. Nests are usually placed near the ground in dense shrubs.	Absent. Suitable habitat is not present within the study area. The nearest CNDDDB record is 7 miles northeast of the study area. This species was not observed during focused avian use surveys.
Loggerhead shrike ( <i>Lanius ludovicianus</i> )	SSC	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub, and washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	Present. Suitable habitat is present within the study area. The nearest CNDDDB record is 14 miles northeast of the study area. There are multiple eBird records of this species within 5 miles of the study area. Multiple individuals were observed on-site.
Summer tanager ( <i>Piranga rubra</i> )	SSC	Western populations nest in riparian woodlands dominated by willows ( <i>Salix</i> spp.) and cottonwoods ( <i>Populus</i> spp.) at lower elevations; at higher elevations, the species inhabits mesquite ( <i>Prosopis</i> spp.) and saltcedar ( <i>Tamarix ramosissima</i> ) habitats.	Absent. The nearest CNDDDB record is 45 years old and 11.5 miles southwest of the study area. The nearest eBird record is 3.5 miles east of the study area. However, potential habitat is not present within the study area. This species was not observed during focused avian use surveys.
Vermilion flycatcher ( <i>Pyrocephalus rubinus</i> )	SSC	Nests in arid scrub, desert, savanna, farmlands, parks, golf courses, cultivated lands, and riparian woodland; usually found near water. Nests typically in trees that line riparian corridors; water may be nearby but is not required.	Absent. The nearest CNDDDB record is over 45 years old and 7 miles northeast of the study area. The nearest eBird record is 3.5 miles east of the study area; however, potential habitat is not present within the study area. This species was not observed during focused avian use surveys.

Common Name (Species Name)	Special-Status *	Range or Habitat Requirements	Presence in the Study Area
Least Bell's vireo ( <i>Vireo bellii pusillus</i> )	FE, SE	Inhabits riparian woodlands but benefits from using both riparian and adjacent non-riparian habitat. In arid regions, surface water appears to be an important element of habitat, and it is commonly listed as an obligate or preferential riparian nesting species, especially in bottomland riparian scrub. Most critical structural component of its habitat in California is a dense shrub layer 0.6–3.0 m aboveground.	Absent. Suitable habitat is not present within the study area. The nearest CNDDDB record is over 45 years old and 10 miles southwest of the study area. The nearest eBird record is nearly 50 miles southwest of the study area.
<b>Mammals</b>			
Pallid bat ( <i>Antrozous pallidus</i> )	SSC, BLMS	Roosts in a variety of places but favors rocky outcrops and favor desert habitats. Also occurs in oak ( <i>Quercus</i> spp.) and pine ( <i>Pinus</i> spp.) forested areas and open farmland. Roosting sites are variable, depending on what is available. The species can be found roosting in caves, rock crevices, mines, hollow trees, and buildings.	Low. Suitable foraging habitat is present, but suitable habitat for roosting is not present within the study area. The nearest CNDDDB record is over 12 miles from the study area. This species was not detected during the 2023 nighttime acoustic surveys. There is low potential for this species to forage on-site.
Townsend's big-eared bat ( <i>Corynorhinus townsendii</i> )	SSC, BLMS	Typical roosting habitat is located in mines, caves, old buildings, and tree hollows. The species requires moths and beetles for feeding, with moths being its primary food source.	Low. Suitable habitat for roosting is not present within the study area. The nearest CNDDDB record, from 2006, is 3.5 miles east of the study area. This species was not detected during the 2023 nighttime acoustic surveys. There is a low potential for this species to forage on-site.
Southern California ringtail ( <i>Bassariscus astutus octovus</i> )	FP	Exploit a variety of habitats such as dry, rocky, brush-covered hillsides or riparian areas, typically not far from an open water source. Dens most often in rock crevices, boulder piles, or talus, but also tree hollows, root cavities, and rural buildings.	Absent. Suitable habitat is not present within the study area. There are no nearby CNDDDB records for this species. Furthermore, no sign indicating presence or habitat use by this species was observed.
Mountain lion ( <i>Puma concolor</i> )	SSC, SCE	Low elevations in the Colorado River Valley of California. Live in dense bottomland vegetation, also found in adjacent, rocky uplands.	Absent. Suitable habitat is present within the study area. There are no nearby CNDDDB records for this species.
Desert bighorn sheep ( <i>Ovis canadensis nelsoni</i> )	FP, BLMS	Prefers areas with high visibility and avoids habitat with dense vegetation, often in steep rugged mountainous terrain. Also uses canyon bottoms, alluvial fans, and sandy washes to find water and forage.	Present. Suitable habitat is present within the study area. The nearest CNDDDB record is 3.0 miles east of the study area in the adjacent mountain range. Research Grade iNaturalist records are in the mountains south of the study area, and a desert bighorn sheep skull was observed on-site. Additional analysis for desert bighorn sheep will be provided by CDFW.

Common Name (Species Name)	Special-Status *	Range or Habitat Requirements	Presence in the Study Area
American badger ( <i>Taxidea taxus</i> )	SSC, BLMS	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils, and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Present. Suitable habitat is present within the study area. This species did not show up in CNDDDB or IPaC search queries and was not observed during surveys. However, this species is widespread throughout the Mojave Desert. Multiple burrows were observed on-site.
Desert kit fox ( <i>Vulpes macrotis arsipus</i> )	CPF	Desert kit fox occurs in a wide range of desert habitats consisting of desert scrub and washes, and may also occur in grasslands or ruderal habitats.	Present. CNDDDB does not track occurrence data for this species. However, desert kit fox is widespread throughout the Mojave Desert. An individual, burrows, and scat were observed on-site.

Sources: Habitat and range descriptions were taken directly from the CNDDDB (CDFW 2024b). The potential for special-status bird species to occur within the study area was assessed using the eBird database (eBird 2024).

\*Status Codes:

Federal Status: FE = Federally Listed Endangered; FT = Federally Listed Threatened; FC = Federal Candidate for Listing; BGEPA = Bald and Golden Eagle Protection Act; BLMS = Bureau of Land Management: Sensitive

California State Status: SE = California State-Listed Endangered; ST = California State-Listed Threatened; SCE = California Candidate Endangered ; SCT = California Candidate Threatened; FP = CDFW Fully Protected; SA = Special Animal; SSC = CDFW Species of Special Concern; CPF = California Protected Furbearer

#### 4.4.2.1 INVERTEBRATES

##### 4.4.2.1.1 Crotch's Bumble Bee

Crotch's bumble bee is a candidate for listing as endangered under CESA. This species occurs primarily within California throughout southern coastal areas, western desert, Central Valley, and neighboring foothills around most of the southwestern part of the state. Crotch's bumble bee was previously common throughout the Central Valley but has since become seemingly absent from this region (Hatfield et al. 2018).

Crotch's bumble bee inhabits warm, dry scrub and open grassland habitat. It is a generalist forager typically associated with specific plant families including Fabaceae, Apocynaceae, Asteraceae, Lamiaceae, Hydrophyllaceae, and Boraginaceae (Hatfield et al. 2018). Crotch's bumble bee has a relatively short tongue; therefore, their nectar sources are usually open flowers with short corollas such as from plant genera *Asclepias*, *Chaenactis*, *Lupinus*, *Medicago*, *Phacelia*, and *Salvia* (Williams et al. 2014). This species prefers to nest underground and will utilize abandoned rodent burrows; however, it does occasionally nest aboveground and have been recorded using abandoned bird nests, undisturbed bunch grasses, rock piles, or dead tree cavities as nesting sites (ForestWatch 2013). Little is currently known regarding the overwintering habitat used by this species, but it is speculated based on the habits of other bumble bee species that the Crotch's bumble bee uses soft disturbed soils or leaf litter as overwintering habitat.

Like other bumble bee species, Crotch's bumble bee has seen recent population declines. While specific causes for this decline are unknown, several threats have been identified: habitat loss, climate change, pesticide use, pathogen infection, and competition with non-native bee species (Hatfield and Jepsen 2021). Potentially suitable foraging and nesting habitat for Crotch's bumble bee is present with the study area, though it is not within the known range for this species. The nearest CNDDDB occurrence is approximately 40 miles north of the study area and nearly 30 years old. There was no evidence of

Crotch's bumble bee or other bumble bee species during the four surveys. Based on this evidence, Crotch's bumble bee is considered absent from the study area and would not be impacted by the project. The detailed methods, results, and species observations can be found in *Crotch's Bumble Bee Focused Survey Report for the Soda Mountain Solar Project* (Appendix F).

#### **4.4.2.2 REPTILES**

##### **4.4.2.2.1 Desert Tortoise**

The desert tortoise is a federally and state threatened species, as well as a CESA candidate for endangered. Desert tortoise is typically found below 5,000 feet in elevation. This species occurs in almost every desert habitat but is most common in desert scrub, desert wash, and Joshua tree habitats. These habitats are typically dominated by creosote bush and white bursage but may also be dominated by cacti (*Opuntia* spp.) and saltbush (*Atriplex* spp.). Desert tortoise requires friable soil for burrowing and nest construction and prefers creosote bush habitat with large annual wildflower blooms. Desert tortoise is most active during spring and early summer, and then again during fall. During the hot summer months, the species is usually found within burrows or other shelter sites but may emerge after a rain event. Desert tortoises enter a state of torpor and remain in their burrows during the coldest months, typically November to February. In addition to burrows within soil, tortoises may also shelter in other structures, including caliche caves, lava tubes, rock caves, rodent or other mammal burrows, shrubs, and human-made structures (USFWS 2009). This species is long-lived and site-faithful, with lifespans of up to 80 years.

Evidence of anthropogenic disturbance such as off-road vehicle use is present throughout the study area. Other evidence of disturbance includes trash from illegal dumping and bullet casings. During the survey, the biologists observed several trucks, dirt bikes, and all-terrain vehicles being driven off-road within or near the study area. Off-road vehicle use can alter the native vegetation and soil composition, leading to a shift in perennial plant cover and annual food plant potential. Off-road vehicles may also run over tortoises and collapse burrows. The major highway (I-15) passes directly through the project location, reducing connectivity and exacerbating fragmentation of desert habitat.

Several known predators of desert tortoise were observed during the survey, including feral dogs. Free-roaming dogs are known to injure or kill native wildlife, including desert tortoise, and are considered by USFWS in the evaluation of habitat quality (USFWS 2019a; Young et al. 2011). Ravens are another predator, primarily of juvenile desert tortoise, that have benefited from human development. Ravens were the most commonly encountered avian species on-site.

Expansion of the human-built environment has led to a dramatic increase in the raven population in the Mojave Desert in the last 50 years, which has subsequently led to a significant decline in the desert tortoise population (USFWS 2008). Numerous suitable nesting structures for ravens in the form of electrical and telephone poles occur just outside the study area. Proximity to the gas station on Razor Road and widespread trash dumping may also provide resources for a local large raven population. The cumulative effects of these disturbances and habitat conditions have likely negatively impacted desert tortoise populations in and near the study area.

The nearest CNDDDB occurrence of the desert tortoise is over 9 miles from the study area, and the study area is 7 miles from critical habitat for this species. The study area consisted of the appropriate vegetation composition, soils, and topography to support desert tortoise, and was located within the species' geographic range. While the western and northeastern portion of the site contain suitable habitat, the site had little indication of recent tortoise use. The majority of the gen-tie route was found to be unsuitable habitat for desert tortoise due to rocky outcrops. Conditions during the survey were good for detecting



desert tortoise, with appropriate temperatures and conditions. Daily weather conditions can be found in *Desert Tortoise Survey Results for the Soda Mountain Solar Project* (Appendix G).

No live tortoises or carcasses were found during the survey. While not all tortoises are expected to be visible at any given time, daily surveys coincided with the highest likelihood of live, aboveground observations both seasonally and thermally. Additionally, all open burrows were visually searched and did not yield any live tortoises or carcasses.

Across the entire study area, 182 burrows were identified as potential tortoise burrows, meaning that they may have been originally excavated by desert tortoise, whether they were currently suitable for occupancy (Figure 11). All burrows were identified as Classes 2–5 (Photographs B-15–B-18), and no burrows were classified as Class 1. The eastern and northeastern portions of the study area, where there is less rocky substrate in the landscape, contained the highest concentration of burrows (see Figure 11). The entire study area was identified as habitat currently suitable for desert tortoise occupation. However, some areas, including the gen-tie and the central portion of the project area consist of very rocky substrate which limit burrowing, which reduces habitat suitability for desert tortoise.

Fresh scat (less than 1 day old) from a subadult was found within the northeast corner of the study area (Photograph D-13; see Figure 11). The scat was classified as recent due to the retention of dark coloration, intact state, and retention of moisture. The scat was not in the vicinity of any suitable desert tortoise burrows and was exposed to the typical desert elements. Additional scat (less than 1 month old) from a juvenile was found on the northwest side of the study area 900 m (0.5 mile) west of the fresh scat, and within 250 m south of multiple Class 4 burrows (Photograph D-14; see Figure 11). This scat retained dark coloration and was intact but lacked moisture.

Based on the 2019 USFWS survey protocol, desert tortoise is considered present at the site based on observations of sign, and scat was detected on-site. All of the tortoise burrows found were collapsed and/or showed no sign of recent activity. No other tortoise sign, such as carcasses, pellets, tracks, drinking depressions, courtship rings, or signs of ephemeral plant herbivory, was observed on-site. Desert tortoise is considered present at the study area due to the observations of scat and Class 2 and 3 burrows. However, no desert tortoise individuals or other signs were directly observed, and the desert tortoise population within and near the project is likely very low. The detailed methods, results, and species observations are provided in *Desert Tortoise Survey Report for the Soda Mountain Solar Project* (Appendix G).



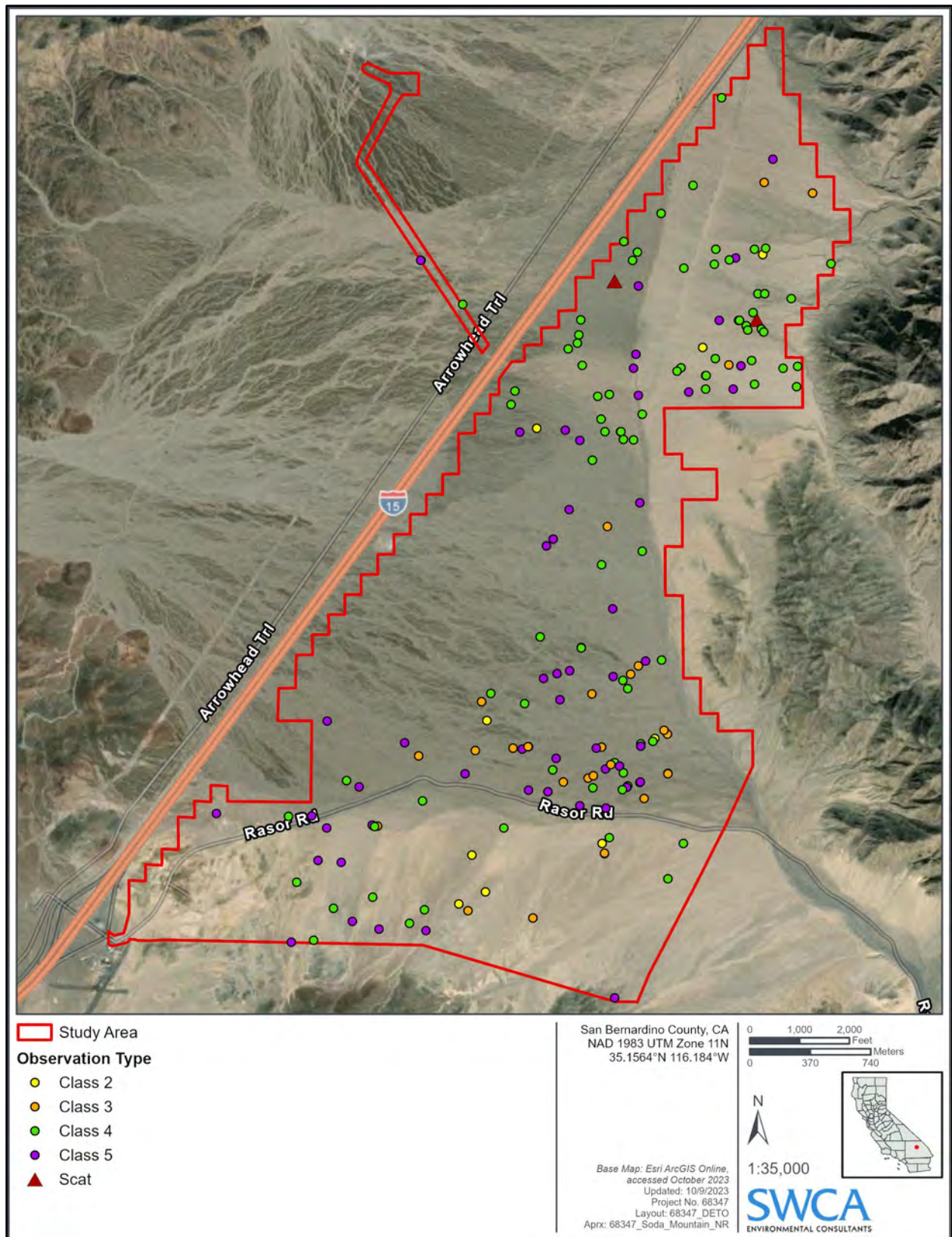


Figure 11. Desert tortoise burrows and scat in the study area.

#### 4.4.2.2 Mojave Fringe-toed Lizard

The Mojave fringe-toed lizard is listed as a Species of Special Concern by CDFW and as sensitive by BLM. The Mojave fringe-toed lizard is restricted to habitats with loose windblown sand, particularly aeolian sand deposits, and the immediate surroundings (Norris 1958; USFWS 2011a). Dunes, dry washes, hillsides, dry lake edges, and sandy hummocks may contain suitable windblown sands (BLM 2015). Captures of individuals more than 150 feet from these types of habitat have not been documented (USFWS 2011a). The species has several physical adaptations for activity in loose sand, including a fringe of scales on the toes that provides traction, double eyelids, and smooth granular scales. When threatened, the Mojave fringe-toed lizard usually takes shelter under the sand and can move under the surface in a swimming motion (California Wildlife Habitat Relationships System 2000). The species is most active during the warmer seasons and typically hibernates between November and February (Norris 1958; USFWS 2011a). When not active, the species takes refuge in burrows or under the sand.

Historically, the species' range spanned parts of northern Los Angeles County, San Bernardino County, southern Inyo County, and eastern Riverside County (BLM 2015; CDFW 2014). The dune complexes where the species is found are associated with three main river complexes: the Amargosa, Mojave, and Colorado Rivers. Based on studies by the USFWS (2011a) of extant Mojave fringe-toed lizard populations. A Mojave fringe-toed lizard population was previously documented in the 2013 Panorama Environmental, Inc. *Biological Resources Technical Report for the Soda Mountain Solar Project* (see Appendix A) just southeast of the project area.

Natural predators of Mojave fringe-toed lizard include larger lizards, snakes, greater roadrunner (*Geococcyx californianus*), burrowing owl, loggerhead shrike, hawks, American badger, and coyote (Jones and Lovich 2009). OHV activity may kill lizards directly and degrade the dune habitat; designated OHV recreation areas overlap three significant historic populations of Mojave fringe-toed lizard: El Mirage Dry Lake, Dumont Dunes, and Razor Road. Habitat loss and disruption of natural windblown sand movement may also be a threat. Population declines for the closely related Coachella fringe-toed lizard (*Uma inornata*) are primarily attributed to habitat loss due to urban development and disruption of sand movement caused by associated roads and windbreaks (Beatley 1994; Weaver 1981). Establishment of non-native plants and the loss of native perennial plants may affect the lizards' insect food sources, shelter, and dune dynamics in ways that are not well understood.

The surveys conducted on April 26 and July 11, 2023, focused on areas in the southeastern portion of the project where a population and suitable habitat was previously documented in 2009 and 2012 (see Appendix A). The surveys conducted in 2009 and 2012 show approximately 5.82 acres of suitable habitat within an ephemeral wash overlapping the southeastern project boundary. The current project boundary does not overlap the ephemeral wash. During the 2023 surveys, the biologists confirmed that there is no suitable habitat present within the southeastern portion of the study area due to the lack of windblown sands. Furthermore, the windblown sands in the section of the ephemeral wash closest to the study area appear to have shifted since 2012 and is no longer suitable for Mojave fringe-toed lizard. The lack of windblown sands in this section of the wash limits the connectivity to other sand deposits in the vicinity. The soil composition in the wash transitions from sand to gravel approximately 750 feet south-southwest of the southeastern portion of the study area. The limits of suitable habitat for Mojave fringe-toed lizard were mapped in this area (Figure 12; Photograph D-19). During Mojave fringe-toed lizard surveys, five individuals were observed in the sandy areas of the wash (see Appendix P: Photograph P-20).



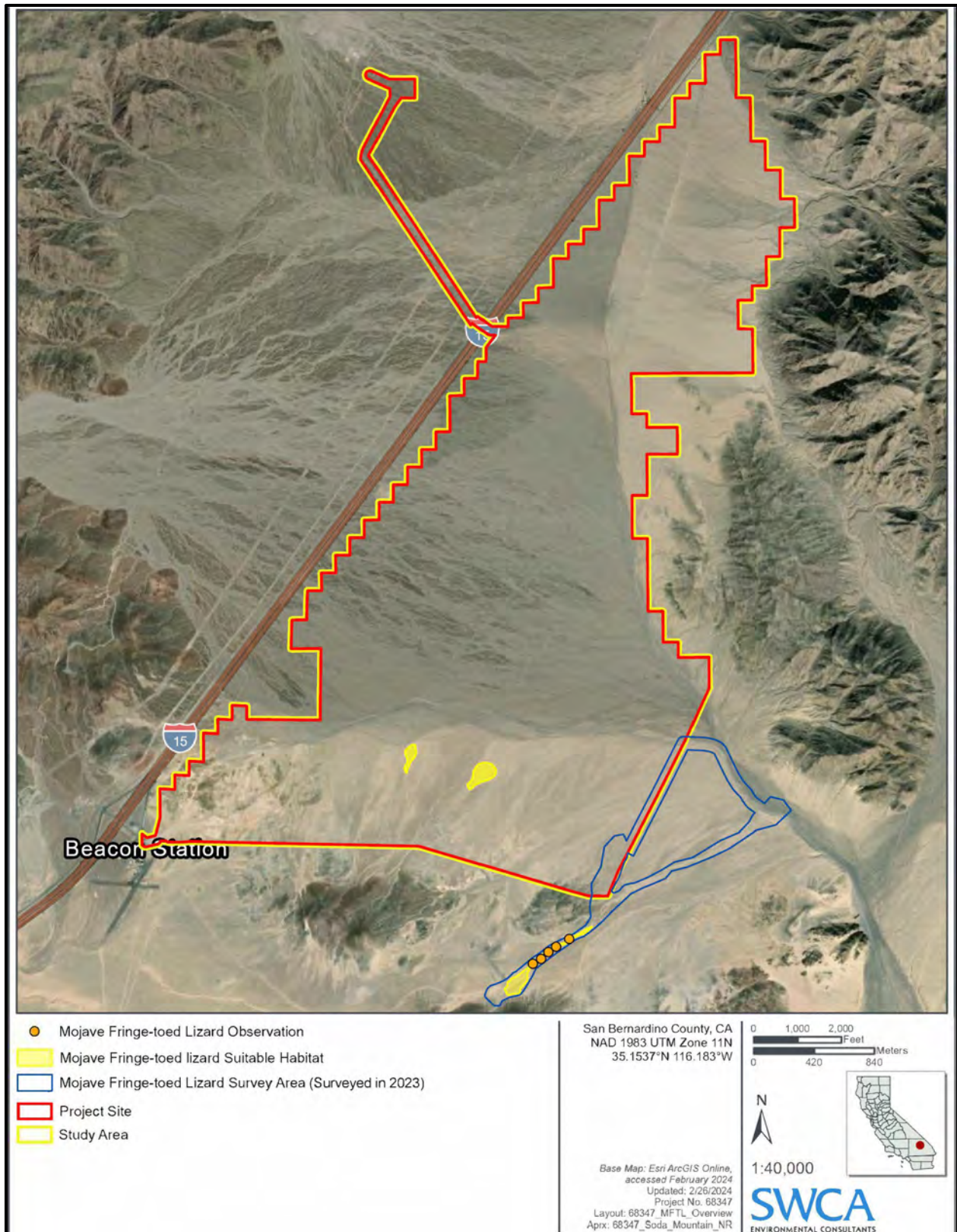


Figure 12. Mojave fringe-toed lizard suitable habitat and live observations.

In total, 6.9 acres of aeolian sands in two separate patches (2.1 and 4.8 acres) were documented during the rare plant survey in two ephemeral washes located within the southern portion of the study area (see Figure 12, Photograph D-12). In the absence of a habitat assessment by a qualified biologist and focused Mojave fringe-toed lizard surveys, this habitat is assumed to have suitable substrate for Mojave fringe-toed lizard. These areas are separated by approximately 429 m, and lack connectivity to each other and to the known populations southeast of the study area. Further, the washes are separated from the known population by a rocky hill to the south. Finally, no Mojave fringe-toed lizards were documented in these areas in 2009 and 2012. While a focused survey for Mojave fringe-toed lizard was not conducted in these areas in 2023, the areas were surveyed for rare plants, desert tortoise, and other fossorial wildlife during the active season for Mojave fringe-toed lizard. No Mojave fringe-toed lizards were observed incidentally during these surveys.

Based on all of the above information, the potential for occurrence for Mojave fringe-toed lizard is considered low within the study area. Mojave fringe-toed lizard is not expected to be impacted by the project. Additional details can be found in *Mojave Fringe-Toed Lizard Survey Report for the Soda Mountain Solar Project* (see Appendix H).

### 4.4.2.3 BIRDS

#### 4.4.2.3.1 Local Bird Use

In total, 16 avian species were detected by sight and/or sound within the study area (excluding the gen-tie) during the winter, spring, summer, and fall avian point-count surveys. Four additional species were detected in the spring 2024 avian point count surveys that took place at 22 new point count locations within the study area (including the gen-tie). An additional 13 species were detected incidentally during surveys for other biological resources, bringing the total number of bird species recorded within the study area to 33 (Table 5). Two CDFW Species of Special Concern were observed on-site during the surveys: loggerhead shrike and burrowing owl. Multiple loggerhead shrikes were detected on-site during the spring avian use survey, and an individual was observed incidentally southeast of Rasor Road in the eastern portion of the study area. A burrowing owl was observed during the burrowing owl breeding season survey in the southeastern portion of the study area. The bird species most frequently detected during the avian point-count surveys and incidentally were common raven, horned lark, verdin (*Auriparus flaviceps*), black-throated sparrow, and house finch (*Haemorhous mexicanus*).

**Table 5. Avian Point-Count Survey Results for the Study Area**

Species Group	Common Name	Scientific Name	Survey Detections
<b>Corvids</b>	common raven	<i>Corvus corax</i>	winter, spring 2023, summer, fall, and spring 2024 avian point count (APC)
<b>Passerines</b>	bush-tit	<i>Psaltriparus minimus</i>	winter APC
	European starling*	<i>Sturnus vulgaris</i>	winter APC
	horned lark	<i>Eremophila alpestris</i>	winter, spring 2023, summer, fall APC, and spring 2024 APC
	house sparrow*	<i>Passer domesticus</i>	winter and fall APC
	Say's phoebe	<i>Sayornis saya</i>	winter, spring 2023, fall, and spring 2024 APC
	verdun	<i>Auriparus flaviceps</i>	winter, spring 2023, and summer APC

Species Group	Common Name	Scientific Name	Survey Detections
	sage thrasher	<i>Oreoscoptes montanus</i>	spring 2023 APC
	cactus wren	<i>Campylorhynchus brunneicapillus</i>	spring 2023 APC
	rock wren	<i>Salpinctes obsoletus</i>	spring 2023, fall, and spring 2024 APC
	black-throated sparrow	<i>Amphispiza bilineata</i>	spring 2023 ,summer, and spring 2024 APC
	loggerhead shrike <sup>†</sup>	<i>Lanius ludovicianus</i>	spring 2023 and fall APC
	house finch	<i>Haemorhous mexicanus</i>	spring 2023, fall, and spring 2024 APC
	dark-eyed junco	<i>Junco hyemalis</i>	spring 2023 and summer APC
	white-crowned sparrow	<i>Zonotrichia leucophrys</i>	other
	Bell's sparrow	<i>Artemisospiza belli</i>	other
	Brewer's sparrow	<i>Spizella breweri</i>	fall APC
	blue-gray gnatcatcher	<i>Poliophtila caerulea</i>	and spring 2024
	tree swallow	<i>Tachycineta bicolor</i>	other
	Cassin's vireo	<i>Vireo cassinii</i>	other
	ash-throated flycatcher	<i>Myiarchus cinerascens</i>	other
	western tanager	<i>Piranga ludoviciana</i>	spring 2024
	Hammond's flycatcher	<i>Empidonax hammondi</i>	spring 2024
	lazuli bunting	<i>Passerina amoena</i>	spring 2024
	Costa's hummingbird	<i>Calypte costae</i>	spring 2024
<b>Pigeons and Doves</b>	mourning dove	<i>Zenaida macroura</i>	summer APC
<b>Nightjars</b>	lesser nighthawk	<i>Chordeiles acutipennis</i>	other
	common poorwill	<i>Phalaenoptilus nuttallii</i>	other
<b>Owls</b>	burrowing owl <sup>†</sup>	<i>Athene cunicularia</i>	other
<b>Woodpeckers</b>	northern flicker	<i>Colaptes auratus</i>	other
<b>Falcons</b>	American kestrel	<i>Falco sparverius</i>	other
<b>Hawks and Vultures</b>	red-tailed hawk	<i>Buteo jamaicensis</i>	other
	turkey vulture	<i>Cathartes aura</i>	spring raptor survey

Note: Northern flicker primary and secondary feathers only.

\* nonnative species

<sup>†</sup> CDFW Species of Special Concern

Additional details can be found in *Winter Avian Use Survey Report for the Soda Mountain Solar Project* (see Appendix I), *Spring Avian Use Survey Report for the Soda Mountain Solar Project* (see Appendix J), *Summer Avian Use Survey Report for the Soda Mountain Solar Project* (see Appendix K), *Fall Avian Use*

*Survey Report for the Soda Mountain Project* (see Appendix L), and *Spring Avian Use and Raptor Survey Report for the Soda Mountain Project* (see Appendix M).

#### **4.4.2.3.2 Raptor Use**

During the raptor survey, two turkey vulture individuals were observed soaring, circling, and gliding at point 5 during the first survey. An individual turkey vulture was observed circling over the mountains to the west at point 3 during the second survey. A red-tailed hawk pair was also observed incidentally outside of the 800-m survey range at point 1 during the first survey. Raptors and other large birds including turkey vulture, red-tailed hawk, burrowing owl (*Athene cunicularia*), American kestrel (*Falco sparverius*) and common raven were observed on-site in the 2023 surveys and incidentally. No golden eagles were observed during the raptor survey.

Additional details can be found in *Spring Avian Use and Raptor Survey Report for the Soda Mountain Project* (see Appendix M).

#### **4.4.2.3.3 Nesting Birds**

The entirety of the survey area has suitable habitat for nesting birds. Bird nests were documented during the April and May 2023 desert tortoise and rare plant survey since the timing of the surveys coincided with the nesting season. Four bird nests were found during the survey, all of which were active (Figure 13). Of the active nests, three were black-throated sparrow nests and one was a horned lark nest (see Appendix P: Photographs P-21 and P-22). Multiple recently fledged horned larks were also observed on-site.



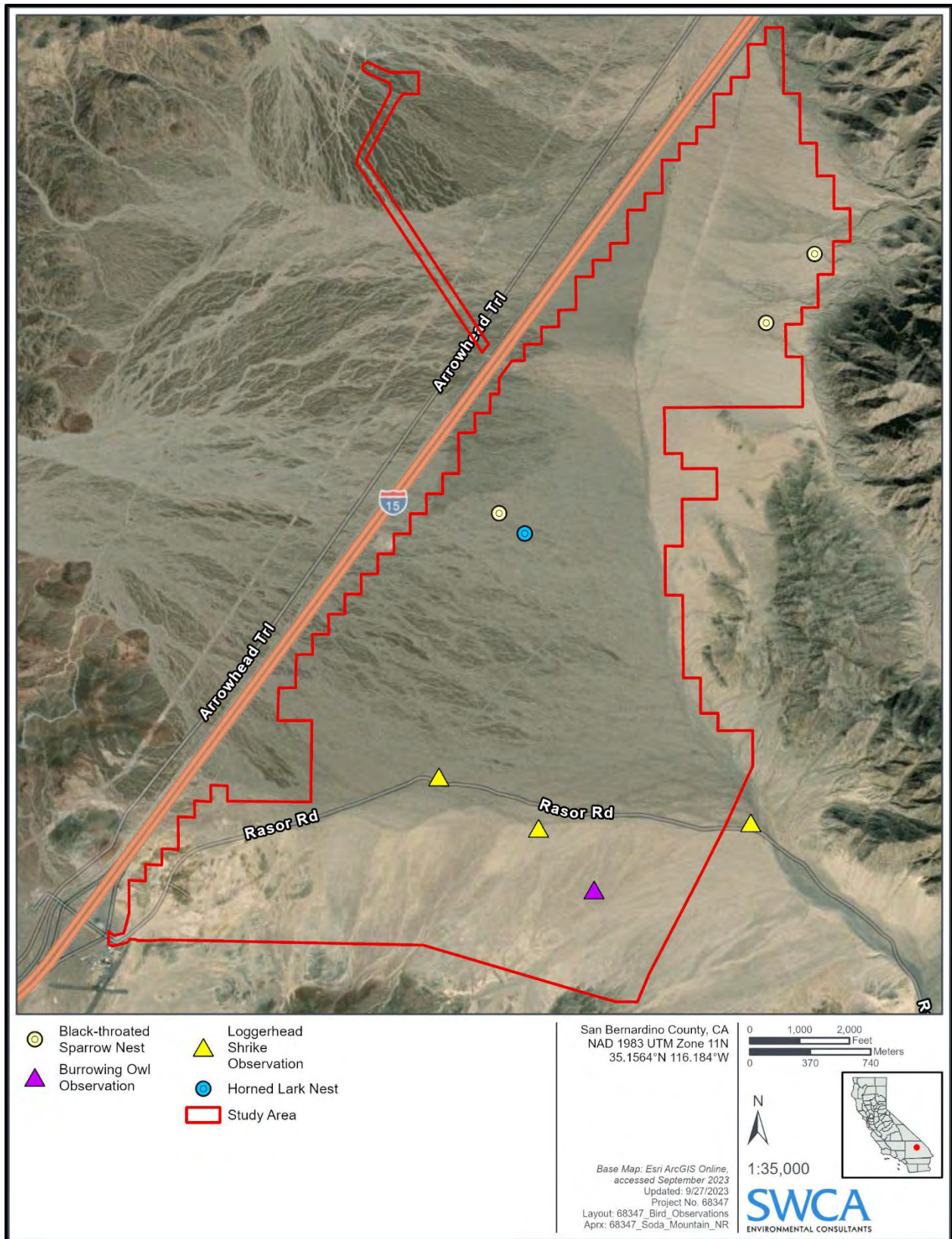


Figure 13. Active bird nests and special-status avian species documented.



#### 4.4.2.3.4 Special-Status Avian Species

##### *Golden Eagle*

The golden eagle is a CDFW fully protected species, is protected pursuant to the federal BGEPA, and is considered sensitive by the BLM. This species has a global range that includes much of North America, Eurasia, and parts of northern Africa. The golden eagle is an uncommon but widespread resident in California and is known to nest in the Mojave Desert. Territories regularly span 5 to 10 miles depending on the availability of prey, nest sites, and wind resources. Breeding adults in desert settings may range up to 10 miles from the nest while foraging. Golden eagles nest on cliffs, rock outcrops, or in large trees, none of which are present in the study area. Foraging golden eagles require large amounts of open space for hunting, such as grasslands, deserts, and savannahs. The entire study area provides suitable foraging habitat and may support a suitable prey base. Mid-sized mammals such as rabbits and marmots are preferred, but prey may be as small as California ground squirrels (*Otospermophilus beecheyi*) or as large as deer (rarely), and golden eagles will consume carrion when it is available. The study area supports at least one mid-sized mammalian prey species: black-tailed jackrabbit.

No golden eagles were observed by SWCA biologists in the study area, and there are no cliffs, rocky outcrops, or other suitable nesting habitat within the study area. The Soda Mountains to the south and north of the project may provide suitable nesting habitat. The study area is suitable for foraging. The USFWS provided records of golden eagle nest sites within 10 miles of the study area (USFWS 2024) (Figure 14). There is potential for golden eagles to forage within the study area. No golden eagles were detected or observed during the 2024 spring raptor survey. All large bird data collected in 2024 can be found in *Spring Avian Use and Raptor Survey Report for the Soda Mountain Project* (see Appendix M).

##### *Burrowing Owl*

Burrowing owl is listed as a Species of Special Concern by CDFW and as sensitive by the BLM. This species occurs in a wide range of mostly open habitats in California, including grasslands, shrub-steppe, deserts, pastures, and agricultural areas. Suitable habitat for burrowing owl includes short vegetation and, in the breeding season, the presence of small mammal burrows. The California range of this species extends from Redding south to San Diego, east through the Mojave Desert and west to San Francisco and Monterey. The key characteristics of suitable habitat are moderately low and sparse vegetation; a prey base of small mammals, reptiles, and/or large insects during nesting; and burrows or similar sites for shelter. Habitat loss, degradation, and fragmentation present the most significant threats to burrowing owls in California. The majority of burrowing owls in California are now found in wide, flat lowland valleys and basins like the Imperial Valley and Great Central Valley, where intense residential and commercial development is occurring (DeSante et al. 2007). The study area falls within the portion of the Mojave Desert where less than 1% of burrowing owl breeding pairs in California occur (Wilkerson and Siegel 2011). CDFW considers burrows occupied within the last 3 years to be occupied for the purposes of documenting burrowing owls at a project and evaluating potential impacts (CDFW 2012). There are no CNDDDB records of this species within 20 miles of the project area.

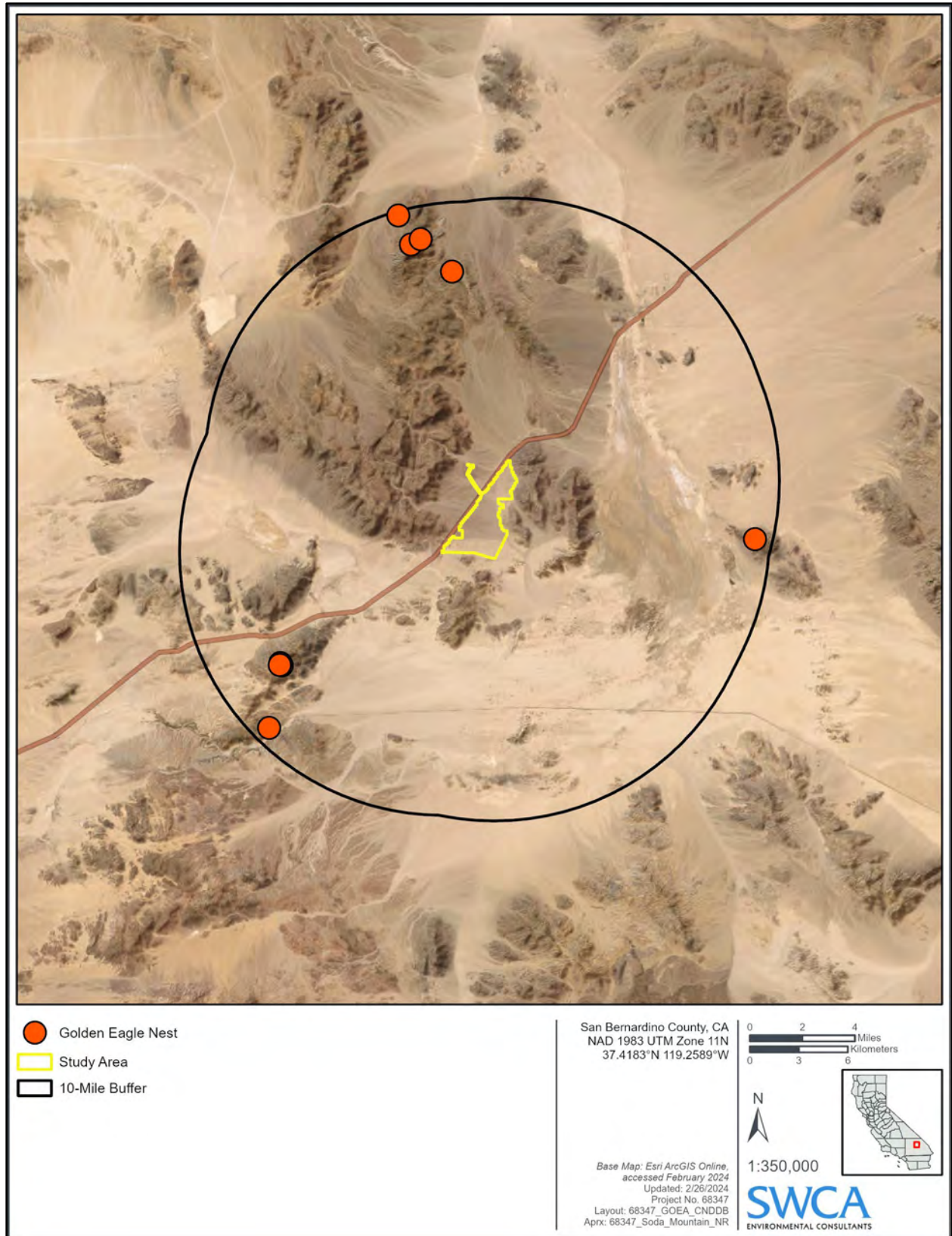


Figure 14. USFWS records of golden eagle nesting sites within 10 miles of the study area.

Habitat in the study area is generally suitable for this species due to the availability of burrows for roosting and nesting, as well as relatively short vegetation with sparse shrubs and taller vegetation. During the burrow survey, 50 burrows were identified as potential burrowing owl burrows (Figure 15). Following the habitat assessment, breeding season surveys were conducted for burrowing owl due to the observation of a live burrowing owl and presence of sign at several potential burrows. Upon close examination of each burrow, it was found that only one of the burrows exhibited definitive recent sign of potential burrowing owl activity, with whitewash staining around the entrance (see Appendix P: Photographs P-23 and P-24). A single burrowing owl was observed during the survey in the southern section of the study area just south of Razor Road. No burrows were observed within the vicinity of the individual, and no reproductive or nesting behavior was observed. Subsequent follow-up visits to potentially active burrows were performed, and no burrows were determined to be active based on the lack of recent activity or sign at all 50 of the burrows. Based on this evidence, burrowing owl is considered present with the potential to nest or forage on-site, though at low quantities. Additional details can be found in *Burrowing Owl, Desert Kit Fox, and American Badger Survey Report for the Soda Mountain Solar Project* (see Appendix N).

### ***Loggerhead Shrike***

Loggerhead shrike is listed as a CDFW Species of Special Concern. This species favors open country habitats with short vegetation, such as pastures with fence rows, agricultural fields, riparian areas, and open woodlands (Yosef 2020). In desert habitats, this species exhibits similar preferences for open areas with short vegetation, which may include grasslands, desert scrub, and low shrublands (Yosef 2020).

Loggerhead shrike preys on large insects, amphibians, reptiles, small mammals, birds, and carrion (Yosef 2020). It requires open areas for hunting and shrubs or low trees for perches and nest sites (Yosef 2020). The nearest CNDDDB record for this species is 14 miles northeast of the study area, and there are multiple recent eBird records for loggerhead shrike within 5 miles of the study area.

Suitable habitat is present within the project, and many prey species for the loggerhead shrike are available on-site. This species was detected by sight and sound during the 2023 spring avian use survey and observed during other surveys. Loggerhead shrike has been confirmed to be present at the project area, and there is suitable habitat throughout the project area.



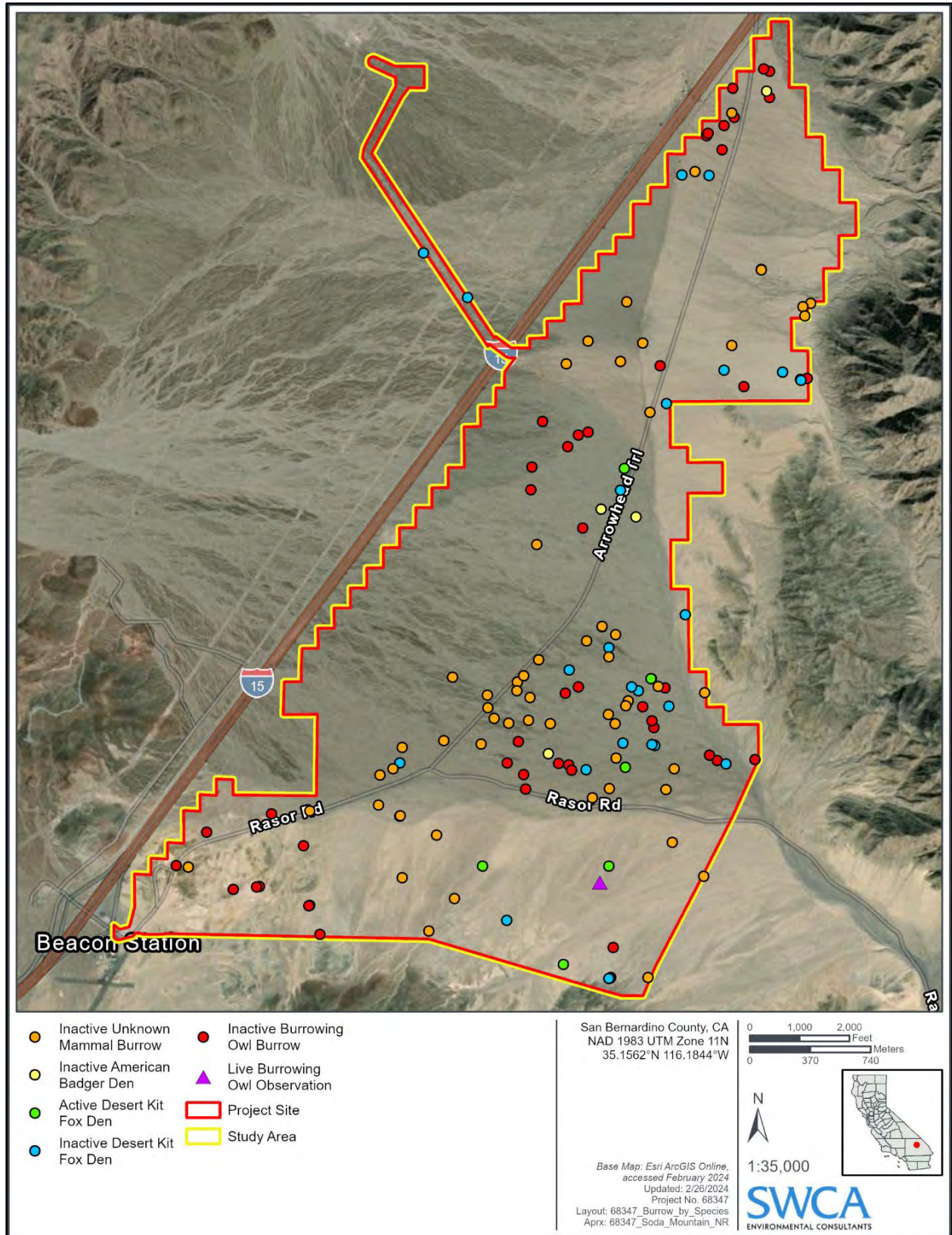


Figure 15. Location of potential burrowing owl and unknown mammal burrows, and desert kit fox and American badger dens identified within the study area.

#### 4.4.2.4 MAMMALS

This section covers all special-status mammals that were determined to have potential to occur in the study area based on the results of the desktop review.

##### 4.4.2.4.1 Bats

Two bat species were detected by sight and/or sound within the study area during the nighttime acoustic survey period: canyon bat (*Parastrellus hesperus*) and Mexican free-tailed bat (*Tadarida brasiliensis*). There were 18 detections total, all occurring between August 28 and August 31 at RE4, T2, and T5 (Figure 16). The four roost emergence locations were determined to be potentially suitable for roosting due to the presence of crevices within the culverts displaying suitable depth, width, and height above the ground for bat roosting (Keeley and Tuttle 1999). In addition, possible urine staining was observed at RE3.

No roost emergence behavior was observed. Bat behavior during all acoustic detections and visual observations were consistently categorized as either foraging or commuting. The potential roosting sites identified during the daytime habitat assessment survey and monitored acoustically during the nighttime surveys did not reveal any active roosting sites, as there were no evident bat emergences detected during the acoustic monitoring surveys. No other potential roosting locations were identified within the study area or immediate vicinity during the surveys.

##### *Pallid Bat*

The pallid bat (*Antrozous pallidus*) is a CDFW Species of Special Concern and a BLM sensitive species. This widespread, non-migratory species occurs as far south as Baja California and as far north as British Columbia. Populations of this species are severely fragmented but may be locally common. The pallid bat is typically found in a wide range of habitats including deserts, grasslands, shrublands, woodlands, and forests where they can be found year-round. They are most common in open, dry habitats for foraging with rocky areas for roosting. The pallid bat has been found to roost in mines, caves, and buildings. This species is sensitive to disturbance while roosting, and the main threats to the species include human activity such as vandalism, recreational activities, mine closures, and reclamation. The pallid bat is an insectivore that forages by gleaning insects off the ground. Habitat in the study area is suitable for foraging, but there is no potential roosting habitat for this species. The nearest CNDDDB record from 2005 is approximately 12 miles west of the study area. During the 2023 bat surveys, pallid bat was not detected or observed, and is considered absent with regards to roosting, and with low potential to forage on-site. The detailed methods, results, and species observations can be found in *Bat Survey Report for the Soda Mountain Solar Project* (see Appendix O).



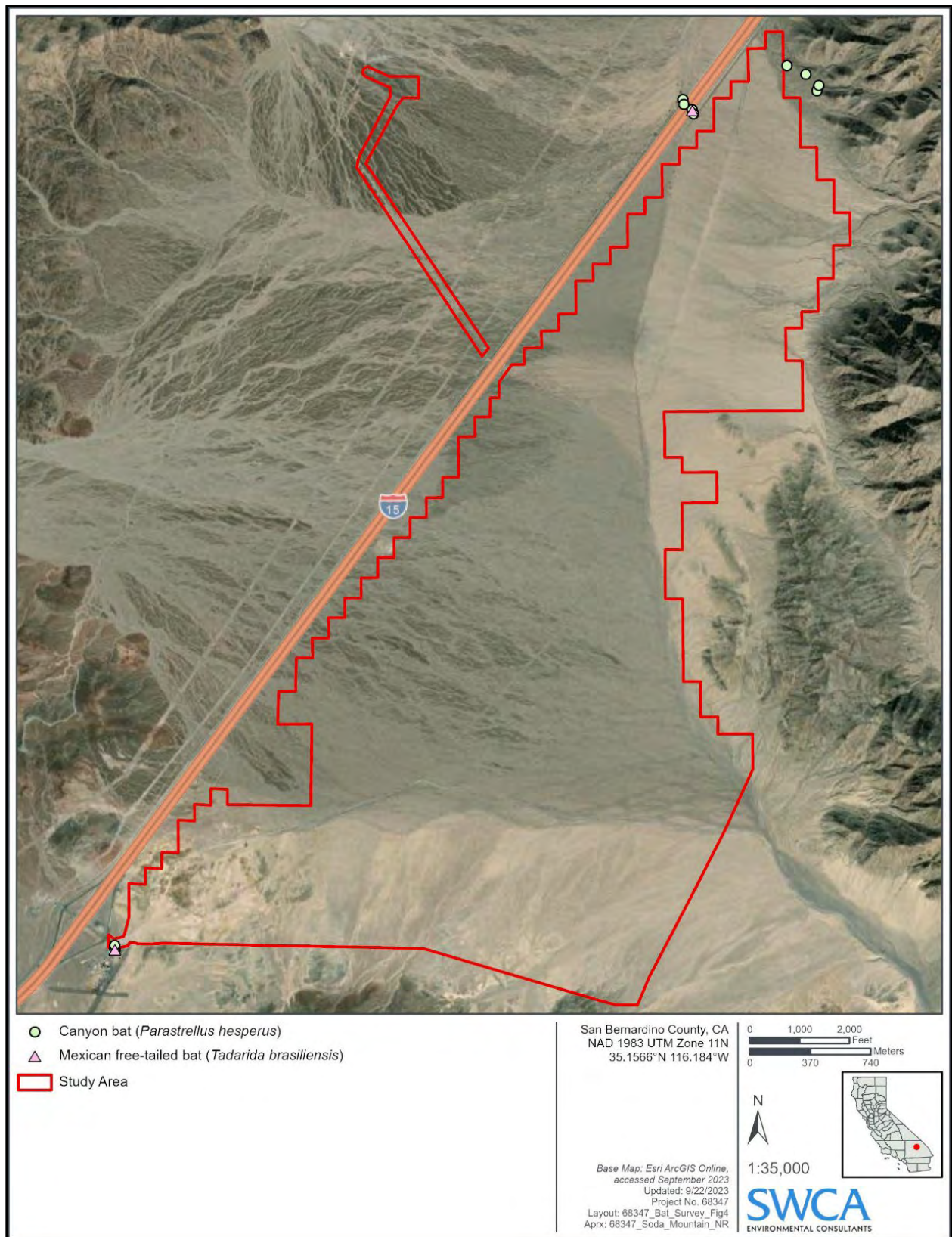


Figure 16. Locations of bats observed in the study area.



### ***Townsend's Big-eared Bat***

Townsend's big-eared bat (*Corynorhinus townsendii*) is a CDFW Species of Special Concern and a BLM sensitive species. Townsend's big-eared bat occurs throughout most of California, albeit with a patchy distribution. This species is non-migratory and can be found in the study area year-round. It is closely tied to caves and cave-like roost sites, which can include hollow trees and mines, and sometimes buildings or water diversion tunnels. This species is very sensitive to disturbance while roosting, and the main threats to the species are likely human impacts to roosts. In the Mojave Desert, Townsend's big-eared bat is mostly dependent on mining infrastructure for roost sites. Habitat in the study area is suitable for foraging, but there is no potential roosting habitat for this species. The nearest CNDDDB record, which is from 2006, is approximately 3.5 miles east of the study area. During the 2023 acoustic bat surveys, Townsend's big-eared bat was not detected or observed, and is considered to have a low potential to forage on-site. The detailed methods, results, and species observations can be found in *Bat Survey Report for the Soda Mountain Solar Project* (see Appendix O).

#### **4.4.2.4.2 Mountain Lion**

Mountain lion is a candidate for listing as threatened or endangered under CESA. This status is applicable to the evolutionary significant units (ESUs) associated with the Southern California/Central Coast mountain lion subpopulations (CDFW 2020):

1. Santa Ana Mountains
2. Eastern Peninsular Range (EPR)
3. San Gabriel/San Bernardino Mountains
4. Central Coast South (Santa Monica Mountains)
5. Central Coast North (Santa Cruz Mountains)
6. Central Coast Central

The project study area is located within the outer range of the EPR ESU. This population of mountain lions inhabits mountain ranges in the Mojave Desert and the southernmost part of California, including inland areas in San Diego, Imperial, Riverside, and San Bernardino Counties. It does not occur within the Los Angeles Basin or Inland Empire, and its northward limit is slightly north of I-15. The EPR is described as occurring in mountain ranges, rather than flat valley or inter-mountain areas like the study area.

As described in the California Fish and Game Commission Notice of Receipt of Petition (California Fish and Game Commission 2019), mountain lions require large areas of relatively undisturbed habitats with adequate connectivity to allow for dispersal and gene flow. They have large home ranges which often consist of a mix of habitat types including coniferous forests, riparian and oak woodlands, streams, chaparral, grasslands, and desert (California Fish and Game Commission 2019). Gustafson et al. (2018) found that the EPR population exhibits evidence of a prior genetic bottleneck (Center for Biological Diversity and the Mountain Lion Foundation [CBD] 2019). Although the EPR was found to have a higher effective population size than other subpopulations, it was still below the standard to prevent inbreeding depression in the short-term and is insufficient for the long-term persistence of the population (CBD 2019). In addition, the EPR population was found to be largely disconnected from all the other California populations, with limited gene flow and low connectivity with the Santa Ana Mountains and San Gabriel/San Bernardino Mountains populations (Gustafson et al. 2018).

There are records of mountain lions outside of the core mountain ranges in Southern California, which are likely transients or residents of smaller populations (CBD 2019). For example, the Yuma mountain lion

has been recognized by CDFW as a subspecies of special concern, and likely occurs in low density in the desert plains and low mountains of the Colorado River Valley (CBD 2019). In their Notice of Findings, the California Fish and Game Commission determined that based on that finding and the acceptance of the petition, the California Fish and Game Commission provided a notice that the Southern California/Central Coast ESU of mountain lions is a candidate species as defined by Section 2068 of the FGC (California Fish and Game Commission 2020).

Large ungulates are the preferred prey of mountain lions, especially deer (Currier 1983; Iriarte et al. 1990). Potential prey that may occur in the project vicinity include burros (*Equus asinus*), bighorn sheep, and mule deer (*Odocoileus hemionus*). All require access to drinking water, which is not available within the study area.

The study area is not considered suitable habitat for mountain lion, as it is in a flat valley rather than in the mountains, and is not suitable permanent habitat for local prey species (bighorn sheep, mule deer, and burros). However, the study area is suitable for transient use by both mountain lions and their potential prey, which may pass through the study area while moving between mountain ranges or between water sources.

There are no nearby CNDDDB records for mountain lion, and no evidence of mountain lions was detected during protocol surveys for other special-status plant and wildlife species. Thus, mountain lion are considered absent from the study area.

#### **4.4.2.4.3 American Badger**

American badger is a CDFW Species of Special Concern and is listed as sensitive by the BLM. This species is generally found in open areas, including open woodlands, desert scrub, and grasslands. This burrowing mammal uses friable soil to construct burrows for cover and protection. While they often reuse existing burrows, some individuals may create new dens nightly, particularly during the summer months (Messick and Hornocker 1981). Badger dens are distinctive due to their size and the presence of claw marks on the sides created when the den was dug. As obligate carnivores, American badgers primarily rely on a diet composed of fossorial (burrowing) rodents, including rats, mice, chipmunks, ground squirrels, and pocket gophers. Additionally, they consume reptiles, insects, earthworms, bird eggs, small birds, and carrion. The composition of their diet experiences seasonal and yearly variations, influenced by the availability and abundance of prey in their habitat. Recent trends for this species indicate a significant reduction in both range and abundance, particularly in areas where it was once common (Williams 1986).

The study area is considered suitable habitat for this species, which is widespread throughout North America. No badgers were observed during any of the surveys, likely due to their nocturnal habits, but five burrows were identified as potential American badger burrows (see Figure 15). These burrows were identified as American badger by the distinct claw marks and size and shape of den entrances, though they were determined to be inactive based on lack of recent sign (see Appendix P: Photograph P-25). A follow-up visit confirmed inactivity at all five burrows. Based on this evidence, American badger is considered to be present on-site. The detailed methods, results, and species observations can be found in *Burrowing Owl, Desert Kit Fox, and American Badger Survey Report for the Soda Mountain Solar Project* (see Appendix N).

#### **4.4.2.4.4 Desert Kit Fox**

Desert kit fox is afforded protection from take under California FGC Sections 460 and 4000-4003. Much of the Mojave Desert provides habitat for this species, although its population status and trends are uncertain. Desert kit fox can be found in a wide range of habitat types, including desert scrub, washes, and arid grasslands. In the western Mojave Desert, desert kit fox dens are frequently located on west- and

northwest-facing slopes on friable soils with an absence of stones, caliche, or hardpan. Kit foxes use multiple dens and switch dens frequently throughout the year. Breeding typically occurs in December and January, and pups have usually left the natal den by May. This species primarily exhibits carnivorous behavior, with its diet primarily consisting of black-tailed jackrabbit and desert cottontail (*Sylvilagus audubonii*), kangaroo rat, and ground squirrel (Sheldon 1992). Additionally, the species consumes insects, reptiles, some birds, bird eggs, and vegetation (Egoscue 1962; Laughrin 1970; Morrell 1971; Orloff et al. 1986). Potential threats to this species include habitat loss and fragmentation, disease, predation, and vehicle collisions (Kadaba 2014).

CNDDDB does not maintain records for this species, so no location records are available for reference, although it is regularly encountered in desert habitats. The majority of the study area is suitable habitat for desert kit fox. One kit fox was observed on the access road leading to the proposed gen-tie during a bat survey. No other kit foxes were observed during other surveys, likely due to their nocturnal habits, but several dens with fresh scat were found throughout the study area. The initial burrowing owl survey occurred concurrently with the fossorial mammal survey, during which six kit fox burrows were identified as active. Another 28 burrows were identified as inactive desert kit fox dens, and 59 were identified as unknown mammal/dig (see Figure 15). Several medium-sized mammal burrows could not be identified due to the lack of diagnostic characteristics, or due to burrows only being partially dug, and having shallow depth/collapsed and therefore were described as inactive unknown mammal burrow/dig.

During three follow-up visits, the six burrows were confirmed active and occupied based on the presence of fresh or recent scat, evidence of recent digging or excavation, and well-maintained entrances (see Appendix P: Photographs P-26, P-27, and P-28). Based on this information, desert kit fox is considered to be present on-site. The detailed methods, results, and species observations can be found in *Burrowing Owl, Desert Kit Fox, and American Badger Survey Report for the Soda Mountain Solar Project* (see Appendix N).

#### **4.4.2.4.5 Desert Bighorn Sheep**

CDFW monitors desert bighorn populations at both the herd (local population) and metapopulation (regional population) levels (CDFW 2023f). CDFW monitors individual herd population size, recruitment, survival, movement, and health, whereas the metapopulation is monitored by documenting local population extinction and colonization events, range connectivity, and gene flow (CDFW 2023f). The overarching management goals for desert bighorn in California are outlined in CDFW's Desert Bighorn Management Plan, which is currently under review (CDFW 2023f).

Desert bighorn sheep occur in California's desert mountain ranges from the White Mountains of Mono and Inyo Counties south to the San Bernardino Mountains, and further southeast to the Mexican border (Zeiner et al. 1988–1990). Bighorn sheep graze and browse on a variety of plant species, with a preference for green, succulent grasses and forbs (Zeiner et al. 1988–1990). They prefer open areas of low-growing vegetation for feeding, with proximity to steep, rugged terrain for escape, lambing, and bedding, an adequate source of water, and travel routes linking these areas (Zeiner et al. 1988–1990). Although focused surveys for desert bighorn sheep were not performed for the project, suitable grazing habitat was incidentally observed during the wildlife and plant surveys described previously. Also, a desert bighorn sheep skull was observed during burrowing owl surveys on March 29, 2023 (see Appendix P: Photograph P-29).

Survey data for desert bighorn sheep near the study area will be provided separately by CDFW and included in the EIR. Analyses will be based on CDFW-specific methodologies designed to understand how to reach their long-term management goals. Therefore, project-led data were not recorded and potential project impacts to desert bighorn sheep are not included in this report.

## 5 POTENTIAL IMPACTS AND RECOMMENDATIONS

### 5.1 Applicant-Proposed Measures

For purposes of this analysis, potential indirect, direct, temporary, and/or permanent and cumulative impacts are assessed according to the thresholds of significance included in Appendix G of the State CEQA Guidelines. The applicant identified and committed to implementing the following applicant-proposed measures (APMs) as part of the project to avoid or substantially lessen potentially significant impacts to biological resources, to the extent feasible. The APMs originated in the ROD issued by BLM in 2016 and have been updated to match the current project description and regulations. The APMs, where applicable, are discussed in the impact analysis section below. These measures include the following:

#### 5.1.1 Vegetation

- **APM BIO-1:** The site shall be revegetated after decommissioning according to the Final Closure Plan described in MM BIO-21 and prepared in conformance with BLM requirements at the time of decommissioning.
- **APM BIO 2:** The applicant shall prepare and implement a Vegetation Resources Management Plan that contains the following components:
  - a) Vegetation Salvage Plans that discuss the methods that will be used to transplant cacti present within the proposed disturbance areas. Salvage and transplant methods used will be approved by CDFW. In addition, the Vegetation Salvage Plans will also include methods that will be used to transplant special-status plant species that occur within proposed disturbance areas.
  - b) Restoration Plans discussing the methods that will be used to restore any of the four native plant community types (creosote bush-white bursage scrub, cheesebush scrub, and creosote bush scrub,) present within the project area that may be temporarily disturbed by construction activities. The applicant will obtain CDFW approval for any seed mixtures used for restoration.
  - c) Vegetation Salvage and Restoration Plans that will specify success criteria and performance standards. The applicant will be responsible for implementing the Vegetation Salvage and Restoration Plan according to CDFW requirements.
- **APM BIO-3:** Herbicides shall not be applied systemically over the entire project area. Herbicides shall be applied in focused treatments in areas where invasive weed infestations have been identified, such as where there is a clump or monotypic stand of invasive weeds. Herbicides shall not be applied within 100 feet of a special-status plant.
- **APM BIO-4:** Only a State of California and federally certified contractor (i.e., Qualified Applicator), who is also approved by CDFW, and holds and maintains a Qualified Applicator License from California Department of Pesticide Regulation, shall be permitted to perform herbicide applications. Herbicides shall be applied in accordance with applicable laws, regulations, and permit stipulations. All herbicide applications must follow U.S. Environmental Protection Agency label instructions.
- **APM BIO-5:** Herbicides shall not be applied during rain events, within 48 hours of a forecasted rain event with a 50% or greater chance of precipitation, or when wind velocity exceeds 10 mph (for liquids) and 15 mph for granular herbicides.

- **APM BIO-6:** The applicant shall implement an Integrated Weed Management Plan (IWMP) to control weed infestations and the spread of noxious weeds in the study area.
- **APM BIO-7:** After project construction, areas of temporary disturbance shall be closed and the restoration measures in the Vegetation Resource Management Plan shall be implemented.
- **APM BIO-8:** Foundations shall be removed to a minimum of 3 feet below surrounding grade during decommissioning and covered with soil to allow adequate root penetration for native plants. Petroleum product leaks and chemical releases shall be remediated prior to completion of decommissioning.
- **APM BIO-9:** Decommissioning methods shall minimize new site disturbance and removal of native vegetation.

### **5.1.2 Special-Status Plants**

- **APM BIO-10:** All special-status and rare plant (CRPR 1, 2, 3, and 4) occurrences within the project area will be documented during preconstruction surveys. The applicant will also provide a 100-foot buffer area surrounding each avoided occurrence in which no construction activities will take place, if feasible. If avoidance is not feasible, the applicant shall provide on-site mitigation (e.g., vegetation salvage) for impacts to special-status and rare plants.
- **APM BIO-11:** Before construction of a given phase begins, the applicant shall stake and flag the construction area boundaries, including the construction areas for the solar arrays and associated infrastructure; construction laydown, parking, and work areas; and the boundaries of all temporary and permanent access roads. A CDFW-approved biologist shall then survey all areas of proposed ground disturbance for rare or special-status plant species and cacti during the appropriate period (blooming or otherwise identifiable) for those species having the potential to occur in the construction areas. All rare or special-status plant species and cacti observed shall be flagged for transplantation.

### **5.1.3 Special-Status Wildlife**

- **APM BIO-12:** The applicant shall implement a Worker Environmental Awareness Program (WEAP) to educate workers about the environmental issues associated with the project and the MMs that will be implemented at the site, including nest awareness and non-disturbance exclusion zones.
- **APM BIO-13:** Preconstruction clearance surveys to identify active bird nests shall be conducted within 2 weeks of ground disturbance or vegetation removal in all active work areas during the breeding season (February 1–August 31). The work area will need to be resurveyed following periods of inactivity of 2 weeks or more. Active nests shall be avoided using non-disturbance buffer zones as shown below.
  1. Avian Awareness and Baseline Non-Disturbance Buffer Zones
  2. Starting Distance of Awareness or Type Non-Disturbance Exclusion Zones  
Passerines 300 feet from active nest  
Raptors 500 feet from active nest  
Golden Eagles 1 mile and line of sight from active nest  
Burrowing 250 feet from active burrows during nesting  
Owls 1 season (February 1–August 31)  
160 feet from active burrows during the wintering period (September 1–January 31)
  3. Implementation Notes: A qualified biologist may reduce or increase the buffer distance if there is sufficient evidence based on species, habitat, and other factors, that applicant

activity would not impact nesting activity. Buffers would be maintained until a qualified biologist has determined that the nest is no longer active.

- **APM BIO-14:** Monitoring of any active nests within or adjacent to the work areas shall be conducted until nestlings have fledged and dispersed. Ongoing breeding-season monitoring of work areas shall be conducted throughout the duration of construction. Nest monitoring results shall be recorded in a Nest Check Form. Typically, a nest check will have a minimum duration of 30 minutes, but it may be longer or shorter, or more frequent than one check per day, as determined by the Designated Biologist (see MM BIO-5 for Designated Biologist) based on the type of construction activity (duration, equipment being used, potential for construction-related disturbance) and other factors related to assessment of nest disturbance (weather variations, pair behavior, nest stage, nest type, species, etc.). The Designated Biologist shall record the construction activity occurring at the time of the nest check and note any work exclusion buffer in effect at the time of the nest check. Non-project activities in the area should also be recorded (e.g., adjacent construction sites, roads, commercial/industrial activities, recreational use, etc.). The Designated Biologist shall record any sign of disturbance to the active nest, including but not limited to parental alarm calls, agitated behavior, distraction displays, nest fleeing and returning, chicks falling out of the nest or chicks or eggs being predated as a result of parental abandonment of the nest. Should the Designated Biologist determine project activities are causing or contributing to nest disturbance that might lead to nest failure, the Designated Biologist shall coordinate with the Construction Manager to limit the duration or location of work, and/or set other limits related to use of project vehicles and/or heavy equipment. Nest locations, project activities in the vicinity of nests, and any adjustments to buffer areas shall be described and reported in regular monitoring and compliance reports.
- **APM BIO-15:** Preconstruction surveys for burrows containing suitable bat roosting habitat that could be used as individual bat roosts shall be conducted in all project work areas.
- **APM BIO-16:** The connection from the substation to the transmission line shall be designed to meet the most recent Avian Power Line Interaction Committee guidelines to the extent practicable.
- **APM BIO-17:** Roads, power lines, fences, and other infrastructure associated with the project shall be minimized to reduce habitat loss. Fencing will use wildlife compatible design standards.
- **APM BIO-18:** Collector lines shall be placed underground to reduce avian collisions.
- **APM BIO-19:** Federal and state measures for handling toxic substances shall be followed to minimize danger from spills to water and wildlife resources. Facility operators shall maintain Hazardous Materials Spill Kits on-site. Personnel shall be trained to use the Hazardous Materials Spill Kits.
- **APM BIO-20:** The applicant shall clear vegetation outside of the bird breeding season to the maximum extent practicable. Preconstruction avian clearance surveys shall be conducted by a qualified biologist for vegetation clearing during the bird breeding season (February 1–August 31). If a nest(s) is identified in the preconstruction avian clearance surveys, a qualified monitor shall be on-site during vegetation removal in order to enforce non-disturbance buffers and stop activities as necessary should construction disturb nesting activity.
- **APM BIO-21:** Trash shall be disposed of in covered containers and regularly removed from the site.
- **APM BIO-22:** Surveys for burrowing owl shall be conducted in suitable burrowing owl habitat prior to construction and if construction is suspended for 2 weeks or more. Surveys shall be performed pursuant to the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). If



active burrows are found, they shall be avoided using non-disturbance buffer zones. Passive relocation shall be used as described above once the burrow is determined to be inactive.

- **APM BIO-23:** A qualified biologist shall conduct a ground-based golden eagle clearance survey for active golden eagle nests in a 2-mile area surrounding the project, as accessible. Golden eagle clearance surveys shall be conducted annually for each year of construction during the golden eagle nesting season. If active nests are found in the study area, the applicant shall coordinate with BLM, USFWS, and CDFW to ensure that construction does not result in disturbance of the golden eagles.
- **APM BIO-24:** Project personnel shall remove and dispose of roadkill near the study area to avoid attracting raptors and other scavengers to the site, and shall regularly remove vegetation around larger facilities (such as the substation) to reduce raptor foraging.
- **APM BIO-25:** The project shall minimize the use of lighting that could attract migrating birds and bats (that could feed on concentrations of insects at lights). Lighting will be kept to the minimum level necessary for safety and security. High-intensity, steady burning, bright lights such as sodium vapor or spotlights will not be used on project facilities.
- **APM BIO-26:** Project personnel and visitors shall be instructed to drive at low speeds (<15 mph) and be alert for wildlife, especially in low-visibility conditions.
- **APM BIO-27:** Fencing shall be removed at the completion of decommissioning.
- **APM BIO-28:** Desert tortoise exclusion fencing shall be installed at the perimeter of project construction areas (i.e., solar array areas, project buildings, substation/switchyard, earthen berms, and along the edge of access roads and collector line corridors). The fence locations will be determined during final design and will enclose areas of project activity. The fence line and a 30-foot-wide buffer shall be surveyed for desert tortoise before construction of the fence and according to USFWS protocol. Desert tortoise translocation will adhere to guidelines of the desert tortoise translocation plan for the project (see MM BIO-10). Tortoises found in the fence line study area or spotted within 50 m of the fence line study area shall be:
  1. Assigned a USFWS identification number.
  2. Given a health assessment.
  3. Fitted with a transmitter. Tortoises that are too small to accept a transmitter (i.e., no transmitter is available that is 10% or less of the tortoise's body weight) shall be treated as a translocatee and held in situ.
  4. Moved into habitat adjacent outside the fence line. The tortoise shall be moved into an empty burrow if clearance of the fence area takes place outside the tortoise active season (i.e., November–March and June–August).
  5. Any of the moved tortoises that return to the project area before completion of fence construction shall be treated as translocatees. Desert tortoises remaining outside the fence line prior to completion of the fence shall be deemed residents. The transmitter shall be removed from the resident tortoise, and no further action shall be taken for the resident tortoises. USFWS procedures shall be followed to clear and handle the desert tortoise.
- **APM BIO-29:** The project area desert tortoise preconstruction clearance survey shall be conducted during the desert tortoise active season (April–May and September–October) unless otherwise agreed to by USFWS and CDFW. The survey shall be conducted according to USFWS protocol and preferably during early morning hours to increase the chance juvenile tortoises are

found, per the Guidelines. Any tortoise scat shall be collected on each pass of a transect, per the Guidelines. USFWS procedures shall be followed to clear and handle the desert tortoise.

- **APM BIO-30:** The linear facilities desert tortoise preconstruction clearance survey(s) can be conducted at any time throughout the year. Linear facilities for this project include the buried collector lines between arrays and connecting to the substation. Located desert tortoises shall be undisturbed and allowed to clear the site without assistance or interference. Tortoises shall be moved if necessary to reduce the potential for harm from construction activities but shall not be moved more than 500 m in such a scenario. USFWS procedures shall be followed to clear and handle the desert tortoise.
- **APM BIO-31:** Data shall be collected during desert tortoise clearance surveys as described in this section. The same data shall be collected again on tortoises held in the interim in situ on the day that the tortoise is translocated from the study area. The data include:
  1. Date
  2. Time
  3. Temperature (°C)
  4. Project name
  5. Site type (project/recipient/control)
  6. Landowner (BLM)
  7. Permit/BO #
  8. Coverage #
  9. Field crew vendor
  10. Surveyor (first and last name)
  11. ID#
  12. Midline carapace length (MCL) (millimeters)
  13. Sex
  14. Universal Transverse Mercator (UTM) (Easting)
  15. UTM (Northing)
  16. Location (e.g., burrow)
  17. Transmitter manufacturer
  18. Transmitter serial #
  19. Transmitter frequency
  20. Transmitter install date
  21. Battery life (months)
  22. Status (alive/dead/lost)
- **APM BIO-32:** Following installation of the desert tortoise exclusion fencing, the fencing shall be regularly inspected. Permanent fencing shall be inspected monthly and during and within 24 hours following all major rainfall events. A major rainfall event is defined as one for which flow is detectable within the fenced drainage. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within 72 hours between

March 15 and October 31 and within 7 days between November 1 and March 14 of observing damage. Inspections of permanent site fencing shall occur while desert tortoise fencing is in place.

- **APM BIO-33:** No construction, operation, or decommissioning activities shall occur in unfenced areas without a USFWS-approved desert tortoise biologist present. These activities include the construction phase (construction, revegetation), decommissioning phase, and maintenance activities during the operations phase that require new surface disturbance. An adequate number of trained and experienced monitors must be present during all construction and decommissioning activities in unfenced areas, depending on the various construction tasks, locations, and season. A biologist shall be on-site from March 15 through October 31 (active season) during ground-disturbing activities in areas outside the exclusion fencing, and shall be on-call from November 1 through March 14 (inactive season). The biologist shall check all construction areas immediately before construction activities begin. The biologist shall inspect construction pipes, culverts, or similar structures 1) with a diameter greater than 3 inches, 2) stored for one or more nights, 3) less than 8 inches aboveground, and 4) within desert tortoise habitat (i.e., outside the permanently fenced area), before the materials are moved, buried, or capped. Alternatively, such materials may be capped before storing outside the fenced area or placing on pipe racks.
- **APM BIO-34:** A Raven Monitoring and Control Plan shall be prepared consistent with the most current USFWS-approved raven management guidelines. The purpose of the plan is to avoid any project-related increases in raven numbers during construction, operation, and decommissioning. The Raven Monitoring and Control Plan shall be submitted to BLM, CDFW, and USFWS for approval at least 30 days prior to the start of construction.
- **APM BIO-35:** A Burrowing Owl Relocation Plan shall be prepared and submitted to CDFW for approval. Burrowing owls occupying burrows on-site shall be passively relocated outside the nesting season (February 1–August 31) or after a qualified biologist determines that the burrow does not contain eggs or chicks and after consultation with CDFW. Prior to construction and passive relocation, artificial burrows shall be installed in areas that would not be disturbed during construction at a ratio of 5:1 for each burrow that will be destroyed by project construction. Passive relocation shall be conducted prior to construction and according to guidelines from the California Burrowing Owl Consortium (1993).
- **APM BIO-36:** Compensatory habitat mitigation shall be provided at a 1:1 ratio for impacts to suitable desert tortoise habitat during construction. A Habitat Compensation Plan shall be prepared to the approval of CDFW, USFWS, and BLM.
- **APM BIO-37:** No pets shall be allowed on-site prior to or during construction, except kit fox scat detection dogs (with CDFW approval) used for preconstruction surveys or postconstruction kit fox mortality monitoring.

## **5.2 Environmental Impact Analysis**

This section describes the anticipated direct, indirect, temporary, permanent, and cumulative impacts to biological resources that may result from implementation of the project. This analysis was based on the results of the biological resources surveys performed within the defined study areas, information from literature and database resources, and the proposed project design and layout. Anticipated impacts would result from construction of the solar plant site (including panel arrays and mounting structures), gen-tie, operation and maintenance buildings and structures, stormwater infrastructure, the substation and switchyard, and the 300-MW BESS.

Project implementation would result in the direct, permanent removal of up to 2,645.4 acres of on-site plant communities and displacement of wildlife that depend on them for habitat (Table 6). When combined with non-vegetation community areas (e.g., developed areas), the total project area is 2,670 acres. The final project design is expected to have lesser impacts to vegetation communities. However, for the purposes of this report, and to ensure that all environmental impacts are considered, it is assumed that all vegetation communities in the study area will be directly and permanently impacted by construction of the project.

**Table 6. Total Impacts to Vegetation Communities in the Study Area**

Vegetation Community	Global Rank*	State Rank†	Acres within the Study Area‡
Creosote Bush – White Bursage Scrub <i>Larrea tridentata</i> – <i>Ambrosia dumosa</i> Shrubland Alliance	G5	S5	2,459
Creosote Bush Scrub <i>Larrea tridentata</i> Shrubland Alliance	G5	S5	145
Rigid Spineflower – Hairy Desert Sunflower <i>Chorizanthe rigida</i> – <i>Geraea canescens</i> Desert Pavement Sparsely Vegetated Alliance ( <i>Chorizanthe rigida</i> – <i>Geraea canescens</i> Desert Pavement Association)	G4	S4 (Sensitive Association)	32
Cheesebush – Sweetbush Scrub <i>Ambrosia salsola</i> – <i>Bebbia juncea</i> Shrubland Alliance	G4	S4	8.2
California Joint Fir – Longleaf Joint-fir <i>Ephedra californica</i> – <i>Ephedra trifurca</i> Shrubland Alliance ( <i>Ephedra californica</i> – <i>Ambrosia salsola</i> Association)	G5	S4 (Sensitive Association)	1.2
<b>Total</b>	<b>N/A</b>	<b>N/A</b>	<b>2,645.4</b>

\*Global Rank (NatureServe 2024):

- G4 = Over 100 viable occurrences worldwide/statewide and/or more than 32,000 acres
- G5 = Demonstrably secure because of its worldwide/statewide abundance

†State Rank (NatureServe 2024):

- S4 = Over 100 viable occurrences worldwide/statewide and/or more than 32,000 acres
- S5 = Demonstrably secure because of its worldwide/statewide abundance

‡Vegetation Communities only. Does not include developed areas.

Potential direct, permanent impacts to special-status plant and/or wildlife species may include death, injury, or displacement; degradation or loss of habitat; and/or the destruction of or interference with local movement and migratory corridors. Many indirect, temporary, and permanent impacts to off-site biotic resources are possible during construction (e.g., from noise and dust) and after project completion (e.g., from noise, night lighting, restriction of movement). The temporary deposition of dust on off-site vegetation communities during construction could adversely affect quality of the habitat. Additionally, permanent artificial night lighting could adversely affect the behavior of nocturnal wildlife, and increased trash produced by project activities could result in an increase of opportunistic predators to the area.

Under CEQA, a mitigation, monitoring, and reporting plan would be developed to avoid, minimize, and mitigate impacts associated with the implementation of the project. As the lead agency responsible for authorizing project implementation, CDFW is responsible for ensuring that the measures for avoiding, minimizing, and reducing impacts are sufficient and compliant with CEQA and CESA requirements, and other applicable state, federal, and local regulations.

If impacts to state or federally listed species were to occur, permits from the applicable regulatory agencies would be required. Preconstruction surveys for special-status wildlife would avoid and minimize impacts to these resources by allowing them to be avoided or translocated off-site. The APMs described above observe the expected inclusion of avoidance and minimizations measures as described in the ROD. The potential impacts that may result from project implementation and recommended MMs pertinent to specific resource types are discussed below.

### **5.2.1 Special-Status Plants and Wildlife**

*a) Would the project 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?*

**Less than Significant with Mitigation Incorporated.** Potential adverse effects to special-status plant and wildlife species could result from construction of the project, as well as from operation and maintenance. Future decommissioning of the project could also result in adverse effects on special-status plants, wildlife, and their habitats. Construction is anticipated to occur over 18 months, thus including construction in the spring. Therefore, grubbing, grading, and fill during site preparation could impact special-status plants and associated seed banks during the growing season through direct removal and/or destruction of habitat. Construction of the project components, including the substation and switchyard, could result in vehicles crushing special-status plants. Several special-status plant and wildlife species were observed or have the potential to occur within the study area.

#### **5.2.1.2 SPECIAL-STATUS PLANTS**

Special-status plants may be subject to direct and indirect impacts, including crushing and/or dust cover during operation and maintenance activities. Dust cover could inhibit vital physiological processes such as respiration or photosynthesis. Regular road maintenance could result in direct removal of plants and/or seed beds, as well as significant habitat modification through repeated grading, compaction, berm construction, or installation of best management practices (BMPs). Special-status plants could be adversely affected by the introduction of new and spread of existing invasive plant species via personnel or vehicles. Also, altered hydrology as a result of construction could flood or dehydrate special-status plants and their associated seed banks. Finally, reduced wildlife activity could result in adverse effects on special-status plant species pollination and/or seed dispersal through zoochory.

One special-status plant species, Utah vine milkweed (CRPR 4.3), was identified in the study area, along the gen-tie. Direct, permanent impacts to Utah vine milkweed could occur through removal of individuals through grubbing, grading, and/or filling during construction, operation and maintenance, or future decommissioning of the project.

Permanent, indirect impacts to Utah vine milkweed could include permanent habitat destruction in project component locations, permanent removal of seed beds, increase in invasive plant species, permanent removal of pollinator host and/or nectaring plants, and/or altered hydrology.

Temporary, direct impacts to Utah vine milkweed during construction could include deposition of fugitive dust raised by vehicles and equipment, leading to reduction in photosynthesis and other physiological processes.

Implementation of APM BIO-10, APM BIO-11, and APM-BIO 12 as part of the project would avoid or substantially lessen potentially significant impacts to special-status plants, to the extent feasible.

Impacts to Utah vine milkweed would be reduced to less than significant through the implementation of the MMs summarized below:

- **MM BIO-1: Best Management Practices.** MM BIO-1 will reduce indirect impacts such as dust and potentially harmful chemicals through implementation of BMPs such as applying water to control dust and placing drip cans under vehicles and equipment when not in use.
- **MM-BIO 2: Worker Environmental Awareness Program.** MM BIO-2 will ensure that workers are aware of where Utah vine milkweed is located, and how to identify Utah vine milkweed to avoid direct, indirect, temporary, permanent, and cumulative impacts to individuals or populations of the plant during construction.
- **MM BIO-3: Special-Status Plant Species and Cacti Impact Avoidance and Minimization.** MM BIO-3 will provide guidance on how project personnel can avoid direct, indirect, temporary, permanent, and cumulative impacts to special-status plants on the project area.

#### 5.2.1.2.1 California Desert Native Plants Act

CDNPA-regulated plant species identified within the study area include desert holly, blue paloverde (*Parkinsonia florida*), beavertail cactus, cottontop cactus, common fishhook cactus (*Mammillaria tetrandra*), branched pencil cholla, and silver cholla. Native desert plants that are declared to be rare, threatened, or endangered species by federal or state law are not included under the provisions of the CDNPA. Additional regulated plant species in the Agavaceae (century plant [*Agave americana*], nolina [*Nolina microcarpa*], yucca, desert lily) and Cactaceae (cacti) families may be identified on-site prior to construction. Potential impacts to CDNPA-regulated plants would be similar to the special-status plants described above. Direct, indirect, temporary, permanent, and cumulative impacts to CDNPA-regulated plants would be reduced to less than significant by implementation of *MM BIO-3: Special-Status Plant Species and Cacti Impact Avoidance and Minimization*. MM BIO-3 will provide guidance on how project personnel can avoid unintended direct, indirect, temporary, permanent, and cumulative impacts to special-status plants on the project area and provide for the salvage of CDNPA-protected cacti prior to construction.

#### 5.2.1.3 WILDLIFE

Potential direct, indirect, temporary, permanent, and cumulative effects on special-status wildlife could result from construction of the project, as well as from operation and maintenance. Future decommissioning of the project could also result in impacts to special-status wildlife and their habitats. Construction is anticipated to occur in the spring. Thus, grubbing, grading, and filling during site preparation could impact habitat (e.g., burrows, vegetation cover) necessary for special-status wildlife during their reproductive phases. All phases of construction, operation and maintenance, and decommissioning could result in the direct mortality or injury of special-status wildlife through vehicles, equipment, and increased predation through exposure or increased access by predators (e.g., predatory bird perches such as fence posts). Finally, noise and lighting during construction could adversely and indirectly affect wildlife life cycles through disruption of foraging, breeding, and/or diurnal/nocturnal cycles.

Four special-status wildlife species—loggerhead shrike, Mojave fringe-toed lizard, burrowing owl, and desert kit fox—were directly observed during the field surveys. However, the Mojave fringe-toed lizard observations were located outside of the project area. Signs of other special-status wildlife observed during the field surveys include desert tortoise, American badger, and desert bighorn sheep. An additional three species have the potential to occur within the study area, including golden eagle (foraging only), pallid bat, and Townsend's big-eared bat.



### **5.2.1.3.1 Desert Tortoise**

Fresh scat (less than 1 day old) from a subadult was found within the northeast corner of the study area. The scat was classified as recent due to the retention of dark coloration, intact state, and retention of moisture. The scat was not in the vicinity of any suitable desert tortoise burrows and was exposed to the typical desert elements. Additional scat (less than 1 month old) from a juvenile was found in the northwestern portion of the study area 900 m (0.5 mile) west of the fresh scat and within 250 m south of multiple Class 4 burrows. This scat retained dark coloration and was intact but lacked moisture.

Across the entire study area, 182 burrows were identified as tortoise burrows, meaning that they had been originally excavated by desert tortoise, whether they were currently suitable for occupancy or not. All burrows were identified as Classes 2–5, and no burrows were classified as Class 1. The eastern and northeastern portions of the project contained the highest concentration of burrows, likely due to suitable vegetation communities at distances farther from human disturbances and impacts, and less rocky outcroppings in the landscape. These areas were identified as habitat currently suitable for desert tortoise occupation. No other tortoise signs, such as carcasses, pellets, tracks, drinking depressions, courtship rings, or signs of ephemeral plant herbivory, were observed on-site.

No live tortoises or carcasses were found during the survey. While not all tortoises are expected to be visible at any given time, daily surveys coincided with the highest likelihood of live, aboveground observations both seasonally and thermally. Additionally, open burrows were visually searched and did not yield any live tortoises or carcasses. Most of the gen-tie route was found to be unsuitable habitat for desert tortoise due to extensive rocky outcrops. However, two collapsed burrows (Class 4 and Class 5) were identified.

Construction of the project components and gen-tie may result in direct impacts to desert tortoise, including the direct, permanent removal of up to 2,645.4 acres of habitat (all of the study area that is covered by native plant communities). Desert tortoise may be crushed by vehicles and/or equipment. Trenches dug for construction purposes could trap tortoise. And ground disturbance could result in the destruction of desert tortoise habitat. Construction and maintenance of the project also could directly impact desert tortoise if present, killing or injuring tortoises by crushing tortoises or burrows containing tortoises or eggs. These effects would be most likely to occur when tortoises are most difficult to detect, during the initial clearing of vegetation.

Indirect impacts to desert tortoise could result from human activities that increase the prevalence of invasive plants and the population of common ravens. Non-native plant seeds may be transported into the area with equipment, especially in tire treads. Non-native vegetation often becomes established in areas where the native vegetation has been disturbed, which may occur in the project's areas of temporary impacts. Many invasive grasses and forbs are highly flammable, and increase the risk of wildfire if not controlled, and adjacent desert tortoise habitat may be further degraded by invasion of weeds. Common ravens may be encouraged at the study area by food refuse inappropriately disposed of by construction or maintenance workers, and the project infrastructure may provide additional nest sites. In addition, the project fences and heliostats would provide additional perching and roosting sites for common ravens. Increases in common ravens may lead to higher rates of raven predation on desert tortoise.

Implementation of APM-BIO 12, APM-BIO 17, APM-BIO 19, APM-BIO 21, APM-BIO 26, APM-BIO 27, APM-BIO-28, APM-BIO-29, APM-BIO-30, APM-BIO-31, APM-BIO-32, APM-BIO-33, APM-BIO-34, APM-BIO-36, and APM-BIO 37 as part of the project would avoid or substantially lessen potentially significant impacts to desert tortoise, to the extent feasible.

Impacts to desert tortoise would be reduced to less than significant by implementation of the MMs summarized below:

- **MM BIO-1: Best Management Practices** will reduce indirect impacts such as dust and potentially harmful chemicals through implementation of BMPs such as applying water to control dust and placing drip cans under vehicles and equipment when not in use.
- **MM BIO-2: Worker Environmental Awareness Program** will ensure that construction personnel are aware of where desert tortoise burrows are located and/or where desert tortoises are likely to take refuge or attempt movement during construction.
- **MM BIO-4 Biological Monitoring** will conduct pre-construction surveys and monitor protected species during ground disturbance, grading, construction, decommissioning, and restoration activities. The biological monitor will ensure compliance with avoidance and minimization measures for protected species, inspect the work site at the start and end of the work day, halt construction in areas where protected species are found, and create and maintain construction avoidance limits using staking or flagging.
- **MM BIO-5: Designated Biologist** requires the applicant to assign at least one Designated Biologist to the project. The Designated Biologist must be approved by BLM, CDFW, and USFWS.
- **MM BIO-6: Fence Design and Site Permeability.** Permanent site fencing installed around the project should be designed to allow for the passage of wildlife, to the extent feasible given the need for the fencing to prevent ingress by desert tortoise. Depending on the fencing material, the fence line should have gaps of approximately 4 to 6 inches accessible to wildlife other than desert tortoise and the fencing material should be knuckled back to create a smooth edge. Alternate designs may also be constructed with prior written approval from CDFW and USFWS.
- **MM BIO-7: Compliance Monitoring by the Designated Biologist** will ensure compliance with all measures set forth in the BO and CESA Section 2081 take authorization, and project MMs. The Designated Biologist is responsible for providing notifications for ground-disturbing activities and noncompliance issues to USFWS and CDFW, and ensure performance of compliance inspections during construction. The Designated Biologist will submit a monthly compliance report to CDFW until construction is complete.
- **MM BIO-8: Speed Limits** defines appropriate speed limits to prevent desert tortoise mortality during construction.
- **MM BIO-9: Desert Tortoise Protection** will instruct the applicant on how to undertake appropriate measures to manage the construction site and related facilities in a manner to avoid or minimize direct, indirect, temporary, permanent, and cumulative impacts to desert tortoise including protective fencing, exclusion fencing, clearance surveys, and monitoring.
- **MM BIO-10: Desert Tortoise Translocation Plan (DTTP)** mandates that the applicant develop a DTTP that will provide instruction on how to relocate all desert tortoise from the project area to nearby suitable habitat; minimize and avoid direct, indirect, temporary, permanent, and cumulative impacts to resident desert tortoise outside the project area; minimize stress, disturbance, and injuries to relocated/translocated tortoises; and assess the success of the translocation effort through monitoring.
- **MM BIO-11: Desert Tortoise Compliance Verification** requires that the applicant provide BLM, CDFW, and USFWS staff with unrestricted access to the project area and compensation lands to verify the applicant's compliance with, or the effectiveness of, adopted MMs.
- **MM BIO-12: Desert Tortoise Compensatory Mitigation** describes how the applicant will fully mitigate for habitat loss and potential take of desert tortoise through compensatory mitigation consistent with federal and state requirements.

- **MM BIO-13: Minimize Vehicle and Equipment Impacts During Operation and Maintenance** requires that the applicant implement measures to minimize the potential for desert tortoise and other wildlife species mortality along access and maintenance roads including speed limits, pedestrian access guidance and clear delineation of vehicle traffic, and parking and staging areas to avoid impacting habitat during operations.

### **5.2.1.3.2 Mojave Fringe-toed Lizard**

There is a total of 6.9 acres of potentially suitable windblown sand habitat within the study area for Mojave fringe-toed lizard, and focused surveys for Mojave fringe-toed lizard were not conducted in these areas as they had not been identified as potential habitat in the desktop review (see Figure 12). The aeolian sand deposits located in these areas have no connectivity to larger sand deposits that support known existing populations. Mojave fringe-toed lizards were not observed in these areas during any of the surveys described in the 2013 Biological Resources Technical Report nor during the 2023 surveys for other types of biological resources, which occurred during the Mojave fringe-toed lizard active season.

The nearest known population of Mojave fringe-toed lizard is located outside of the project area in a sandy wash approximately 750 feet south-southwest of the study area. During focused surveys for Mojave fringe-toed lizard outside of the study area, five individuals were observed in this wash, the nearest of which was approximately 1,000 feet south of the project boundary. Based on the survey results, small area of potentially suitable habitat, and lack of connectivity to suitable habitat on-site, Mojave fringe-toed lizard is considered to have a low potential to occur within the study area.

Implementation of APM-BIO 12, APM-BIO 17, APM-BIO 19, APM-BIO 21, APM-BIO 26, APM-BIO 27, and APM-BIO 37 as part of the project would avoid or substantially lessen potentially significant impacts to Mojave fringe-toed lizard, to the extent feasible.

Based on the presence of potentially-suitable windblown sand habitat within the project area, construction of the solar plant site (including panel arrays and mounting structures), operation and maintenance buildings and structures, stormwater infrastructure, the substation and switchyard, and the BESS may result in indirect impacts to Mojave fringe-toed lizard. Potential indirect impacts include increased predation by raptors, ravens, and other birds; the potential introduction and spread of exotic vegetation species into off-site dune areas; and increased human activity causing Mojave fringe-toed lizards to avoid the study area and/or adjacent suitable habitat. Indirect impacts to Mojave fringe-toed lizards would be reduced to less than significant through the implementation of the MM summarized below:

- **MM BIO-1: BMPs.** MM BIO-1 will reduce indirect impacts such as dust and potentially harmful chemicals through implementation of BMPs such as applying water to control dust and placing drip cans under vehicles and equipment when not in use.
- **MM-BIO 2: Worker Environmental Awareness Program.** MM BIO-2 will ensure that workers are aware of where Utah vine milkweed is located, and how to identify Utah vine milkweed to avoid direct, indirect, temporary, permanent, and cumulative impacts to individuals or populations of the plant during construction.
- **MM BIO-4 Biological Monitoring** will conduct pre-construction surveys and monitor protected species during ground disturbance, grading, construction, decommissioning, and restoration activities. The biological monitor will ensure compliance with avoidance and minimization measures for protected species, inspect the work site at the start and end of the work day, halt construction in areas where protected species are found, and create and maintain construction avoidance limits using staking or flagging.

- **MM BIO-5: Designated Biologist** requires the applicant to assign at least one Designated Biologist to the project. The Designated Biologist must be approved by BLM, CDFW, and USFWS.
- **MM BIO-7: Compliance Monitoring by the Designated Biologist** will ensure compliance with all measures set forth in the BO and CESA Section 2081 take authorization, and project MMs. The Designated Biologist is responsible for providing notifications for ground-disturbing activities and noncompliance issues to USFWS and CDFW, and ensure performance of compliance inspections during construction. The Designated Biologist will submit a monthly compliance report to CDFW until construction is complete.
- **MM BIO-14: Mojave Fringe-toed Lizard Protection Measures.** A qualified biologist will conduct a focused survey for Mojave fringe-toed lizard prior to ground disturbance in suitable habitat (aeolian sand deposits) within all active work areas. Two survey replicates will be performed during the Mojave fringe-toed lizard active season (March–October) during appropriate weather conditions. Qualified biologists will walk transects spaced 10m apart throughout areas with suitable habitat within the study area. Detections of Mojave fringe-toed lizard will be recorded using a GPS unit. If Mojave fringe-toed lizards are not detected, then no further action is needed. If Mojave fringe-toed lizards are found, then a pre-construction survey should be conducted no more than one week before ground disturbance begins, and any Mojave fringe-toed lizards should be moved to suitable habitat south of the Project area where the species was confirmed to be present.

### 5.2.1.3.3 Burrowing Owl

Burrowing owls were confirmed to be present and were observed during the 2023 survey (see Appendix N). One individual and one unoccupied burrow with burrowing owl sign were identified. Burrowing owls may overwinter or nest on-site.

Construction of the solar plant site (including panel arrays and mounting structures) and gen-tie, operation and maintenance buildings and structures, stormwater infrastructure, the substation and switchyard, and the 300-MW BESS may result in direct impacts to burrowing owls, including the direct, permanent removal of up to 2,645.4 acres of habitat. Construction and maintenance of the project could directly impact burrowing owl through vehicle collisions, crushing overwintering burrows or active nests. Indirect impacts from noise, night lighting, and the increase in human activity could cause burrowing owls to avoid the study area.

Implementation of APM-BIO 12, APM-BIO 17, APM-BIO 19, APM-BIO 21, APM-BIO 22, APM-BIO 26, APM-BIO 27, APM-BIO 35, and APM-BIO 37 as part of the project would avoid or substantially lessen potentially significant impacts to burrowing owl, to the extent feasible.

Impacts to burrowing owl would be reduced to less than significant through the implementation of the MM summarized below:

- **MM BIO-1: Best Management Practices.** MM BIO-1 will reduce indirect impacts such as dust and potentially harmful chemicals through implementation of BMPs such as applying water to control dust and placing drip cans under vehicles and equipment when not in use.
- **MM-BIO 2: Worker Environmental Awareness Program.** MM BIO-2 will ensure that workers are aware of where Utah vine milkweed is located, and how to identify Utah vine milkweed to avoid direct, indirect, temporary, permanent, and cumulative impacts to individuals or populations of the plant during construction.

- **MM BIO-4 Biological Monitoring** will conduct pre-construction surveys and monitor protected species during ground disturbance, grading, construction, decommissioning, and restoration activities. The biological monitor will ensure compliance with avoidance and minimization measures for protected species, inspect the work site at the start and end of the work day, halt construction in areas where protected species are found, and create and maintain construction avoidance limits using staking or flagging.
- **MM BIO-5: Designated Biologist** requires the applicant to assign at least one Designated Biologist to the project. The Designated Biologist must be approved by BLM, CDFW, and USFWS.
- **MM BIO-7: Compliance Monitoring by the Designated Biologist** will ensure compliance with all measures set forth in the BO and CESA Section 2081 take authorization, and project MMs. The Designated Biologist is responsible for providing notifications for ground-disturbing activities and noncompliance issues to USFWS and CDFW, and ensure performance of compliance inspections during construction. The Designated Biologist will submit a monthly compliance report to CDFW until construction is complete.
- **MM BIO-18: Bird and Bat Conservation Strategy (BBCS)** requires that the applicant develop a BBCS to address potential direct, indirect, temporary, permanent, and cumulative impacts to special-status avian and bat species. The bird and bat conservation strategy (BBCS) will include an assessment of potential avian and bat impacts from lighting, noise, collision, electrocution, and attraction of ravens, as applicable, as well as measures to mitigate for the effects to birds. The BBCS will also include a description of the reporting requirements and reporting schedule and duration, and an adaptive management strategy.
- **MM BIO-19: Burrowing Owl Protection Measures** MM BIO-18 requires that the applicant perform a preconstruction survey for burrowing owls no more than 14 days prior to the initiation of construction, and following periods of inactivity that last 2 weeks or more. Furthermore, MM BIO-18 prescribes protective buffers for occupied burrows and nesting pairs. Finally, the measure also mandates avoidance disturbance of occupied burrows during defined nesting and non-nesting periods, and compensatory mitigation should impacts to active burrows occur.

#### **5.2.1.3.4 Desert Kit Fox and American Badger**

Desert kit fox was confirmed to be present based on the presence of sign and the identification of six active dens during the field surveys. Five potential American badger dens were identified during the field surveys. However, all were determined to be inactive based on cobwebs or obstructions in the entrances and the lack of maintenance and sign of recent use. Nonetheless, habitat is suitable for American badger and the species could be present during project construction, operation, and decommissioning. Potential impacts to desert kit fox and American badger would be similar to the impacts experienced by fossorial species. Direct impacts include vehicle collisions and equipment and inadvertent entombment from collapsing burrows. Indirect impacts would result from noise and human activity, which may deter kit foxes and badgers from the study area. In addition, the project will result in the direct, permanent removal of up to 2,645.4 acres of habitat for desert kit fox and American badger.

Implementation of APM-BIO 12, APM-BIO 17, APM-BIO 19, APM-BIO 21, APM-BIO 26, APM-BIO 27, APM-BIO 35, and APM-BIO 37 as part of the project would avoid or substantially lessen potentially significant impacts to desert kit fox and American badger, to the extent feasible.

Significant impacts to desert kit fox and American badger would be reduced to less than significant by implementation of the MM summarized below:

- **MM BIO-1: Best Management Practices.** MM BIO-1 will reduce indirect impacts such as dust and potentially harmful chemicals through implementation of BMPs such as applying water to control dust and placing drip cans under vehicles and equipment when not in use.
- **MM-BIO 2: Worker Environmental Awareness Program.** MM BIO-2 will ensure that workers are aware of where Utah vine milkweed is located, and how to identify Utah vine milkweed to avoid direct, indirect, temporary, permanent, and cumulative impacts to individuals or populations of the plant during construction.
- **MM BIO-4 Biological Monitoring** will conduct pre-construction surveys and monitor protected species during ground disturbance, grading, construction, decommissioning, and restoration activities. The biological monitor will ensure compliance with avoidance and minimization measures for protected species, inspect the work site at the start and end of the work day, halt construction in areas where protected species are found, and create and maintain construction avoidance limits using staking or flagging.
- **MM BIO-7: Compliance Monitoring by the Designated Biologist** will ensure compliance with all measures set forth in the BO and CESA Section 2081 take authorization, and project MMs. The Designated Biologist is responsible for providing notifications for ground-disturbing activities and noncompliance issues to USFWS and CDFW, and ensure performance of compliance inspections during construction. The Designated Biologist will submit a monthly compliance report to CDFW until construction is complete.
- **MM BIO-20: American Badger and Desert Kit Fox Protection** includes required preconstruction surveys, excavation of inactive dens subject to direct impacts, biological monitoring by the Biological Monitor, and agency notification should natal dens be detected within the project area.

#### **5.2.1.3.5 Desert Bighorn Sheep**

A desert bighorn sheep skull was found during the burrowing owl survey on March 29, 2023. The environmental analysis and measures required for desert bighorn sheep will be completed by CDFW and included in the project EIR.

#### **5.2.1.3.6 Birds**

Common and special-status bird species forage at the study area and have the potential to nest at the project area. Being highly mobile, birds can generally move out of harm's way and avoid direct injury and harm from grading, construction, and project operations. Birds can use the study area for nesting, foraging, and roosting.

Suitable nesting habitat is present on-site and within 500 feet of the study area boundaries. Construction performed during the nesting season could directly affect active bird nests through crushing or removal of vegetation supporting or camouflaging nests, or by disturbing adults so much that they abandon the nest. The project will also result in the loss of up to approximately 2,670.4 acres of nesting habitat due to permanent vegetation removal. The project may indirectly impact nesting birds within and adjacent to the study area during construction by making the area less suitable due to increased noise or visual disturbances.

The development of utility-scale solar energy facilities is a recent phenomenon, and the biological relevance of avian mortality at PV solar facilities is not well understood. Preliminary information suggests that the levels of avian mortality at solar facilities of all technology types is much lower than mortality from other known anthropogenic sources such as fossil fuel plants, communication towers,



vehicle collisions, and buildings (Walston et al. 2016). Nevertheless, these impacts may be biologically significant, and many species of North American birds are protected under the MBTA, BGEPA, and/or ESA, and California has several comparable state regulations.

All large artificial structures pose some collision risk to birds in flight; this phenomenon has been most extensively documented for nocturnal migrants (Loss, Will et al. 2014). Most small birds migrate at night and large birds are more likely to migrate during the day, especially raptors; both day and night migration occur in waterfowl. Non-nesting birds are killed at high rates by collision with buildings, radio towers, and other structures, especially those with lighting (Longcore et al. 2012; Loss et al. 2014). Collision with aboveground wires, including both electrical transmission lines and guy wires on radio towers, is also a significant anthropogenic cause of bird mortality (Longcore et al. 2012; Loss et al. 2014).

Avian mortalities have been recorded at PV solar facilities, with high-end estimates ranging from 2.49 birds per MW per year (Kosciuch et al. 2020) to 9.9 birds per MW per year (Walston et al. 2016). Most data on the impacts of PV solar facilities have been collected at sites in the Desert Southwest, primarily Southern California, an area that contains a substantial fraction of the large-scale (>1,000 acres) solar facilities in the United States. At PV solar facilities, impact trauma is the most frequently recorded identifiable cause of death (e.g., Kagan et al. 2014; Kosciuch et al. 2020; Walston et al. 2016).

Evidence that birds collide with PV panels at higher rates than with other stationary infrastructure is lacking, as is evidence that collisions with PV panels at solar facilities are a biologically significant source of avian mortality. However, Conkling et al. (2022) demonstrated that avian mortalities found at solar facilities originated from both local and distant sites, based on stable hydrogen isotopic analysis of feathers collected from bird fatalities found at wind and solar energy generating facilities. Therefore, PV solar facilities have the potential to impact non-local bird populations.

It has been hypothesized that birds in flight mistake the reflective surfaces of PV and concentrating solar energy generating facilities for water bodies and are attracted to the facilities due to this water-like appearance, a phenomenon called the “lake effect” (Kagan et al. 2014; Upton 2014). Once attracted to reflective features at solar facilities, birds might then be injured or killed by collision with facility infrastructure while in flight or when landing. Injured birds may then be exposed to the elements, predators, dehydration, and starvation. Some waterbird species like loons and grebes can only take off into flight from a body of water, and therefore, stranding without access to water or rescue is inevitably fatal.

Bird injuries and mortalities documented at PV solar facilities to date have included both landbird and waterbird species, and there is very little evidence supporting or refuting the lake effect hypothesis (Kagan et al. 2014; Kosciuch et al. 2020; Kosciuch et al. 2021). In an effort to assess the hypothesis, Kosciuch et al. (2021) searched for aquatic bird carcasses in both PV solar facilities and reference sites in agricultural, desert, and grassland habitats; they found no aquatic birds in undeveloped desert or grassland reference sites but did find aquatic bird carcasses at PV solar facilities, suggesting that some characteristic of the facilities attracted or impacted aquatic birds. They also found that the species diversity of aquatic birds using a small desert lake was substantially higher than both 1) the diversity of aquatic birds observed using habitats in and adjacent to solar energy facilities, and 2) the diversity of aquatic birds found dead and injured at solar energy facilities, which suggests that if lake effect attraction occurs, not all aquatic birds are equally susceptible. For insects, there is evidence that PV solar panels are attractive: field experiments showed that some species of flying insects with aquatic larval stages laid their eggs on solar panels more often than on water (Horvath et al. 2009).

Direct project impacts to birds may result from collision with project infrastructure of all kinds, including panel arrays and mounting structures, operation and maintenance buildings, substation and switchyard, BESS, gen-tie poles and overhead conductor wire, and fencing.

Indirect project impacts to non-nesting birds would result from vegetation removal and the conversion of native foraging habitat to development. Construction of the solar plant (including panel arrays and mounting structures), operation and maintenance buildings, stormwater infrastructure, the substation and switchyard, and the BESS would result in indirect impacts through habitat conversion.

The study area is located in an area of relatively low use by avian species, is not within heavily used known migratory paths, and does not include features that would tend to attract or concentrate migrating birds, such as bodies of water, dense or riparian vegetation, or terrain that creates thermal uplift more than the surrounding area.

Avian impacts resulting from the project are expected to be comparable in type and levels to those documented at other PV solar facilities in the region. These include direct mortality of up to 2.49 or 9.9 birds per MW per year (Kosciuch et al. 2020; Walston et al. 2016). Extrapolating to this proposed 300-MW project, annual mortality of birds consistent with those examples would be approximately 747 to 2,970 birds per year. Indirect impacts will include the loss of up to 2,645.4 acres of foraging and nesting habitat.

Implementation of APM-BIO 12, APM-BIO 13, APM-BIO 14, APM-BIO 16, APM-BIO 17, APM-BIO 18, APM-BIO 19, APM-BIO 20, APM-BIO 21, APM-BIO 22, APM-BIO 24, APM-BIO 25, APM-BIO 26, APM-BIO 27, and APM-BIO 37 as part of the project would avoid or substantially lessen potentially significant impacts to birds, to the extent feasible.

Direct mortality of up to 2,970 nesting and non-nesting birds per year and indirectly impact birds through conversion of approximately 2,645.4 acres of foraging and nesting habitat to development would be reduced to less than significant through the implementation of the MMs summarized below:

- **MM BIO-15: Avian Monitoring and Mitigation Program** directs the drafting of an avian monitoring and mitigation program (AMMP). The AMMP will be initiated and approved by BLM in consultation with CDFW and USFWS prior to construction, and will prevent substantial adverse direct, indirect, temporary, permanent, and cumulative impacts to special-status species. The purpose of the AMMP is to provide an adaptive management and decision-making framework for reviewing, characterizing, and responding to avian and bat monitoring results, and reducing long-term impacts to these taxa.
- **MM BIO-16: Avoid Disturbance to Nesting Birds** requires vegetation clearing to occur outside of the general avian breeding season (February 15–September 1) when feasible. This measure also includes preconstruction surveys for nesting birds should work occur during the breeding season, as well as nest monitoring and buffer implementation protocols.
- **MM BIO-17: Lighting Specifications to Minimize Bird and Bat Impacts** requires that the applicant minimize night lighting during construction by using shielded directional lighting that is pointed downward, thereby avoiding illumination to adjacent natural areas and the night sky.
- **MM BIO-18: Bird and Bat Conservation Strategy** requires that the applicant develop a bird and bat conservation strategy (BBCS) to address potential direct, indirect, temporary, permanent, and cumulative impacts to special-status avian and bat species. The BBCS will include an assessment of potential avian and bat impacts from lighting, noise, collision, electrocution, and attraction of ravens, as applicable, as well as measures to mitigate for the effects to birds. The BBCS will also include a description of the reporting requirements and reporting schedule and duration, and an adaptive management strategy.

### 5.2.1.3.7 Bats

Special-status bat species with the potential for occurrence at the study area include Townsend's big-eared bat and pallid bat. Neither species was detected during the bat surveys performed for the project. Two bat species were detected by sight and/or sound within the study area during the nighttime acoustic survey period: canyon bat and Mexican free-tailed bat. Potential impacts to bats are typically related to lighting and project infrastructure. Nighttime lighting during construction and project operations could attract insects, which could attract foraging bats. Project infrastructure may pose a collision risk for bats.

Implementation of APM-BIO 12, APM-BIO 15, APM-BIO 17, APM-BIO 19, APM-BIO 21, APM-BIO 25, APM-BIO 26, APM-BIO 27, and APM-BIO 37 as part of the project would avoid or substantially lessen potentially significant impacts to bats, to the extent feasible.

Impacts to bats would be reduced to less than significant through the implementation of the MMs summarized below:

- **MM BIO-16: Lighting Specifications to Minimize Bird and Bat Impacts** requires that the applicant minimize night lighting during construction by using shielded directional lighting that is pointed downward, thereby avoiding illumination to adjacent natural areas and the night sky.
- **MM BIO-17: Bird and Bat Conservation Strategy** requires that the applicant develop a BBCS to address project impacts to special-status avian and bat species. The BBCS will include an assessment of potential avian and bat impacts from lighting, noise, collision, electrocution, and attraction of ravens. The BBCS will also include a description of the reporting requirements and reporting schedule and duration, and an adaptive management strategy.

## 5.2.2 Sensitive Natural Communities

b) *Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS?*

**Less than Significant with Mitigation Incorporated.** Two sensitive natural communities were identified within the study area: Rigid Spineflower – Hairy Desert Sunflower and California Joint Fir – Longleaf Joint-fir associations. No riparian habitat is present within the project boundary.

Direct impacts include permanent and temporary removal of the sensitive vegetation communities. At this time, it is assumed that all impacts to vegetation within the study area will be permanent. The permanent impacts within the study area are expected to be 33.2 acres. Approximately 32 acres of Rigid Spineflower – Hairy Desert Sunflower and 1.2 acres of California Joint Fir – Longleaf Joint-fir associations would be impacted by the project. If areas of vegetation are temporarily disturbed during construction, they will be reseeded to facilitate restoration of the original vegetation communities.

Implementation of APM-BIO 1, APM-BIO 2, APM-BIO 3, APM-BIO 4, APM-BIO 5, APM-BIO 6, APM-BIO 7, APM-BIO 8, APM-BIO 9, and APM-BIO 912 as part of the project would avoid or substantially lessen potentially significant impacts to sensitive natural communities, to the extent feasible.

Direct permanent and temporary impacts to sensitive natural communities will be reduced to less than significant through implementation of the MMs summarized below:

- **MM BIO-21: Vegetation Best Management Practices** directs the applicant to implement BMPs to manage the construction site and related facilities in a manner to avoid or minimize direct, indirect, temporary, permanent, and cumulative impacts to vegetation resources, including

minimizing road and traffic impacts, monitoring during construction, revegetating temporarily disturbed areas, and integrating weed management.

- **MM BIO-22: Final Closure Plan** directs the preparation of a Final Closure Plan to restore the site's topography and hydrology to a relatively natural condition and to establish native plant communities.

### 5.2.3 Wildlife Movement

*d) Would the project 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?*

**Less than Significant with Mitigation Incorporated.** No identified wildlife corridors exist within the project property, nor is any part of the project property within a wildlife connectivity area as mapped in the BLM's *A Linkage Network for the California Deserts* or the *California Essential Habitat Connectivity Project* (Spencer et al. 2010). The habitat types at the project area are dominated by low vegetation, grasslands, and widely spaced shrubs, which do not pose a physical barrier to the movements of most wildlife species. There is little topographic relief within the project area that would serve to funnel or direct wildlife movement into any particular areas or in specific directions.

Washes present in the study area are landscape features that are the most likely to represent wildlife movement corridors locally; however, there is no evidence that they provide avenues for concentrations of wildlife. Further, there is no riparian vegetation to support concentrations of wildlife. Migratory birds passing through the area may utilize the site for breeding, nesting, foraging, or transient rest sites. However, there are no significant stopover sites in the vicinity of the project, as there are no riparian habitats or water bodies with abundant resources to attract concentrations of birds.

Survey data for desert bighorn sheep mobility within and near the study area will be provided separately by CDFW and included in the EIR. Analyses will be based on CDFW-specific methodologies designed to understand how to reach their long-term management goals. Therefore, project-led data were not recorded and potential project impacts to desert bighorn sheep are not included in this report. Finally, the site does not support wildlife nursery sites such as bat maternity roosts or nesting bird colonies. Thus, the project would not 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.

Implementation of APM-BIO 12, APM-BIO 17, APM-BIO 19, APM-BIO 21, APM-BIO 26, APM-BIO 27, APM-BIO 35, and APM-BIO 37 as part of the project would avoid or substantially lessen potentially significant impacts to wildlife movement, to the extent feasible.

However, the following MM would ensure that the project does not impede movement of wildlife.

- **MM BIO-6: Fence Design and Site Permeability.** Fences installed around the project should be designed to allow for the passage of wildlife. Depending on the fencing material, the bottom of the fence line should have gaps of approximately 4 to 6 inches and be knuckled back to create a smooth edge. Alternate designs may also be constructed with prior written approval from CDFW and USFWS.
- **MM BIO-17: Lighting Specifications to Minimize Bird and Bat Impact** will minimize night lighting during construction by using shielded directional lighting that is pointed downward, thereby avoiding illumination to adjacent natural areas and the night sky.

## 5.2.4 Local Policies and Ordinances

e) *Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

**No Impact.** The project is located entirely on federally owned land managed by the BLM. Given the project is on federal land, it is not subject to local regulations and policies. However, to comply with CEQA and for informational purposes, San Bernardino County policies are included in Section 2.3 Local Regulations. Implementation of the APMs and the MMs identified in this EIR would ensure consistency with San Bernardino County regulations and policies adopted for the purpose of avoiding or minimizing environmental impacts. Therefore, the project would not result in a conflict with local policies and ordinances; there would be no impact.

## 5.2.5 Adopted or Approved Plans

f) *Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

**Less than Significant Impact.** The project gen-tie falls within the Soda Mountains Expansion designated ACEC as designated by the BLM. ACECs are designated where the BLM has determined that important historical, cultural, scenic, fish and wildlife, or other natural resources occur, and special protection is warranted. In addition, ACECs may be designated for safety in areas with natural hazards. The Soda Mountains Expansion ACEC abuts the northern edge of I-15 and encompasses 16,720 acres between I-15 and the Soda Mountain Wilderness Study area. It was designated to protect plant and wildlife connectivity between surrounding wilderness and wilderness study areas.

Transmission activities are allowed in ACECs within the DRECP, as described in CMA ACEC-LANDS-1 (BLM 2016c). Disturbance within each ACEC in the DRECP is limited to a specified percentage of the total ACEC area, as described in CMA ACEC-DIST-1; for the Soda Mountain Expansion ACEC the disturbance is capped at 1%.

The Soda Mountains Expansion ACEC was designated as a part of the DRECP LUPA in September 2016 (BLM 2016c), after the project ROD was issued in March 2016. The project as described here is consistent with that described in the project ROD, and therefore the project would not need to conform to the Conservation and Management Actions outlined in the DRECP that would otherwise apply to activities within this ACEC. Nevertheless, an analysis of the potential impacts is appropriate.

Construction and operation of the project gen-tie would impact up to 36 acres of the Soda Mountains Expansion ACEC, approximately 0.22% of its total area. The gen-tie construction would temporarily disrupt wildlife activity in the area, and temporarily and permanently remove some habitat for plants and wildlife. This impact is less than significant.

There are no other federal, state, or local designated conservation areas within or directly adjacent to the project area. Within 10 miles, there is no USFWS-designated critical habitat for ESA-listed species, no USFWS-authorized habitat conservation plans, and no CDFW natural community conservation plans.

## 5.2.6 Cumulative Impacts

Cumulative impacts for a project would be significant if the incremental effects of the individual project are considerable when combined with the effects of past projects, other current projects, and probable

future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period.

As the County experiences growth in large-scale energy projects and other development, broad-scale impacts to biological resources are also increasing. As of May 2024, over 23,000 acres of land that has been approved for renewable energy projects by the County (San Bernardino County 2024). Currently the nearest large-scale solar projects are approximately 40-45 miles to the northeast and southwest of the project. Several special-status species use the study area and the surrounding area. Implementation of the project would impact special-status species that use the study area such as burrowing owl and desert tortoise, along with more common species that support the ecosystem. Habitats within the study area sustain a diverse range of insects, rodents, and small birds that serve as a crucial prey base for raptors and terrestrial wildlife. In addition, as detailed in the literature review and database search, the region is home to a variety of special-status species, most of which are anticipated to utilize the study area intermittently, if at all. When considered together with other existing or proposed projects in the County, impacts to special-species due to primarily habitat loss, wildlife corridor impairment, and land use conversion may be cumulatively considerable.

Caltrans, CDFW, and Brightline West have entered into an agreement to design and construct three wildlife overcrossings across I-15 and the future Brightline West high-speed rail system connecting Las Vegas and Southern California (Caltrans 2023). These dedicated overcrossings would provide a sustainable and safe path for wildlife—especially for desert bighorn sheep—over the existing northbound and southbound highway lanes and the future high-speed rail system to be built within the median (Caltrans 2023). CDFW has identified three priority locations for the wildlife overcrossing, all in San Bernardino County (Caltrans 2023). These overcrossings will be built near Zzyzx Road, near Mountain Pass and near Razor Road, spanning the entire width of I-15 including the Brightline West rail line (Caltrans 2023). Beyond the three wildlife overcrossings, the Brightline West project will maintain or improve more than 600 culverts and large-scale crossings under I-15 that exist today (Caltrans 2023). The project also will restore and install desert tortoise fencing and directional wildlife exclusionary fencing (Caltrans 2023). The proposed Brightline overcrossings would reduce project impacts associated with temporary and/or permanent disruptions to local wildlife movement, most notably impacts that pertain to desert bighorn sheep. The environmental analysis and measures required for desert bighorn sheep will be completed by CDFW and included in the project EIR. This report does not contain an analysis of potential impacts and measures to reduce impacts for desert bighorn sheep. The proposed Brightline overcrossings would reduce cumulative impacts associated with temporary and/or permanent disruptions to local wildlife movement, most notably impacts that pertain to desert bighorn sheep.

All the proposed MMs—and specifically the following summarized MMs—would reduce cumulative impacts to common species, prey species, pollinators, special-status wildlife, habitat for special-status wildlife, and sensitive vegetation communities to less than significant:

- **MM BIO-1: Best Management Practices**
- **MM BIO-2: Worker Environmental Awareness Program**
- **MM BIO-3: Special-Status Plant Species and Cacti Impact Avoidance and Minimization**
- **MM BIO-9: Desert Tortoise Protection**
- **MM BIO-10: Desert Tortoise Translocation Plan**
- **MM BIO-12: Desert Tortoise Compensatory Mitigation**
- **MM BIO-15: Avian Monitoring and Mitigation Program**
- **MM BIO-16: Avoid Disturbance to Nesting Birds**



- **MM BIO-18: Bird and Bat Conservation Strategy**
- **MM BIO-19: Burrowing Owl Protection Measures**
- **MM BIO-20: American Badger and Desert Kit Fox Protection**
- **MM BIO-21: Vegetation Best Management Practices**
- **MM BIO-22: Final Closure Plan**

The measures listed are intended to reduce project impacts—both permanent and temporary, direct and indirect—for all wildlife and vegetation, and special-status plant and wildlife species, including their habitats, to less than significant. These measures are also intended to reduce impacts to sensitive vegetation communities to less than significant. Thus, the implementation of the above-listed MMs would reduce the project’s cumulative impacts to common species, prey species, pollinators, special-status wildlife, habitat for special-status wildlife, and sensitive vegetation communities to less than significant.

### **5.3 Mitigation Measures**

For the purposes of this analysis, the APMs listed in Section 5.1 are considered part of the project. However, where other impacts are identified that are not addressed by these APMs, or where the APMs do not reduce impacts to less-than significant levels, the EIR identifies and recommends the additional MMs below to avoid and substantially lessen significant effects to the extent feasible.

- **MM BIO-1: Best Management Practices.** To reduce indirect impacts to special-status plants and wildlife that may occur in the study area, BMPs shall be implemented prior to and during construction to control dust pollution, prevent discharge of potentially harmful chemicals, and prevent changes in hydrology. BMPs may include the installation of erosion and sedimentation control devices, applying water to control dust, placing drip pans under equipment when not in use, refueling in designated areas, and containing concrete washout properly, among other practices.
- **MM BIO-2: Worker Environmental Awareness Program.** Prior to project initiation, the Designated Biologist shall develop and implement the WEAP (APM BIO-12), which will be available in English and Spanish. Wallet-sized cards summarizing the information shall be provided to all construction and operation and maintenance personnel. The WEAP shall include the following:
  1. An explanation of the sensitivity of the vegetation communities and special-status plant and wildlife species within and adjacent to work areas, and proper identification of these resources.
  2. Biology and status of the desert tortoise, golden eagle, burrowing owl, other nesting birds, kit fox, and American badger and measures to reduce potential effects on these species.
  3. Actions and reporting procedures to be used if desert tortoise, burrowing owl, other nesting birds, kit fox, or American badger are encountered.
  4. An explanation of the function of flagging that designates authorized work areas.
  5. Driving procedures and techniques to reduce mortality of wildlife on roads.

6. Discussion of the federal ESA and CESA, BGEPA, and MBTA and the consequences of non-compliance with these acts.
  7. The importance of avoiding the introduction of invasive weeds onto the project area and surrounding areas.
  8. A discussion of general safety protocols such as hazardous substance spill prevention and containment measures and fire prevention and protection measures.
  9. A review of mitigation requirements that are applicable to their work.
- **MM BIO-3: Special-Status Plant Species and Cacti Impact Avoidance and Minimization.**

This measure will provide guidance on how project personnel can avoid unintended impacts to special-status plants on the project area (e.g., Utah vine milkweed) and provide for the salvage of protected cacti prior to construction. This measure includes the following requirements:

    - The applicant shall establish Environmentally Sensitive Areas around Utah vine milkweed that has been identified on the project area and/or may be identified in project disturbance areas during site preparation. A minimum 100-foot exclusion area shall be established around the plants, which shall be clearly identified and maintained throughout construction to ensure that avoided plants are not inadvertently harmed. ESAs shall be clearly delineated in the field with temporary construction fencing and signs prohibiting movement of the fencing or sediment controls under penalty of work stoppages or compensatory mitigation.
    - *Worker Environmental Awareness Program.* The WEAP (APM BIO-12; MM BIO-2) shall include training components specific to protection of special-status plants that occur on the project area.
    - *Herbicide and Soil Stabilizer Drift Control Measures.* Special-status plant occurrences within 100 feet of the project disturbance area, including Utah vine milkweed, shall be protected from herbicide and soil stabilizer drift. The IWMP includes measures to avoid chemical drift or residual toxicity to special-status plants consistent with guidelines such as those provided by the Nature Conservancy's Global Invasive Species Team (Hillmer and Liedtke 2003), the U.S. Environmental Protection Agency, and the Pesticide Action Network Database.
    - *Erosion and Sediment Control Measures.* Erosion and sediment control measures shall not inadvertently impact special-status plants (e.g., by using invasive or non-Mojave Desert native plants in seed mixtures, introducing pest plants through contaminated seed or straw, etc.). These measures shall be incorporated in the Comprehensive Drainage, Stormwater, and Sedimentation Control Plan.
    - *Preconstruction Vegetation Salvage.* The applicant shall provide a draft Vegetation Resources Management Plan detailing the methods for the salvage and transplantation of target succulent species covered under the CDNPA. The plan shall be submitted to CDFW for review and approval at least 30 days prior to the start of ground-disturbing activities and shall include, at a minimum, the following elements:
      - a. **Soil baseline characterization.** The characterization shall be presented to CDFW prior to ground disturbance and shall include:
        - i. Profile description of three representative pedons. (A pedon is the smallest three-dimensional sampling unit displaying the full range of characteristics of a particular soil and typically occupies an area ranging

from about 1 to 10 square yards.)

- ii. Characterization of surface application (desert pavement or biological soil crust present). Description of biological soil crust shall include major groups of organisms identified at the site (filamentous cyanobacteria, other cyanobacteria, mosses, lichens, liverworts) and the characteristics by which they were identified (see item b, below).
  - iii. Documentation of soil macro-invertebrates (that is, presence of ants, termites, and other significant macro-invertebrates).
- Bulk density, along with a reference to a generally accepted method for making the determination.
  - Fertility (nutrient status, electrical conductivity, sodium adsorption ratio), along with methods by which composite samples were collected and the laboratory methods used to determine these properties. Composite samples will contain equal contributions from at least six randomly located collection points within the soil donor area.
  - Organic matter content and total carbon and nitrogen content, along with a reference to generally accepted methods for making the determinations.

- a. Soil compaction shall be determined by measurement of bulk density in grams per cubic centimeter (or numerically equivalent units). Bulk density may be determined by any of several standard measurements, but the method used must be referenced to a widely accepted soil methodology publication. In no case shall soil be compacted to a bulk density that exceeds 1.6 grams per cubic centimeter except where no planting is to take place. Penetrometer measurements are not a substitute for bulk density measurements.

Once characterized, the top 3 inches of topsoil shall be salvaged from the areas where traditional grading will be used per the following protocol, and stored within the project area. The upper 0.25 inch may be collected separately to preserve biological crust organisms. Topsoil may not be distinguishable from subsoils by color or organic content at the time of salvage but is characterized as the layer that contains fine roots during the active growing season. Soil shall be collected, transported, and formed into stockpiles only while the soil is dry. The vegetation in place at or immediately before topsoil collection shall be healthy native vegetation with less than 15% absolute cover of exotic weed growth. Soil occupied by vegetation of high plant diversity shall be given priority over soil occupied by low-diversity native vegetation. Soil may be collected with a front loader, bulldozer, or scraper and transported to storage areas by front loader, dump truck, or scraper. The equipment transporting the soil may not travel across the stockpile more than the minimum number of times required to build the soil to its intended depth. The depth of the stockpiles shall not exceed 4 feet in the case of sandy loam or loamy sand soils. Topsoil stockpiles shall be kept dry and covered if no vegetation is introduced. If native vegetation is grown on the stockpiles to increase seeds and soil organisms, no cover is required. Artificial watering may be provided at the applicant's option.

Stockpiled topsoil shall be used to grow native plant species for the purpose of producing native seeds and building beneficial microorganisms in the soil volume. All native plant species encountered in the vegetation surveys shall be included in the growing rotation on the stockpiles. Most growing space needs to be dedicated to the species for which the most seeds shall be required. At least

half by area of the growing area during each growing cycle shall be dedicated to plant species known to be good mycorrhizal host plants. Members of the families Chenopodiaceae and Amaranthaceae should be limited to less than half the area of the soil stockpiles, with the other half occupied by known mycorrhizal host plant species.

- b. **Biological Soil Crust Characterization and Preservation.** Biological soil crust is defined here as a mixture of organisms that occupy and protect the surface of the soil in most desert ecosystems. The organisms often include filamentous and non-filamentous cyanobacteria, mosses, lichens, liverworts, and fungi. Biological soil crust shall be preserved by collecting the upper 0.25 inch of topsoil from areas to be graded. The applicant and/or its contractor(s) shall collect from specific areas known to contain biological crust organisms or collect upper soil from the entire area to be graded. Collections shall emphasize filamentous cyanobacteria, but other cyanobacteria, mosses, lichens, and liverworts are also considered valuable contributors to biological soil crust and important in protecting against erosion and reducing weed invasion, and shall be collected as a secondary priority. Soil surface crust shall be air dried and stored dry in a shaded location in containers that allow air movement, such as loose-weave fabric bags. In no case may the stored crust be subject to wetting or direct sunlight during storage. All containers shall be clearly labeled with date and location of original collection; name and contact information of persons responsible for identifying suitable material to collect; and the persons who collected, stored, and maintained collections. Biological soil crust shall be re-applied at the time of replanting by crumbling the stored material and broadcasting it on the surface of the soil. Approximately 10% of the stored material shall be broadcast on topsoil storage areas among plants being grown for seed and soil microorganisms. When the growing cycle progresses to new planting, the soil supporting biological crust shall be collected and stored by the same methods prescribed for collections from the original soil, in clearly labeled bags or other suitable containers.
- c. **Succulent Transplant.** The majority of the succulent plants located in areas to be dragged, rolled, or spot graded, or above mowing height, shall be salvaged and transplanted into a nursery area. The Succulent Transplant portion of the Vegetation Resources Management Plan shall include, at a minimum:
- i. The location of target plants on the project area;
  - ii. Criteria for determining which individual plants are appropriate for salvage;
  - iii. The proposed methods for salvage, propagation, transport, and planting;
  - iv. Procedures for identifying target species during preconstruction clearance surveys;
  - v. Considerations for storing salvaged plants or pre-planting requirements; and
  - vi. Suggested transplantation sites.

Succulents to be transplanted into the nursery area shall be placed in their same compass orientation as they were in their original location. The salvaged plants also shall be kept in long-term soil stockpiles, along with natives grown on the stockpiles, to keep the soil biota fresh.

Succulent transplants done during preparation of the project area shall be fully documented and serve as trials of methods to be used during plant salvage on the project area. Records shall be maintained for each transplanted specimen including species; height; number of branches or pads as appropriate; donor location by UTM coordinates; methods used to remove, transport, and store the plant; period of temporary storage; location; facility description; planting medium used for storage; and frequency of watering during storage. Records shall be kept at the time of planting at the storage area, and quarterly thereafter during storage until such time as each plant is placed in the field or dies. Transplanted individuals shall be maintained for 3 years, including removal of invasive species and irrigation (if necessary), as well as monitored for 3 years to determine the percentage of surviving plants each year and to adjust maintenance activities using an adaptive management approach.

- d. **Seed Collection.** Seed collection shall be carried out within the ROW grant area and within 10 miles of the boundaries of the project area on similar terrain, soil, exposure, slope and elevation to the project area. Seed collection guidelines shall conform to all laws and regulations in effect at the time of collection. Seed collection shall include all plant species known to be removed from the facility. If insufficient seeds are provided by “seed farming” and collection within 10 miles of the site, CDFW may approve collection from a greater distance provided other environmental factors at the collection site are good matches to the project area. Collected seed may be used to seed salvaged topsoil piles during the construction phase and after decommissioning related to restoring the project area.
  - e. If the palo verde trees on-site meet the CDFW size criterion for replacement (i.e., at least one stem greater than 2 inches in diameter) and cannot be salvaged based on the professional opinion of a qualified biologist/horticulturalist, three replacement plants shall be planted in or near the project area for each affected tree and monitored following the above guidance.
- **MM BIO-4: Biological Monitoring.** Biological Monitor(s) shall be employed to assist the Designated Biologist in conducting preconstruction surveys and monitoring ground disturbance, grading, construction, decommissioning, and restoration activities. Additionally, biological monitoring shall be performed during any ground disturbance or grading activities that occur during operation and maintenance. The Biological Monitor(s) shall have sufficient education and field experience to understand resident wildlife species biology; have experience conducting desert tortoise, burrowing owl, kit fox, and badger field monitoring; and be able to identify these species and their sign (including active burrows). The Designated Biologist shall submit a resume, at least three references, and contact information for each prospective Biological Monitor to CDFW and USFWS for approval. To avoid and minimize effects on biological resources, the Biological Monitor(s) shall assist the Designated Biologist with the following:
    1. Be present during construction activities that take place in suitable habitat for desert tortoise, burrowing owl, kit fox, badger, or other protected species to prevent or minimize harm or injury to these species.
    2. Activities of the Biological Monitor(s) include, but are not limited to, ensuring compliance with all avoidance and minimization measures; monitoring for desert tortoise, burrowing owl, kit fox, badger, and other protected species; halting construction activity in the area if an individual is found; and checking the staking/flagging of all disturbance areas to be sure that they are intact and that all construction activities are being kept within the staked/flagged limits. If a desert tortoise, burrowing owl, kit fox, badger, or other

protected species is found within a work area, the Biological Monitor(s) shall immediately notify the Designated Biologist, who shall determine measures to be taken to ensure that the individual is not harmed.

3. Inspect the study area for any special-status wildlife species.
  4. Ensure that potential habitats within the construction zone are not occupied by special-status species (e.g., potential burrows or nests are inspected).
  5. In the event of the discovery of a non-listed, special-status ground-dwelling animal, recover and relocate the animal to adjacent suitable habitat at least 200 feet from the limits of construction activities.
  6. At the end of each work day, inspect all potential wildlife pitfalls (e.g., trenches, bores, other excavations) for wildlife and remove wildlife as necessary. If the potential pitfalls will not be immediately backfilled following inspection, the Biological Monitor(s) will ensure that the construction crew slopes the ends of the excavation (3:1 slope), provides wildlife escape ramps, or completely and securely covers the excavation to prevent wildlife entry.
  7. Inspect the site to ensure trash and food-related waste is placed in closed-lid containers and that workers do not feed wildlife. Also inspect the work area each day to ensure that no microtrash (e.g., bolts, screws, etc.) is left behind.
- **MM BIO-5: Designated Biologist.** The applicant shall assign at least one Designated Biologist to the project. The applicant shall submit the resume of the proposed Designated Biologist(s), with at least three references and contact information, to the BLM Authorized Officer for approval in consultation with CDFW and USFWS.

The Designated Biologist must meet the following minimum qualifications:

1. Have a bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. Have 3 years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society;
3. Have at least 1 year of field experience with biological resources found in or near the study area;
4. Meet the current USFWS Authorized Biologist qualifications criteria, demonstrate familiarity with protocols and guidelines for the desert tortoise, and be approved by the USFWS;
5. Possess a CESA Memorandum of Understanding pursuant to Section 2081(a) for desert tortoise.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the BLM Authorized Officer, in consultation with CDFW and USFWS, that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the MMs.

- **MM BIO-6: Fence Design and Site Permeability.** Permanent site fencing installed around the project should be designed to allow for the passage of wildlife, to the extent feasible given the need for the fencing to prevent ingress by desert tortoise. Depending on the fencing material, the fence line should have gaps of approximately 4 to 6 inches accessible to wildlife other than desert



tortoise and the fencing material should be knuckled back to create a smooth edge. Alternate designs may also be constructed with prior written approval from CDFW and USFWS.

- **MM-BIO-7: Compliance Monitoring by the Designated Biologist.** Prior to ground-disturbing activities, an individual shall be designated and approved by CDFW as a Designated Biologist (i.e., field contact representative). Designated Biologist qualifications are presented below.

The Designated Biologist shall be employed for the period during which ongoing construction and postconstruction monitoring and reporting by an approved biologist is required. Each successive Designated Biologist shall be approved by CDFW. The Designated Biologist shall have the authority to ensure compliance with all measures set forth in the BO and CESA Section 2081 take authorization and with all MMs included herein, and shall be the primary agency contact for the implementation of these measures. The Designated Biologist shall have the authority and responsibility to halt any project activities that are in violation of the terms of the BO, Section 2081 take authorization, or project MMs. A list of responsibilities of the Designated Biologist is summarized below.

To avoid and minimize effects to biological resources, the Designated Biologist shall:

1. Notify CDFW and USFWS at least 14 calendar days before initiation of ground-disturbing activities.
  2. Immediately notify the CDFW in writing if the applicant/owner does not comply with any of the MMs or terms of the BO and/or the Section 2081 take authorization including, but not limited to, any actual or anticipated failure to implement such measures within the periods specified.
  3. Ensure performance of daily compliance inspections during ongoing construction as clearing, grubbing, and grading are completed, and submit a monthly compliance report to CDFW until construction is complete.
- **MM BIO-8: Speed Limits.** Speed limits along all access roads outside of permanent desert tortoise fencing shall not exceed 15 mph to minimize dust during construction activities. Speed limits within permanent desert tortoise fencing shall not exceed 25 mph to minimize impacts during operation and maintenance. Nighttime vehicle traffic associated with project activities shall be kept to a minimum volume and speed (maximum of 15 mph) to prevent mortality of nocturnal wildlife species.
  - **MM BIO-9: Desert Tortoise Protection.** The applicant/owner shall undertake appropriate measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to desert tortoise. Methods for clearance surveys, fence specification and installation, tortoise handling, artificial burrow construction, egg handling, and other procedures shall be consistent with those described in the USFWS's *Desert Tortoise (Mojave Population) Field Manual* (USFWS 2009) or more current guidance provided by CDFW and USFWS. The applicant/owner shall also implement all terms and conditions described in the BO to be prepared by USFWS and CESA ITP. These measures include, but are not limited to, the following, subject to modification by the terms of incidental take authorizations issued by the USFWS and CDFW:
    1. ***Desert Tortoise Fencing along I-15.*** If required by CDFW, to avoid increases in vehicle-related mortality from disruption of local movement patterns along the existing ephemeral wash systems, desert tortoise-proof fencing shall be installed along the existing freeway ROW fencing on both sides of I-15 for the entire east-west dimension of the project area. The tortoise fencing shall be designed to direct tortoises to existing

undercrossing to provide safe passage under the freeway and shall be regularly inspected and maintained for the life of the project.

2. ***Desert Tortoise Exclusion Fence Installation.*** To avoid impacts to desert tortoise, permanent desert tortoise exclusion fencing shall be installed along the permanent perimeter security fence and temporarily installed along road corridors during construction. The proposed alignments for the permanent perimeter fence and temporary fencing shall be flagged and surveyed within 24 hours prior to the initiation of fence construction. Clearance surveys of the perimeter fence and temporary fencing areas shall be conducted by the Designated Biologist(s) using techniques outlined in the USFWS's *Desert Tortoise (Mojave Population) Field Manual* and may be conducted in any season with USFWS and CDFW approval. Biological Monitors may assist the Designated Biologist under his or her supervision. These fence clearance surveys shall provide 100% coverage of all areas to be disturbed and an additional transect along both sides of the fence line covering an area approximately 90 feet wide centered on the fence alignment. Transects shall be no greater than 15 feet apart. All desert tortoise burrows and burrows constructed by other species that might be used by desert tortoise shall be examined to assess occupancy of each burrow by desert tortoise and handled in accordance with the USFWS's *Desert Tortoise Field Manual*. Any desert tortoise located during fence clearance surveys shall be handled by the Designated Biologist in accordance with the USFWS's 2009 *Desert Tortoise (Mojave Population) Field Manual* (USFWS 2009).
  - a. *Timing, Supervision of Fence Installation.* The exclusion fencing shall be installed prior to the onset of site clearing and grubbing. The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors to ensure the safety of any tortoise present.
  - b. *Fence Material and Installation.* The permanent tortoise exclusionary fencing shall be constructed in accordance with the USFWS's *Desert Tortoise (Mojave Population) Field Manual* (Chapter 8 – Desert Tortoise Exclusion Fence) (USFWS 2009).
  - c. *Security Gates.* Security gates shall be designed with minimal ground clearance to deter ingress by tortoises. The gates may be electronically activated to open and close immediately after the vehicle(s) have entered or exited to prevent the gates from being kept open for long periods of time. Cattle grating designed to safely exclude desert tortoise shall be installed at the gated entries to discourage tortoises from gaining entry.
  - d. *Fence Inspections.* Following installation of the desert tortoise exclusion fencing for both the permanent site fencing and temporary fencing, the fencing shall be regularly inspected. If tortoises were moved out of harm's way during fence construction, permanent and temporary fencing shall be inspected at least two times per day for the first 7 days to ensure a recently moved tortoise has not been trapped within the fence. Thereafter, permanent fencing shall be inspected monthly and during or within 24 hours following all major rainfall events. Exceptions to inspections during major rainfall events may be made as needed to maintain crew safety. A major rainfall event is defined as one for which flow is detectable within the fenced drainage. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within 48 hours of observing damage.

Inspections of permanent site fencing shall occur for the life of the project. Temporary fencing shall be inspected weekly and, where drainages intersect the fencing, during and within 24 hours following major rainfall events. All damaged temporary fencing shall be repaired immediately upon discovery and, if the fence may have permitted tortoise entry while damaged, the Designated Biologist shall inspect the area for tortoise.

3. ***Desert Tortoise Clearance Surveys within Solar Arrays and Gen-tie.*** Clearance surveys shall be conducted in accordance with the USFWS *Desert Tortoise (Mojave Population) Field Manual* (USFWS 2009) (Chapter 6 – Clearance Survey Protocol for the Desert Tortoise – Mojave Population) and shall consist of two surveys covering 100% of the study area by walking transects no more than 15 feet apart. If a desert tortoise is located during the second survey, a third survey shall be conducted. Each separate survey shall be walked in a different direction to allow opposing angles of observation. Clearance surveys of the project area may only be conducted when tortoises are most active (April–May or September–October) unless the project receives approval from CDFW and USFWS. Clearance surveys of linear features may be conducted during any time of the year. Any tortoise located during clearance surveys of solar arrays shall be translocated or relocated and monitored in accordance with the DTTP (MM 3.4-2b). The Designated Biologist, who may be assisted by the Biological Monitors, shall assess occupancy of each burrow by desert tortoise in accordance with the USFWS *Desert Tortoise (Mojave Population) Field Manual* (USFWS 2009). All potential desert tortoise burrows located during clearance surveys shall be excavated by hand, tortoises removed, and burrows collapsed or blocked to prevent occupation by desert tortoise in accordance with the DTTP.
  4. ***Monitoring Following Clearing.*** Following the desert tortoise clearance and removal from the project area, workers and heavy equipment shall be allowed to enter the project area to perform clearing, grubbing, leveling, and trenching activities. A Designated Biologist or Biological Monitor shall be on-site for clearing and grading activities to move tortoises missed during the initial tortoise clearance survey. Should a tortoise be discovered, it shall be relocated or translocated as described in the DTTP.
  5. ***Reporting.*** The Designated Biologist shall record the following information for any desert tortoise handled: a) the locations (narrative and maps) and dates of observation; b) general condition and health, including injuries, state of healing and whether desert tortoise voided their bladders; c) location moved from and location moved to (using GPS); d) gender, carapace length, and diagnostic markings (i.e., identification numbers or marked lateral scutes); e) ambient temperature when handled and released; and f) digital photograph of each handled tortoise. Desert tortoise moved from within the project area shall be marked and monitored in accordance with the DTTP. All collected data related to tortoise relocation shall be provided to CDFW and USFWS.
- **MM BIO-10: Desert Tortoise Translocation Plan.** The applicant/owner shall develop and implement a USFWS- and CDFW-approved DTTP. The DTTP, which shall be approved prior to any ground disturbance or tortoise relocation, shall include measures to minimize the potential for repeated translocations of individual desert tortoise. The goals of the DTTP shall be to relocate all desert tortoise from the project area to nearby suitable habitat; minimize impacts on resident desert tortoise outside the project area; minimize stress, disturbance, and injuries to relocated/translocated tortoises; and assess the success of the translocation effort through monitoring. The DTTP shall follow the *Translocation of Mojave Desert Tortoises from Project Sites: Plan Development Guidance* (USFWS 2011b) and shall clearly define how it addresses the

11 steps outlined in the guidance. The final DTTP shall be based on the draft DTTP prepared by the applicant/owner and shall include all revisions deemed necessary by CDFW and USFWS. The final plan will be subject to modification for consistency with the CESA ITP, USFWS take authorization and/or BO conservation requirements.

- **MM BIO-11: Desert Tortoise Compliance Verification.** The applicant/owner shall provide CDFW and USFWS staff with unfettered access to the project area and compensation lands under the control of the project owner and shall otherwise fully cooperate with the CDFW's efforts to verify the project owner's compliance with, or the effectiveness of, adopted MMs. The Designated Biologist shall do all of the following:
  1. **Notification.** Notify CDFW at least 14 calendar days before initiating construction-related ground disturbance activities; immediately notify CDFW in writing if the project owner is not in compliance with any conditions of certification, including but not limited to any actual or anticipated failure to implement MMs within the time periods specified in the conditions of certification;
  2. **Monitoring During Grubbing and Grading.** Remain on-site daily while vegetation salvage, grubbing, grading, and other ground-disturbing construction activities are taking place to avoid or minimize take of listed species, and verify personally or have Biological Monitor(s) verify compliance with all impact avoidance and minimization measures, including checking all exclusion zones to ensure that signs, stakes, and fencing are intact and that human activities are restricted in these protective zones.
  3. **Monthly Compliance Inspections.** Conduct compliance inspections at a minimum of once per month after clearing, grubbing, and grading are completed and submit a monthly compliance report to CDFW and USFWS during construction.
  4. **Notification of Injured or Dead Listed Species.** If an injured or dead federally or state-listed species is detected on or near the project area CDFW and USFWS shall be notified immediately by phone. Notification shall occur no later than noon on the business day following the event if it occurs outside normal business hours so that the agencies can determine whether further actions are required to protect listed species. Written follow-up notification via facsimile or electronic communication shall be submitted to these agencies within 2 calendar days of the incident and include the following information as relevant:
    - a. **Injured Desert Tortoise.** If a desert tortoise is injured as a result of project-related activities during construction, the Designated Biologist or Biological Monitor(s) shall immediately take it to a CDFW-approved wildlife rehabilitation and/or veterinarian clinic. Any veterinarian bills for such injured animals shall be paid by the applicant/owner. Following phone notification as required above, CDFW and USFWS shall determine the final disposition of the injured animal, if it recovers. Written notification shall include, at a minimum, the date, time, location, and circumstances of the incident and the name of the facility where the animal was taken.
    - b. **Desert Tortoise Fatality.** If a desert tortoise is killed by project-related activities during construction, operation and maintenance, or decommissioning, a written report with the same information as an injury report shall be submitted CDFW and USFWS. These desert tortoises shall be salvaged according to federally established guidelines. The applicant/owner shall pay to have the desert tortoises transported and necropsied. The report

shall include the date and time of the finding or incident.

5. **Final Listed Species Mitigation Report.** The Designated Biologist shall provide CDFW a Final Listed Species Mitigation Report that includes, at a minimum, 1) all available information about project-related incidental take of listed species; 2) information about other project impacts to the listed species; 3) construction dates; 4) an assessment of the effectiveness of conditions of certification in minimizing and compensating for project impacts; 5) recommendations on how MMs might be changed to more effectively minimize and mitigate the impacts of future projects on the listed species; and 6) any other pertinent information, including the level of take of the listed species associated with the project.
  6. **Stop Work Order.** CDFW may issue the project owner a written stop work order to suspend any activity related to the construction or operation of the project to prevent or remedy a violation of one or more conditions of certification (including but not limited to failure to comply with reporting, monitoring, or habitat acquisition obligations) or to prevent the illegal take of an endangered, threatened, or protected species. The project owner shall comply with the stop work order immediately upon receipt thereof.
- **MM BIO-12: Desert Tortoise Compensatory Mitigation:** To fully mitigate for habitat loss and potential take of desert tortoise, the project owner shall provide compensatory mitigation consistent with federal requirements, adjusted to reflect the final project footprint. The acreage for mitigation of desert tortoise habitat will be at a 1:1 ratio. For the purposes of this condition, the project footprint means all lands disturbed in the construction and operation of the project, including all project linears, as well as undeveloped areas inside the project's boundaries that will no longer provide viable long-term habitat for the desert tortoise. To satisfy this condition, the project owner shall acquire, protect, and transfer 1 acre of desert tortoise habitat for every acre of habitat within the final project footprint, and provide associated funding for the acquired lands, as specified below. In lieu of acquiring land itself, the project owner may satisfy the requirements of this condition by depositing funds into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF), as provided below in Section 3.i. of this measure.

If compensation lands are acquired in fee title or in easement, the requirements for acquisition, initial improvement, and long-term management of compensation lands include all of the following, subject to modification by the terms of incidental take authorizations issued by USFWS and CDFW:

1. **Selection Criteria for Compensation Lands.** The compensation lands selected for acquisition in fee title or in easement shall:
  - a. be within the Western Mojave Recovery Unit, or, with prior USFWS and CDFW approval, within the Eastern Mojave Recovery Unit as defined in the 2011 Revised Recovery Plan (USFWS 2011b), with potential to contribute to desert tortoise habitat connectivity and build linkages between desert tortoise designated critical habitat, known populations of desert tortoise, and/or other preserve lands;
  - b. provide habitat for desert tortoise with capacity to regenerate naturally when disturbances are removed;
  - c. be prioritized near larger blocks of land that are either already protected or planned for protection, such as Desert Wildlife Management Areas within the Western Mojave Recovery Unit (or nearby portions of the Eastern Mojave

- Recovery Unit with prior USFWS and CDFW approval) or which could feasibly be protected long term by a public resource agency or a non-governmental organization dedicated to habitat preservation;
- d. be connected to lands with desert tortoise habitat equal to or better quality than the project area, ideally with populations that are stable, recovering, or likely to recover;
  - e. not have a history of intensive recreational use or other disturbance that does not have the capacity to regenerate naturally when disturbances are removed or might make habitat recovery and restoration infeasible;
  - f. not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;
  - g. not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat; and
  - h. have water and mineral rights included as part of the acquisition, unless BLM and CDFW, in consultation with CDFW and USFWS, agree in writing to the acceptability of the land.
2. ***Review and Approval of Compensation Lands Prior to Acquisition.*** The project owner shall submit a formal acquisition proposal to BLM, CDFW, and USFWS describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for desert tortoise in relation to the criteria listed above. Approval from the BLM and CDFW in consultation with USFWS shall be required for acquisition of all compensatory mitigation parcels.
  3. ***Compensation Lands Acquisition Requirements.*** The project owner shall comply with the following requirements relating to acquisition of the compensation lands after BLM, in consultation with CDFW and USFWS, have approved the proposed compensation lands:
    - a. ***Preliminary Report.*** The project owner, or approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the BLM. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by BLM and CDFW, in consultation with USFWS. For conveyances to the State, approval may also be required from the California Department of General Services, the Fish and Game Commission, and the Wildlife Conservation Board.
    - b. ***Title/Conveyance.*** The project owner shall transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement as required by the BLM and CDFW. Transfer of either fee title or an approved conservation easement will usually be sufficient, but some situations, e.g., the donation of lands burdened by a conservation easement to BLM, will require that both types of transfers be completed. Any transfer of a conservation easement or fee title must be to CDFW, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or BLM under terms approved by the BLM. If an approved non-profit organization holds title to the compensation lands, a conservation



easement shall be recorded in favor of CDFW in a form approved by CDFW. If an approved non-profit holds a conservation easement, CDFW shall be named a third-party beneficiary.

- c. *Initial Habitat Improvement Fund.* The project owner shall fund the initial protection and habitat improvement of the compensation lands. Alternatively, a non-profit organization may hold the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code Section 65965) and if it meets the approval of CDFW and BLM. If CDFW takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFW or its designee.
- d. *Property Analysis Record.* Upon identification of the compensation lands, the project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate long-term maintenance and management fee to fund the in-perpetuity management of the acquired mitigation lands.
- e. *Long-term Maintenance and Management Fund.* The project owner shall deposit in NFWF's REAT Account a capital long-term maintenance and management fee in the amount determined through the PAR or PAR-like analysis conducted for the compensation lands. BLM, in consultation with CDFW, may designate another non-profit organization to hold the long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity. If CDFW takes fee title to the compensation lands, CDFW shall determine whether it will hold the long-term management fee in the special deposit fund, leave the money in the REAT Account, or designate another entity to manage the long-term maintenance and management fee for CDFW and with CDFW supervision.
- f. *Interest, Principal, and Pooling of Funds.* The project owner, BLM, and CDFW shall ensure that an agreement is in place with the long-term maintenance and management fee holder/manager to ensure the following conditions:
  - i. *Interest.* Interest generated from the initial capital long-term maintenance and management fee shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action approved by CDFW designed to protect or improve the habitat values of the compensation lands.
  - ii. *Withdrawal of Principal.* The long-term maintenance and management fee principal shall not be drawn upon unless such withdrawal is deemed necessary by CDFW or the approved third-party long-term maintenance and management fee manager to ensure the continued viability of the species on the compensation lands. If CDFW takes fee title to the compensation lands, monies received by CDFW pursuant to this provision shall be deposited in a special deposit fund established solely for the purpose to manage lands in perpetuity unless CDFW designates NFWF or another entity to manage the long-term maintenance and management fee for CDFW.
  - iii. *Pooling Long-Term Maintenance and Management Fee Funds.* CDFW,

- or a BLM- and CDFW-approved non-profit organization qualified to hold long-term maintenance and management fees solely for the purpose to manage lands in perpetuity, may pool the endowment with other endowments for the operation, management, and protection of the compensation lands for local populations of desert tortoise. However, for reporting purposes, the long-term maintenance and management fee fund must be tracked and reported individually to the CDFW.
- g. *Other expenses.* In addition to the costs listed above, the project owner shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to title and document review costs; expenses incurred from other state agency reviews; overhead related to providing compensation lands to CDFW or an approved third party; escrow fees or costs; environmental contaminants clearance; and other site cleanup measures.
- h. *Mitigation Security.* The project owner shall provide financial assurances to the BLM and CDFW with copies of the document(s) to the USFWS, to guarantee that an adequate level of funding is available to implement the MMs described in this condition. These funds shall be used solely for implementation of the measures associated with the project in the event the project owner fails to comply with the requirements specified in this condition, or shall be returned to the project owner upon successful compliance with the requirements in this condition. The BLM's or CDFW's use of the security to implement measures in this condition may not fully satisfy the project owner's obligations under this condition. Financial assurance can be provided to the BLM and CDFW in the form of an irrevocable letter of credit, a pledged savings account, or another form of security ("Security"). Prior to submitting the Security to the BLM, the project owner shall obtain the BLM's approval in consultation with CDFW and the USFWS of the form of the Security. The actual costs to comply with this condition will vary depending on the final footprint of the project and the actual costs of acquiring, improving, and managing the compensation lands.
- i. *NFWF REAT Account.* The project owner may elect to fund the acquisition and initial improvement of compensation lands through NFWF by depositing funds for that purpose into NFWF's REAT Account. Initial deposits for this purpose must be made in the same amounts as the security required above, and may be provided in lieu of security. If this option is used for the acquisition and initial improvement, the project owner shall make an additional deposit into the REAT Account if necessary to cover the actual acquisition costs and administrative costs and fees of the compensation land purchase once land is identified and the actual costs are known. If the actual costs for acquisition and administrative costs and fees are less than anticipated in the PAR analysis, the excess money deposited in the REAT Account shall be returned to the project owner. Money deposited for the initial protection and improvement of the compensation lands shall not be returned to the project owner.

The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the BLM and CDFW. Such delegation shall be subject to approval by the BLM and CDFW, in consultation with USFWS, prior to land acquisition, initial protection, or maintenance and management activities. Agreements to delegate land acquisition to an approved third party, or to manage compensation lands, shall be implemented with 18 months of BLM's approval.

- **MM BIO-13: Minimize Vehicle and Equipment Impacts during Operation and Maintenance.** The applicant/owner shall implement measures to minimize the potential for desert tortoise and other wildlife species mortality along access and maintenance roads. These measures shall include:
  1. Speed limits identified in MM BIO-8 shall continue to be applied during operation and maintenance.
  2. Pedestrian access outside the limits of the designated access/maintenance roads is permitted year-round as long as no ground-disturbing activities take place.
  3. Vehicle traffic and parking shall be confined to designated access roads, and equipment and materials staging areas shall be clearly defined to avoid impacting habitat during the operation phase.
- **MM BIO-14: Mojave Fringe-toed Lizard Protection Measures.** A qualified biologist will conduct a focused survey for Mojave fringe-toed lizard prior to ground disturbance in suitable habitat (aeolian sand deposits) within all active work areas. Two survey replicates will be performed during the Mojave fringe-toed lizard active season (March–October) during appropriate weather conditions. Qualified biologists will walk transects spaced 10m apart throughout areas with suitable habitat within the study area. Detections of Mojave fringe-toed lizard will be recorded using a GPS unit. If Mojave fringe-toed lizards are not detected, then no further action is needed. If Mojave fringe-toed lizards are found, then a pre-construction survey should be conducted no more than one week before ground disturbance begins, and any Mojave fringe-toed lizards should be moved to suitable habitat south of the Project area where the species was confirmed to be present.
- **MM BIO-15: Avian Monitoring and Mitigation Program.** An AMMP shall be initiated and approved by the BLM in consultation with CDFW and USFWS prior to construction and continue for at least 5 years following commercial operation (and longer if determined necessary and appropriate by the Designated Biologist). The AMMP shall prevent substantial adverse effects to special-status species through implementation of the approach outlined in the postconstruction monitoring and adaptive management provisions of Region 8 Interim Guidelines for the Development of a Project-specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities (USFWS 2010), in conjunction with any measures required after consultation with USFWS and/or CDFW under the ESA, CESA, or BGEPA, if applicable. The Program shall use surveys and monitoring of on-site avian and bat use and behavior to document species composition and changes in avian and bat use over time. The purpose of the AMMP is to provide an adaptive management and decision-making framework for reviewing, characterizing, and responding to avian and bat monitoring results, and reducing long-term impacts on these taxa. The AMMP shall include the following components:
  1. A description of the baseline and ongoing avian and bat survey methods, including identification of onsite survey locations and seasonal survey considerations, and a description of acoustic bat monitoring methods.

2. Avian and bat mortality and injury monitoring that includes:
  - a. Onsite monitoring of representative locations in the facility, at a level of effort that accounts for potential spatial bias and allows for the extrapolation of survey results to non-surveyed areas. The AMMP will provide a rationale justifying the proposed schedule of carcass searches.
  - b. Low-visibility and high-wind weather event monitoring to document potential weather-related collision risks that may be associated increased risk of avian or bat collisions with project features, including foggy, highly overcast, or rainy night-time weather typically associated with an advancing frontal system, and high wind events (40-mph winds) are sustained for period of greater than 4 hours. The monitoring report shall include survey frequency, locations, and methods.
  - c. Scavenger and searcher efficiency trials to document the extent to which avian or bat fatalities remain visible over time and can be detected, and to adjust the survey timing and survey results to reflect scavenger and searcher efficiency rates.
  - d. A description of statistical methods used to generate facility estimates of potential avian and bat impacts based on the number of detections during standardized searches during the monitoring season for which the cause of death can be determined.
  - e. Field detection and mortality or injury identification, cause attribution, handling and reporting requirements. The AMMP shall include detailed specifications on data collection and provide a carcass collection protocol.
3. All postconstruction mortality monitoring studies included in the AMMP shall be performed by a -third party contractor for 5 years following commercial operation and approval of the AMMP by the BLM. At the end of the 5-year period, the BLM shall determine whether the survey program shall be continued.
4. An adaptive management program shall be developed to identify and implement reasonable and feasible measures that would reduce levels of avian or bat mortality or injury attributable to project operations and facilities. Such measures could potentially include efforts to make panels more visible to birds (e.g., white borders around panel edges or the use of noise deterrents).

The adaptive management program shall include (i) reasonable measures for characterizing the extent and importance of detected mortality and injuries clearly attributable to the project; (ii) potential measures that the project owner could implement to adaptively respond to detected mortality and injuries attributable to the project. Adaptive actions undertaken will be discussed and evaluated in survey reports. Any impact reduction measures must be commensurate (in terms of factors that include geographic scope, costs, and scale of effort) with the level of avian or bat mortality or injury that is specifically and clearly attributable to the project facilities; and (iii) Appropriate performance standards for mitigation of impacts to any species regulated by BGEPA, ESA, and CESA as well as MMs that reduce or offset mortalities caused by the project to a level that avoids a substantial, long-term reduction in the demographic viability of the local population of the species in question.

- **MM BIO-16. Avoid Disturbance to Nesting Birds.** Vegetation clearing shall take place outside of the general avian breeding season (February 15–September 1), when feasible. If vegetation clearing cannot occur outside the avian breeding season, the Designated Biologist/Biological

Monitor(s) shall conduct a preconstruction survey for nesting birds no more than 3 days prior to vegetation clearing. If no active nests are found, clearing can proceed. If active nests are found, no clearing shall be allowed within 150 feet (for passerines) to 250 feet (for raptors) of the active nests until the Designated Biologist/Biological Monitor(s) determines the nest is no longer active or the nest fails. Based on observation of the individual birds' tolerance to human activity, this buffer may be reduced by a qualified biologist. Encroachment into the buffer may occur at the discretion of a qualified biologist.

The Designated Biologist/Biological Monitor(s) shall submit the results of the preconstruction nesting bird surveys to BLM, USFWS, and CDFW. Following agency coordination, the size of the next buffer may be adjusted based upon the magnitude of proposed activities and observed sensitivity of the bird to disturbance.

- **MM BIO-17: Lighting Specifications to Minimize Bird and Bat Impacts.** The applicant/owner shall minimize night lighting during construction by using shielded directional lighting that is pointed downward, thereby avoiding illumination to adjacent natural areas and the night sky.
- **MM BIO-18: Bird and Bat Conservation Strategy (BBCS).** The applicant/owner shall develop a BBCS to address project impacts to special-status avian and bat species that shall be consistent with the Region 8 *Interim Guidelines for the Development of a Project-specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities* (USFWS 2010). The applicant/owner shall submit the BBCS to the CDFW and USFWS for review and approval prior to initiation of project construction. The BBCS shall include an assessment of potential avian and bat impacts from lighting, noise, collision, electrocution, and attraction of ravens, as applicable; measures to mitigate for the effects to birds; a description of general avoidance and minimization measures applicable during construction, operation and maintenance, and postconstruction to include nest management and postconstruction monitoring; a description of the reporting requirements and reporting schedule and duration; and the adaptive management strategy. A raven management element shall be included in the BBCS or provided separately that includes measures such as storage of garbage in raven-proof containers and installation of anti-nesting devices on structures where raven nests could be built.
- **MM BIO-19: Burrowing Owl Protection Measures.** No more than 14 days prior to the start of ground disturbance, a preconstruction survey for burrowing owls in conformance with the CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW 2012) shall be completed within suitable habitat at every work area and within a 150-m buffer zone of each work area. Work areas will be resurveyed following periods of inactivity of 2 weeks or more. The applicant/owner shall submit the results of the preconstruction survey to BLM's Authorized Officer and CDFW. The applicant/owner shall also submit evidence of conformance with federal and state regulations regarding the protection of the burrowing owl by demonstrating compliance with the following:
  1. Unless otherwise authorized by BLM and CDFW, no disturbance shall occur within 160 feet (50 m) of occupied burrows during the non-breeding season (September 1–January 31) or within 650 feet (200 m) during the breeding season (February 1–August 31). Eviction outside the nesting season may be permitted pending evaluation of eviction plans (developed in accordance with CDFW protocol for burrowing owls) by CDFW and receipt of formal written approval from CDFW authorizing the eviction. A Burrowing Owl Mitigation and Monitoring Plan following the guidance in the CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFW 2012) shall be submitted to the BLM's Authorized Officer and CDFW for review and approval prior to passive relocation.
  2. In the event that an occupied burrow cannot be avoided, passive relocation of owls may

be implemented prior to construction activities only if a qualified biologist approved by BLM verifies through non-invasive methods that either the birds have not begun egg-laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Eviction outside the nesting season may be permitted pending evaluation of eviction plans (developed in accordance with BLM protocol for burrowing owls) by CDFW and receipt of formal written approval from BLM authorizing the eviction. A Burrowing Owl Mitigation and Monitoring Plan shall be submitted to the BLM, and CDFW for review and approval prior to passive relocation.

3. Occupied burrows shall not be disturbed during the nesting season (February 1–August 31). In the event that an occupied burrow absolutely cannot be avoided (e.g., due to physical or safety constraints), passive relocation of owls may be implemented prior to construction activities only if a qualified biologist approved by CDFW verifies through non-invasive methods that either the birds have not begun egg-laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival.
  4. Unless otherwise authorized by CDFW, a 650-foot buffer within which no activity will be permissible shall be maintained between project activities and nesting burrowing owls during the nesting season. This protected area shall remain in effect until August 31 or at CDFW’s discretion and, based on monitoring evidence, until the young owls are foraging independently.
  5. If accidental take (disturbance, injury, or death of owls) occurs, the Designated Biologist shall be notified immediately.
  6. Impacts to active burrowing owl territories shall be mitigated at a 1:1 ratio through a combination of off-site habitat compensation and/or off-site restoration of disturbed habitat capable of supporting this species. The acquisition of occupied habitat off-site shall be in an area where energy facilities would not pose a mortality risk. Acquisition of habitat shall be consistent with the CDFW’s *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). The preserved habitat shall be occupied by burrowing owl and shall be of superior or similar habitat quality to the impacted areas in terms of soil features, extent of disturbance, habitat structure, and dominant species composition, as determined by a qualified ornithologist. The site shall be approved by BLM and CDFW. Land shall be purchased and/or placed in a conservation easement in perpetuity and managed to maintain suitable habitat. The off-site area to be preserved can coincide with other off-site mitigation lands, with the approval of CDFW.
  7. The approved biologist shall remain on-site until all vegetation is cleared and, at a minimum, conduct site and fence inspections on a regular (monthly) schedule throughout construction to ensure that the project is in compliance with the MMs.
  8. Employees and contractors shall look under vehicles and equipment for the presence of wildlife prior to moving vehicles and equipment. If present, the animal shall be left to move on its own or until it is removed by the approved biologist. No listed species shall be handled without concurrence from USFWS and/or CDFW, as applicable.
- **MM BIO-20: American Badger and Desert Kit Fox Protection.** To avoid direct impacts to American badger and desert kit fox, preconstruction surveys shall be conducted for these species concurrently with the desert tortoise surveys. Surveys shall be conducted as described below:
    1. Biological Monitors shall perform preconstruction surveys for badger and kit fox dens in the project disturbance area, including a 20-foot swath beyond the disturbed area, utility corridors, and access roads. If dens are detected, each den shall be classified as inactive, potentially active, or definitely active.



2. Inactive dens that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse by badgers or kit fox.
  3. Potentially and definitely active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for 3 consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance.
  4. If no tracks are observed in the tracking medium or no photos of the target species are captured after 3 consecutive nights, the den shall be excavated and backfilled by hand.
  5. If tracks are observed, the den shall be progressively blocked with natural materials (rocks, dirt, sticks, and vegetation piled in front of the entrance) for the next three to five nights to discourage the badger or kit fox from continued use. After verification that the den is unoccupied it shall then be excavated and backfilled by hand to ensure that no badgers or kit fox are trapped in the den.
  6. If an active natal den is detected on the site, the BLM Authorized Officer and CDFW shall be contacted within 24 hours to determine the appropriate course of action to minimize the potential for harm or mortality. The course of action would depend on the age of the pups, location of the den on the site (e.g., is the den in a central area or in a perimeter location), status of the perimeter site fence (completed or not), and the pending construction activities proposed near the den. A 500-foot no-disturbance buffer shall be maintained around active natal dens.
  7. The following measures are required to reduce the likelihood of distemper transmission:
    - a. No pets shall be allowed on the site prior to or during construction, with the possible exception of kit fox scat detection dogs during preconstruction surveys, and then only with prior CDFW approval;
    - b. Any kit fox hazing activities that include the use of animal repellents such as coyote urine must be cleared through CDFW prior to use; and
    - c. Any documented kit fox mortality shall be reported to CDFW and the BLM Authorized Officer within 24 hours of identification. If a dead kit fox is observed, it shall be retained and protected from scavengers until CDFW determines whether the collection of necropsy samples is justified.
- **MM BIO-21: Vegetation Best Management Practices.** The applicant shall undertake the following measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to vegetation resources:
    1. Limit Area of Disturbance. The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities in consultation with the Designated Biologist. Spoils and topsoil shall be stockpiled in disturbed areas within the project area. Parking areas and staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat. All disturbances, project vehicles, and equipment shall be confined to the flagged areas.

2. Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around would do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.
3. Minimize Traffic Impacts. Vehicular traffic during project construction and operation shall be confined to existing routes of travel to and from the project area, and cross-country vehicle and equipment use outside designated work areas shall be prohibited.
4. Monitor During Construction. In areas that have not been fenced with desert tortoise exclusion fencing and cleared, a Designated Biologist shall be present at the construction site during all project construction activities that have potential to disturb soil, vegetation, and wildlife. The Designated Biologist or Biological Monitor shall review areas immediately ahead of equipment during brushing and grading activities.
5. Minimize Impacts of Staging Areas. Staging areas for construction on the project area shall be within the area that has been fenced with desert tortoise exclusion fencing. For construction activities outside of the solar project area, access roads, pulling sites, and storage and parking areas shall be designed, utilized, and maintained with the goal of avoiding or minimizing impacts to native plant communities and sensitive biological resources. Staging areas outside of the project area shall maintain a minimal disturbance footprint, avoid jurisdictional wetlands, and avoid disturbance to native plant communities whenever possible.
6. Avoid Use of Toxic Substances. Soil bonding and weighting agents used on unpaved surfaces (per MM 3.2-1) shall be non-toxic to plants and wildlife.
7. Implement Erosion Control Measures. All erosion control measures promoted by the Lahontan Regional Water Quality Control Board (RWQCB) in its Project Guidelines for Erosion Control (Board Order No R6T-2003-0-04 Attachment G) (Lahontan RWQCB 2003) shall be implemented for all phases of construction and operation where sediment run-off from exposed slopes threatens to enter “waters of the State.” Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into drainages. All disturbed soils and roads within the project area shall be stabilized to reduce erosion potential, both during and following construction. Areas of disturbed soils (access and staging areas) with slopes toward a drainage shall be stabilized to reduce erosion potential. To avoid impacts associated with generation of fugitive dust, surface application of water would be employed during construction and operation and maintenance activities.
8. Monitor Ground-Disturbing Activities Prior to Preconstruction Site Mobilization. If preconstruction site mobilization requires ground-disturbing activities such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife.
9. Revegetation of Temporarily Disturbed Areas. The applicant shall prepare and implement a Temporary Disturbance Revegetation Plan to restore all areas subject to temporary disturbance to pre-project grade and conditions. The plan shall be submitted to the BLM and CDFW for review and approval at least 30 days prior to the start of ground-

disturbing activities. Temporarily disturbed areas within the project area include, but are not limited to, all proposed locations for linear facilities, temporary access roads, berms, areas surrounding the drainage diffusers, construction work temporary lay-down areas not converted to part of the solar field, and construction equipment staging areas. The Temporary Disturbance Revegetation Plan shall include a description of topsoil salvage and seeding techniques and a monitoring and reporting plan, and plan to achieve the following performance standards by the end of monitoring year 2:

- a. At least 80% of the species observed within the temporarily disturbed areas shall be native species that naturally occur in desert scrub habitats; and
- b. Relative cover and density of plant species within the temporarily disturbed areas shall equal at least 60% relative to pre-disturbance conditions.

10. Integrated Weed Management Plan. This measure provides further detail and clarifies requirements for the applicant's draft IWMP. Prior to beginning construction on the project, the applicant shall prepare, circulate to BLM for comment and approval, and then implement an IWMP that meets the approval of BLM's Authorized Officer and conforms to the CDCA Plan to prevent the spread of existing invasive species and the introduction of new invasive species to the project area. The plan shall be consistent with BLM's *Record of Decision for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States* (BLM 2007) and the *2008-2012 National Invasive Species Management Plan* (National Invasive Species Council 2008). The IWMP shall include, at a minimum, specific management objectives and measures for each target invasive species, baseline conditions, weed risk assessment, measures (both preventative and containment/control) to prevent/limit the introduction and spread of invasive species, monitoring and surveying methods, and reporting requirements. The BLM-approved IWMP shall include:

- a. Preventative measures to prevent the spread of weeds into new habitats, such as equipment inspections, use of weed-free erosion control materials and soils, and a mandatory site training element that includes weed management;
- b. Weed containment and control measures such as the removal of invasive species primarily via mechanical means, with the use of herbicides restricted to BLM-policies and approved usage (e.g., BLM's Herbicide Use Standard Operating Procedures provided in Appendix B of the *Record of Decision for the Final Vegetation Treatments Using Herbicides Programmatic Environmental Impact Statement* (BLM 2007);
- c. Monitoring and reporting standards annually during construction and for 3 years following the completion of construction to describe trends in weed distribution and direct weed management measures, and;
- d. Reporting of monitoring and management efforts in annual reports and a final monitoring report completed at the end of 3 years of postconstruction monitoring. Copies of these reports will be provided to BLM for review and comment. BLM will use the results of these reports to determine whether any additional monitoring or control measures are necessary. Weed control will be ongoing on the project area for the life of the project, but plan success will be determined by BLM after the 3 years of operations monitoring through the reporting and review process. Success criteria will be defined as having no

more than a 10% increase in a weed species or in overall weed cover in any part of the project area.

- **MM BIO-22: Final Closure Plan.** At least 12 months prior to project closure, the applicant shall prepare a Final Closure Plan to restore the site's topography and hydrology to a relatively natural condition and to establish native vegetation communities within the project area. The Final Closure Plan shall include a cost estimate for implementing the proposed decommissioning and reclamation activities, and shall cover the estimated cost as though BLM were to contract with a third party to decommission the project and reclaim the project area. The plan shall be subject to review and revisions from the BLM Authorized Officer in consultation with USFWS and CDFW.

## 6 LITERATURE CITED

- Banks, P.B., and J.V. Bryant. 2007. Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Biology Letters* 3:611–613.
- Beatley, T. 1994. *Habitat Conservation Planning: Endangered Species and Urban Growth*. Austin, Texas: University of Texas Press.
- Bureau of Land Management (BLM). 2005. *Land Use Planning Handbook H-1601-1*. U. S. Department of the Interior, Bureau of Land Management.
- . 2014. California Threatened and Endangered Species List. Available at: [https://www.blm.gov/sites/blm.gov/files/documents/files/Programs\\_FishandWildlife\\_BLMCA%20Special%20Status%20Species.pdf](https://www.blm.gov/sites/blm.gov/files/documents/files/Programs_FishandWildlife_BLMCA%20Special%20Status%20Species.pdf). Accessed August 2023.
- . 2015. *Soda Mountain Solar Project Proposed Plan Amendment/Final Environmental Impact Statement/Environmental Impact Report*. CACA #049584. Publication Index #: BLM/CA/PL-2015/010+1793. U.S. Department of the Interior. Barstow Field Office. Barstow, California.
- . 2016a. Record of Decision. Soda Mountain Solar Project and Amendment to the California Desert Conservation Plan Area. Case File Number: CACA-049584. U.S. Department of Interior. Bureau of Land Management. Barstow Field Office. Barstow, California
- . 2016b. *Soda Mountain Solar Project Proposed Resource Management Plan Amendment (Barstow Field Office)/Final Environmental Impact Statement*. Available at: [https://www.blm.gov/sites/default/files/Soda\\_Mountain\\_Solar\\_RMPA\\_%28California%29\\_%28March\\_28%2C\\_2016%29.pdf](https://www.blm.gov/sites/default/files/Soda_Mountain_Solar_RMPA_%28California%29_%28March_28%2C_2016%29.pdf). Accessed June 2024.
- . 2016c. *Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment and Final Environmental Impact Statement*, Appendix Q, Baseline Biology Report. U.S. Bureau of Land Management in partnership with U.S. Fish and Wildlife Service, California Energy Commission, California Department of Fish and Wildlife.
- . 2016d. *Land Use Plan Amendment to the California Desert Conservation Plan, Bishop Resource Management Plan, and Bakersfield Resource Management Plan*. BLM/CA/PL-2016/03+1793+8321. September. Available at: [https://eplanning.blm.gov/public\\_projects/lup/66459/133474/163144/DRECP\\_BLM\\_LUPA.pdf](https://eplanning.blm.gov/public_projects/lup/66459/133474/163144/DRECP_BLM_LUPA.pdf). Accessed June 2024.
- . 2019. Designation of Sensitive Species. Instruction Memorandum No. CA-2020-006. December 16. Available at: <https://www.blm.gov/policy/ca-ib-2020-006>. Accessed June 2024.
- Calflora. 2024. Information on California plants for education, research and conservation. Berkeley, California: The Calflora Database. Available at: <https://www.calflora.org/>. Accessed June 2024.
- California Burrowing Owl Consortium. 1993. Burrowing owl survey protocol and mitigation guidelines. Available at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83842&inline>. Accessed September 2023.
- California Department of Transportation (Caltrans). 2018. *Log of Bridges on State Highways, District 8*. Available at: <https://dot.ca.gov/-/media/dot-media/programs/maintenance/documents/f0009155-logd08-a11y.pdf>. Accessed April 2023.

- . 2023. Caltrans, California Department of Fish and Wildlife and Brightline Agree to Build Wildlife Overcrossings for Rail Project. Available at: <https://dot.ca.gov/news-releases/news-release-2023-005>. Accessed June 2024.
- California Department of Fish and Wildlife (CDFW). 2012. *Staff Report on Burrowing Owl Mitigation*. California Department of Fish and Game, Sacramento, California.
- . 2014. Mojave Fringe-toed Lizard Range Map. California Department of Fish and Wildlife, California Interagency Wildlife Task Group. Available at: <https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range>. Accessed July 2023.
- . 2018. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities*. Sacramento, CA: California Department of Fish and Wildlife. Available at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline>. Accessed April 2023.
- . 2020. Evaluation of a Petition from the Center for Biological Diversity and the Mountain Lion Foundation to List the Southern California/Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lions as Threatened under the California Endangered Species Act. January 31.
- . 2023a. Vegetation Classification Reports and Maps. Biogeographic Data Branch. Available at: <https://wildlife.ca.gov/Data/VegCAMP/Reports-and-Maps>. Accessed January 2023.
- . 2023b. California Wildlife Habitat Relationships. Available at: <https://wildlife.ca.gov/Data/CWHR> Accessed April 2023.
- . 2023c. *Special Animals Including California Species of Special Concern*. Resource Management and Planning Division, Biogeographic Data Branch, California Department of Fish and Wildlife. Sacramento, California. Available at: <https://www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data>. Accessed January 2023.
- . 2023d. State and Federally Listed Endangered and Threatened Animals of California *Special Vascular Plants, Bryophytes, and Lichens List*. Resource Management and Planning Division, Biogeographic Data Branch, California Department of Fish and Wildlife. Sacramento, California.
- . 2023e. *Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species*. Available at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=213150&inline>. Accessed June 2023.
- . 2023f. Monitoring Efforts. Available at: <https://wildlife.ca.gov/Conservation/Mammals/Bighorn-Sheep/Desert/Monitoring-Efforts>. Accessed August 2023.
- . 2024a. Species of Special Concern. Available at: <https://wildlife.ca.gov/Conservation/SSC>. Accessed June 2024.
- . 2024b. California Natural Diversity Database (CNDDDB). Electronic database managed by the Natural Diversity Data Base, Wildlife Data and Habitat Analysis Branch, California Department of Fish and Wildlife. Sacramento, California. Available at: <https://www.wildlife.ca.gov/Data/CNDDDB/Maps-and-Data>. Accessed October 2022, September 2023, October 2023, and May 2024.

- California Fish and Game Commission. 2019. Notice of Receipt of Petition. Available at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=171207&inline> Accessed April 2024.
- . 2020. Notice of Findings. Mountain Lion (*Puma Concolor*). Available at: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=178623&inline> Accessed April 2024.
- California Legislative Information. 2023. SB-147 Fully protected species: California Endangered Species Act: authorized take. Available at: [https://leginfo.legislature.ca.gov/faces/billStatusClient.xhtml?bill\\_id=202320240SB147](https://leginfo.legislature.ca.gov/faces/billStatusClient.xhtml?bill_id=202320240SB147). Accessed June 2024.
- California National Plant Society (CNPS). 2023a. Rare Plant Inventory (online edition). California Native Plant Society. Sacramento, California. Available at: <http://www.rareplants.cnps.org/>. Accessed January 2023.
- . 2023b. *A Manual of California Vegetation Online*. California Native Plant Society. Sacramento, California. Available at: <https://vegetation.cnps.org/>. Accessed August 2023.
- California Wildlife Habitat Relationships System. 2000. Mohave Fringe-toed Lizard Life History Account. California Department of Fish and Wildlife, California Interagency Wildlife Task Group. Available at: <https://www.wildlife.ca.gov/Data/CWHR/Life-History-and-Range>. Accessed July 2023.
- Center for Biological Diversity and the Mountain Lion Foundation (CBD). 2019. A Petition to List the Southern California/Central Coast Evolutionarily Significant Unit (ESU) of Mountain Lions as Threatened under the California Endangered Species Act (CESA). Available at: <https://www.biologicaldiversity.org/species/mammals/California-mountain-lion/documents.html> Accessed April 2024.
- Collins, J. (ed.). 2016. *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 3rd ed. The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1.
- Conkling, T.J., H.B. Vander Zanden, T.D. Allison, J.E. Diffendorfer, T.V. Dietsch, A.E. Duerr, A.L. Fesnock, R.R. Hernandez, S.R. Loss, D.M. Nelson, P.M. Sanzenbacher, J.L. Yee, and T.E. Katzner. 2022. Vulnerability of avian populations to renewable energy production. *Royal Society Open Science* 9:211558.
- Conservation Biology Institute. 2023. DRECP gateway. Available at: <https://drecp.databasin.org/>. Accessed April 2023.
- Consortium of California Herbaria. 2023. Specimen data from CCH contributing herbaria. Available from Calflora: <https://www.calflora.org/>. Accessed August 2023.
- Cornell Lab of Ornithology. 2022. Birds of the World. Edited by S.M. Billerman, B.K. Keeney, P.G. Rodewald, and T.S. Schulenberg. Cornell Laboratory of Ornithology, Ithaca, NY, USA. Available at: <https://birdsoftheworld.org/bow/home>. Accessed December 2022.
- DeSante, D.F., E.D. Ruhlen, and R. Scalf. 2007. The distribution and relative abundance of burrowing owls in California during 1991–1993: Evidence for a declining population and thoughts on its conservation, in Proceedings of the California Burrowing Owl Symposium, November 2003 (J. H. Barclay, K. W. Hunting, J. L. Lincer, J. Linthicum, and T. A. Roberts, eds.), pp. 1–41. Bird Populations Monogr. 1. The Institute for Bird Populations and Albion Environmental, Inc.



- eBird. 2024. eBird home page. eBird, Ithaca, New York. Available at: <http://www.ebird.org>. Accessed June 2024.
- Egoscue, H.J. 1962. Ecology and life history of the kit fox in Tooele County, Utah. *Ecology* 43:481–497.
- ForestWatch. 2013. Crotch's Bumblebee. Los Padres ForestWatch, Inc. Santa Barbara, CA. Accessed August 2023.
- Gustafson, K. D., R. B. Gagne, T. W. Vickers, S. P. D. Riley, C. C. Wilmers, V. C. Bleich, and H. B. Ernest. 2018. Genetic source-sink dynamics among naturally structured and anthropogenically fragmented puma populations. *Conservation Genetics*. 20(2), 215–227.
- Hatfield, R., S. Jepsen, S.F. Jordan, M. Blackburn, and A. Code. 2018. Petition to List Four Species of Bumble Bees as Endangered Species under the California Endangered Species Act. Submitted by The Xerces Society for Invertebrate Conservation, Defenders of Wildlife, and Center for Food Safety.
- Hatfield, R., and S. Jepsen. 2021. A conservation conundrum: protecting bumble bees under the California Endangered Species Act. Submitted by The Xerces Society for Invertebrate Conservation, Defenders of Wildlife, and Center for Food Safety.
- H.T. Harvey & Associates. 2019. *Caltrans Bat Mitigation: A Guide to Developing Feasible and Effective Solutions*. California Department of Transportation.
- Horvath, G., G. Kriska, P. Malik, and B. Robertson. 2009. Polarized light pollution: a new kind of ecological photopollution. *Frontiers in Ecology and the Environment* 7:317–325.
- Jones, L.C., and R.E. Lovich. 2009. *Lizards of the American Southwest*. Tucson, Arizona.
- Kadaba, D. 2014. Ecology of the desert kit fox (*Vulpes macrotis arsipus*) in Chuckwalla Valley, California.
- Kagan, R.A., T.C. Viner, P.W. Trail, and E.O. Espinoza. 2014. *Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis*. Ashland, Oregon: National Fish and Wildlife Forensics Laboratory.
- Kosciuch, Karl, Daniel Riser-Espinoza, Michael Gerringe, and Wallace Erickson. 2020. A summary of bird mortality at photovoltaic utility scale solar facilities in the southwestern U.S. *PLoS ONE* 15(4): e0232034. Available at: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0232034>. Accessed October 2023.
- Kosciuch, K., D. Riser-Espinoza, C. Moqtaderi, and W. Erickson. 2021. Aquatic habitat bird occurrences at photovoltaic solar energy development in Southern California, USA. *Diversity* 13:524.
- Laughrin, L. 1970. San Joaquin kit fox: its distribution and abundance. California Department of Fish and Game, Sacramento. Wildlife Management Branch Administrative Report No. 70-2. 20 pp.
- Lenth, B., R. Knight, and M.E. Brennan. 2008. The effects of dogs on wildlife communities. *Natural Areas Journal* 28:218–227.

- Loeb, S.C., T.J. Rodhouse, L.E. Ellison, C.L. Lausen, J.D. Reichard, K.M. Irvine, T.E. Ingersoll, J.T.H. Coleman, W.E. Thogmartin, J.R. Sauer, C.M. Francis, M.L. Bayless, T.R. Stanley, and D.H. Johnson. 2015. *A Plan for the North American Bat Monitoring Program (NABat)*. Gen. Tech. Rep. SRS-208. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station.
- Longcore, Travis, Catherine Rich, Pierre Mineau, Beau MacDonald, Daniel G. Bert, Lauren M. Sullivan, Erin Mutrie, Signey A. Gauthreaux Jr., Michael L. Avery, Roberts L. Crawford, Albert M. Manville II, Emilie R. Travis, and David Drake. 2012. An Estimate of Avian Mortality at Communication Towers in the United States and Canada. *PLoS ONE* 7(4): e34025. doi:10.1371/journal.pone.0034025
- Loss, S.R., T. Will, S.S. Loss, and P.P. Marra. 2014. Bird-building collisions in the United States: Estimates of annual mortality and species vulnerability. *Condor* 116:8–23.
- Loss, S.R., T. Will, and P.P. Marra. 2014. Refining Estimates of Bird Collision and Electrocution Mortality at Power Lines in the United States. *PLoS ONE* 9(7): e101565. doi:10.1371/journal.pone.0101565.
- Messick, J.P., and M.G. Hornocker. 1981. Ecology of the badger in southwestern Idaho. *Wildlife Monographs* 76:1–51.
- Morrell, S. 1971. Life history of the San Joaquin kit fox. California Department of Fish and Game. Wildlife Management Branch, Sacramento. 25 pp.
- Nafis, G. 2023. California Herps: A Guide to the Amphibians and Reptiles of California. Available at: <http://www.californiaherps.com/>. Accessed August 2023.
- National Invasive Species Council. 2008. *2008-2012 National Invasive Species Management Plan*. Available at: [https://www.doi.gov/sites/doi.gov/files/uploads/2008-2012\\_national\\_invasive\\_species\\_management\\_plan.pdf](https://www.doi.gov/sites/doi.gov/files/uploads/2008-2012_national_invasive_species_management_plan.pdf). Accessed June 2024.
- National Park Service. 2002. Mojave National Preserve California, Animals. Available at: <https://www.nps.gov/moja/learn/nature/animals.htm>. Accessed June 2024.
- Natural Resources Conservation Service. 2024. Web Soil Survey. U.S. Department of Agriculture. Available at: <https://websoilsurvey.nrcs.usda.gov/app/>. Accessed April 2024.
- NatureServe. 2024. NatureServe home page. Available at: <https://www.natureserve.org/>. Accessed June 2024.
- Norris, K.S. 1958. The evolution and systematics of the iguanid genus *Uma* and its relation to the evolution of other North American desert reptiles. *Bulletin of the American Museum of Natural History* 114(3):251–317.
- Orloff, S., F. Hall, and L. Spiegel. 1986. Distribution and habitat requirements of the San Joaquin kit fox in the northern extreme of their range. *Transactions of the Western Section of the Wildlife Society* 22:60–70.

- Penrod, K., P. Beier, E. Garding, and C. Cabañero. 2012. *A Linkage Network for the California Deserts*. Produced for the Bureau of Land Management and The Wildlands Conservancy. Produced by Science and Collaboration for Connected Wildlands, Fair Oaks, CA and Northern Arizona University, Flagstaff, Arizona. Available at: <http://oak.ucc.nau.edu/pb1/>. Accessed August 2023.
- San Bernardino County. 2020. San Bernardino County Countywide Plan – Natural Resources. San Bernardino County, CA. Available at: <https://countywideplan.com/policy-plan/natural-resources/>. Accessed August 2023.
- Sheldon, J.W. 1992. *Wild Dogs: The Natural History of the Nondomestic Canidae*. San Diego: Academic Press.
- Spencer, W.D., P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian-Romsos, J. Stritholt, M. Parisi, and A. Pettler. 2010. California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California. Prepared for California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration.
- SWCA Environmental Consultants (SWCA). 2022. *Biological and Aquatic Resources Work Plan*. Pasadena, California: SWCA Environmental Consultants.
- Upton, J. 2014. Solar Farms Threaten Birds. *Scientific American*. August 27, 2014. Available at: <https://www.scientificamerican.com/article/solar-farms-threaten-birds>. Accessed October 2023
- U.S. Fish and Wildlife Service (USFWS). 2007. Coachella Valley Fringe-toed Lizard (*Uma inornata*) Survey Protocol. Available at: <https://www.fws.gov/sites/default/files/documents/survey-protocols-for-the-coachella-valley-fringe-toed-lizard.pdf#:~:text=Coachella%20Valley%20Fringe-toed%20Lizard%20%28Uma%20inornata%29%20Survey%20Protocol,separate%20days%20must%20be%20done%20by%20qualified%20biologists>. Accessed August 2023.
- . 2008. Environmental Assessment to Implement a Desert Tortoise Recovery Plan Task: Reduce Common Raven Predation on the Desert Tortoise. Ventura, California.
- . 2009. *Desert Tortoise (Mojave Population) Field Manual: (Gopherus agassizii)*. Region 8, Pacific Southwest Region, Sacramento, California.
- . 2010. Region 8 Interim Guidelines for the Development of a Project-specific Avian and Bat Protection Plan for Solar Energy Plants and Related Transmission Facilities.
- . 2011b. *Translocation of Mojave Desert Tortoises from Project Sites: Plan Development Guidance*.
- . 2011a. Notice of 12-month petition finding: Endangered and Threatened Wildlife and Plants: 12-Month Finding on a Petition to List the Amargosa River Population of the Mojave Fringe-Toed Lizard as an Endangered or Threatened Distinct Population Segment. *Federal Register* 76(192): 61321–61330.
- . 2013. Eagle Conservation Plan Guidance Module 1 – Land-based Wind Energy Version 2. U.S. Fish and Wildlife Service Division of Migratory Bird Management.

- . 2019a. *Preparing for Any Action that May Occur within the Range of the Mojave Desert Tortoise* (*Gopherus agassizii*). Available at: <https://ipac.ecosphere.fws.gov/location/X3274CQKMZEYBOBDWKNITOS454/documents/generated/6342.pdf>. Accessed August 2023.
- . 2019b. *Survey Protocols for the Rusty Patched Bumble bee* (*Bombus affinis*) Version 2.2. Available at: [https://www.fws.gov/sites/default/files/documents/Survey\\_Protocols\\_RPBB\\_12April2019.pdf](https://www.fws.gov/sites/default/files/documents/Survey_Protocols_RPBB_12April2019.pdf). Accessed August 2023.
- . 2023a. Information for Planning and Consultation (IPaC). Available at: <http://ecos.fws.gov/ipac/>. Accessed April 2023.
- . 2023b. USFWS Threatened & Endangered Species Active Critical Habitat Report. Available at: <https://ecos.fws.gov/ecp/report/table/critical-habitat.html>. Accessed April 2023.
- . 2023c. USFWS Environmental Conservation Online System. Available at: <https://www.sciencebase.gov/catalog/item/553a6eebe4b0a658d792c959#:~:text=The%20Environmental%20Conservation%20Online%20System%20%28ECOS%29%20is%20a,Wildlife%20Service%20%28Service%29%20and%20other%20government%20data%20sources>.
- . 2024. Golden eagle data near Soda Mountains. Email from Thomas Dietsch, USFWS, to Pauline Roberts, SWCA Environmental Consultants. February 21.
- U.S. Geological Survey (USGS). 2004. Precipitation History of the Mojave Desert Region, 1893-2001. Available at: <https://pubs.usgs.gov/fs/fs117-03/>. Accessed August 2023.
- Walston, L.J., Jr., K.E. Rollins, K.E. LaGory, K.P. Smith, S.A. Meyers. 2016. A preliminary assessment of avian mortality at utility-scale solar energy facilities in the United States. *Renewable Energy* 92 (2016): 405e414
- Weaver, D.C. 1981. Aeolian Sand Transport and Deposit Characteristics at Ten Sites in Coachella Valley, California. Part II in *The Effect of Blowsand Reduction on the Abundance of the Fringe-Toed Lizard (Uma inornata) in the Coachella Valley, California*. Prepared for the U.S. Army Corps of Engineers, Los Angeles District.
- Wilkerson, R.L., and R.B. Siegel. 2011. Distribution and abundance of western burrowing owls (*Athene cunicularia hypugaea*) in southeastern California. *The Southwestern Naturalist* 56:378–384.
- Williams, D.F. 1986. Mammalian species of special concern in California. California Department of Fish and Game, Sacramento. Admin. Rep. 86-1.
- Williams, P.H., R.W. Thorp, L.L. Richardson, and S.R. Colla. 2014. *The Bumble Bees of North America: An Identification Guide*. Princeton University Press, Princeton.
- Woodroffe, R. 1999. Managing disease threats to wild mammals. *Animal Conservation* 2:185–193.
- Yosef, R. 2020. Loggerhead Shrike (*Lanius ludovicianus*), version 1.0. In *Birds of the World* (A.F. Poole and F.B. Gill, eds). Cornell Lab of Ornithology, Ithaca, NY, USA. Available at: <https://birdsoftheworld.org/bow/species/logshr/cur/foodhabits>. Accessed July 2023.

Young, J.K., K.A. Olson, R.P. Reading, S. Amgalanbaatar, and J. Berger. 2011. Is wildlife going to the dogs? Impacts of feral and free-roaming dogs on wildlife populations. *BioScience* 61(2):125–132.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds). 1988–1990. California's Wildlife. Volumes I–III. California Department of Fish and Game, Sacramento, California.