Appendix E-2

Victory Pass Solar Project
Biological Resources Technical Report

BIOLOGICAL RESOURCES TECHNICAL REPORT
VICTORY PASS SOLAR PROJECT
RIVERSIDE COUNTY, CALIFORNIA

Prepared for:

Aspen Environmental Group
5020 Chesebro Rd. Suite 200
Agoura Hills, CA 91301

and

Clearway Energy
100 California Street,
Suite 400
San Francisco, CA 94111

Prepared by:

Ironwood Consulting

370 Alabama Street, Suite A
Redlands, CA 92373

Submitted: June 2021

Table of Contents

List of Acronyms

amsl	above mean sea level
ACEC	Area of Critical Environmental Concern
BRTR	Biological Resources Technical Report
BBCS	Bird and Bat Conservation Strategy
BLM	Bureau of Land Management
CA-177	California Highway 177
Cal-IPC	California Invasive Plant Council
CDFW	California Department of Fish and Wildlife
CDFA	California Department of Food and Agriculture
CESA	California Endangered Species Act
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CDFW	California Department of Fish and Wildlife
CNPS	California Native Plant Society
CNDDB	California Natural Diversity Database
CRPR	California Rare Plant Rank
DFA	Development Focus Area
DRECP	Desert Renewable Energy Conservation Plan
FEIS	Final Environmental Impact Statement
FESA	Federal Endangered Species Act
GIS	Geographic Information Systems
GPS	Global Positioning System
I-10	Interstate 10
LUPA	Land Use Plan Amendment
NEPA	National Environmental Protection Act
NPS	National Park Service
NECO Plan	Northern and Eastern Colorado Desert Coordinated Management Plan
O&M	Operations and Maintenance
PV	Photovoltaic
ROW	Right of Way
SEZ	Solar Energy Zone
TCAs	Tortoise Conservation Areas
USFWS	US Fish and Wildlife Service

1 INTRODUCTION

1.1 Background

Victory Pass Solar, LLC is proposing to develop the Victory Pass Solar Project (Project) within the Desert Center community of unincorporated Riverside County, California. The proposed Project site is located on Bureau of Land Management (BLM) managed lands. The Victory Pass Solar Project is expected to generate up to 200 megawatts (MW) of renewable energy using photovoltaic (PV) panels and will tie-in to the existing Red Bluff substation.

1.2 Purpose

This Biological Resources Technical Report (BRTR) provides a description of methods and results of biological resource surveys and investigations conducted in fall of 2019 and spring of 2020 for the Victory Pass Solar Project as approved by BLM in the project memo for the Biological Resources Survey Work Plan (Aspen 2019)

The primary purpose of this report is to provide biological information that will be used as the foundation for impact assessments pursuant to the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). The discussion included herein may also be used to support consultation between Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service (USFWS) under the Federal Endangered Species Act (FESA), and any necessary incidental take authorization from the California Department of Fish and Wildlife (CDFW) with respect to the California Endangered Species Act (CESA).

1.3 Site Location

The Project site is in unincorporated eastern Riverside County, California. It consists of approximately 2000 acres of BLM-managed land. The Project site is situated within Chuckwalla Valley near the community of Desert Center, nearly halfway between the cities of Indio and Blythe, north of the Interstate-10 freeway on the Sidewinder Well and Corn Spring 7.5-Minute U.S. Geological Survey topographic quadrangles.

The Project site is located within the California Desert Conservation Area (CDCA) planning area, and within the southern Desert Tortoise Recovery Unit of the Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan. The Project site is not located within any ACECs (Areas of Critical Environmental Concern), but Alligator Rock ACEC is almost 1 miles southwest, the Desert Lily Preserve ACEC is 4 miles north, and Joshua Tree National Park is 6 miles north of the Project.

The entirety of the Project site is located within the boundaries of the Riverside East Solar Energy Zone (SEZ) identified in the Solar Programmatic Environmental Impact Statement (EIS) approved by a Record of Decision signed by BLM on October 12, 2012. Additionally, the Project site is within the Chuckwalla Valley ecoregion subarea of the Desert Renewable Energy Conservation Plan (DRECP) area. The DRECP identifies the federal lands in and around the Project site in the Land Use Plan Amendment (LUPA) and Final Environmental Impact Statement (FEIS) as a Development Focus Area (DFA), as approved by a Record of Decision signed by BLM on September 14, 2016.

1.4 Project Summary

Victory Pass Solar, LLC, a subsidiary of Clearway Energy Group LLC, has proposed to construct and operate the Victory Pass Solar Project, on approximately 2,000 acres of land administered by BLM. The Project solar project site would be adjacent to another concurrently proposed project (Arica Solar Project), also proposed by Clearway Energy that will share a few components. The Project will consist of photovoltaic (PV) solar modules, tracker components, power inverters, transformers, an electrical collection system, one project substation, a shared switchyard, battery storage, access roads, and a shared gen-tie line with Arica Solar Project that will connect to the existing Southern California Edison (SCE) Red Bluff Substation.

2 SITE CHARACTERISTICS

2.1 Regional Setting

The Project site is in the central portion of Chuckwalla Valley, east of Palm Springs in the Colorado Desert. The elevation of Chuckwalla Valley ranges from less than 400 feet above mean sea level (amsl) at Ford Dry Lake to approximately 1,800 feet amsl west of Desert Center and along the upper portions of the alluvial fans that surround the valley perimeter. The surrounding mountains rise to over 3,000 feet amsl. The topography of the Project site generally slopes downward toward the northeast at gradient of less than 1 percent. Ground surface elevations at the Project site itself ranges from approximately 590 feet amsl in the northeast to 755 feet amsl in the southwest.

Anthropogenic features and land use near the Project site include energy transmission, renewable energy, active/fallow agriculture, and historical military operations. Adjacent and nearby land uses are summarized in Table 1 and shown on Figure 1.

Table 1. Adjacent and Nearby Land Uses

Direction	LAND USES
NORTH	Transmission lines, proposed Arica Solar Project, Athos Solar Project, Active/fallow agriculture, Desert Lily Preserve, Joshua Tree National Park
SOUTH	I-10 Freeway, Southern California Edison's Red Bluff substation, desert tortoise critical habitat
EAST	Palen Solar Project, active/fallow agriculture, Palen Dry Lake ACEC
WEST	Multispecies linkage, Athos Solar Project, proposed Oberon Solar Project, transmission lines, Highway 177

2.2 Hydrology

The Project site resides within the Colorado River Hydrologic Region (HR). The Colorado River HR covers approximately 13 million acres (20,000 square miles) in southeastern California and is the most arid HR in California with annual precipitation averaging 5.5 inches (DWR 1994). The Project site is in the Big Wash HUC 10 Hydrologic Areas, which flow to closed basins, not connected with the Colorado River or other traditional navigable waters (Figure 2). Palen Dry Lake and Ford Dry Lake represent the lowest elevations within the basin.

Desert washes within this region are almost always dry but contract and expand dramatically in size due to extreme variations in flows, which can range from high-discharge floods to extended periods when surface flow is absent. The Project site lies between the alluvial fans emanating from the Eagle Mountains to the west, Chuckwalla Mountains to the south, and Coxcomb Mountains to the north.

The Project site is situated in the lower alluvial fan that is characterized by less stabilized soils consisting of finer sand and silt, compared to the upper alluvial fan that supports more stabilized, rocky soils with well-defined channels. The topography the Project site is relatively flat with gradients of less than two percent.

Alluvial processes across the Project site generally flow from southwest to northeast. The I-10 (just south of the Project site) crosses the alluvial fan that emanates from the Chuckwalla Mountains. The I-10 and associated wing dikes, which were constructed over 45 years ago, have altered natural surface flows from dozens of meandering small alluvial washes into concentrated discrete channels. Lancaster et al. (2014) noted that changes to drainage patterns resulting from the construction of I-10 translate into downstream hydrological degradation, focusing surface flow into freeway undercrossings and rendering portions of the alluvial fan less active than under historical conditions. Minor washes located in the hydrological shadow of I-10 were cut off from upstream flows and therefore transport lower volumes of water and entrained sediment. Major, culverted washes received more surface flow and distribute a higher volume and fine sediment compared to conditions that preceded the construction of I-10. These effects persist on the Project site under current conditions.

2.3 Soils

Soils mapped on the Project site consists entirely of one soil type per the United States General Soils Map (Figure 3). The entire Project site is mapped as the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni map unit characterized by soils with high percentage (greater than 65 percent) of sand with moderate susceptibility to wind erosion.

2.4 Sand Transport System

The Project site is located within the Chuckwalla Valley, a region of active aeolian (wind-blown) sand migration and deposition. Aeolian processes play a major role in the creation and establishment of sand dune formations and habitat in the Chuckwalla Valley and those within the Project site. Aeolian sands (dunes, sand fields, and similar habitats) are important habitats for certain plants and animals, including Mojave fringe-toed lizard.

In conjunction with the DRECP process, the Department of Conservation's California Geological Survey prepared a regional Eolian System Mapping Report for Eastern Riverside County in 2014 (Lancaster et al. 2014; note that eolian and aeolian are alternate spellings of the same word).

Active aeolian sand transport was not observed within the Project by survey crews and were consistent with analysis conducted by Kenney et al (2014). This analysis shows that most of the site only consists of areas that can be a source for aeolian sand and does not have the fine sand that makes suitable habitat for Mojave fringe-toed lizards or sensitive plants that prefer dunes (Figure 4). There is some instability over time and space as sand corridors expand, contract or migrate with changing weather and climate. A more recent analysis by Kenney in 2017 shows that a majority of the site has a low sand migration rate (Kenney 2017).

2.5 Rainfall

Measurements of precipitation during winter (October through March) and summer (April through September) periods are important in determining the efficacy of both wildlife and special status plant surveys. Data were obtained from the Western Regional Climate Center (WRCC 2020) for the most proximate stations to the Project site: Blythe Airport and Eagle Mountain weather stations (approximately 40 miles and 10 miles from the Project site, respectively). Historical rainfall data from 2009 to 2020 were totaled and averaged (Table 2). Over the period of analysis, the highest winter rainfall occurred in 2010 and highest summer rainfall occurred in 2012. Winter rains prior to the spring 2020 survey were above average over the last analysis period.

Table 2. Rainfall Summary

Year	Winter - October to March (inches)*	Summer - April to September (inches)*
2010	4.8	0.1
2011	2.5	1.2
2012	1	3.31
2013	1.5	2.6
2014	0.7	1.2
2015	2.1	1.3
2016	1.5	0.7
2017	3.4	1.1
2018	0.1	0.5
2019	2.6	0.165
2020	3.6	-
Seasonal Average	**2.2**	**1.2**

*Source: Western Regional Climate Center (WRCC 2020): Blythe Airport and Eagle Mountain weather stations

2.6 Vegetation Communities

Vegetation communities in the Project site were mapped and classified by botanists, using Holland (1986) and cross-referencing with *A Manual of California Vegetation, 2nd edition* (Sawyer et al. 2009) and the National Vegetation Classification System (NVCS) referenced in the DRECP. Vegetation was mapped by drawing vegetation polygons on aerial images in the field. These field maps were then digitized into GIS shapefiles using ArcGIS Pro and one-foot pixel aerial imagery on a diagonal flat screen monitor at the office. The smallest mapping unit delineated was approximately 0.10 acres; most mapped vegetation boundaries are accurate to within approximately 10 feet.

The vegetation communities map (Figure 5) provided with this report was generated from ArcGIS shapefiles; the shapefiles were used to calculate areas of each vegetation type and may be viewed at larger scale for management or analysis purposes, if needed. Any vegetation map is subject to imprecision for several reasons:

- Vegetation types tend to intergrade on the landscape so that there are no true boundaries in the vegetation itself. In these cases, a mapped boundary represents best professional judgment.
- Vegetation types as they are named and described tend to intergrade; that is, a given stand of real-world vegetation may not fit into any named type in the classification scheme used. Thus, a mapped and labeled polygon is given the best name available in the classification, but this name does not imply that the vegetation unambiguously matches its mapped name.
- Vegetation types tend to be patchy. Small patches of one named type are often included within mapped polygons of another type. The size of these patches varies, depending on the minimum mapping units and scale of available aerial imagery.

The majority of the Project site is creosote bush scrub. There are two primary natural vegetation communities (creosote bush scrub and desert dry wash woodland) as well as one distinct natural habitat type (desert pavement). One vegetation community (desert dry wash woodland/microphyll woodland) is identified by BLM (NECO Plan 2002 and DRECP 2016) and CDFW (2010) as sensitive due to the association with alluvial processes and would likely be considered California State jurisdictional waters. Vegetation communities on the Project site are shown on Figure 5.

2.6.1 Sonoran Creosote Bush Scrub

Sonoran creosote bush scrub has a State Rarity rank of S5 (CDFW 2020d), being demonstrably secure, and is not designated as a sensitive plant community by BLM. It is synonymous with *Larrea tridentata - Ambrosia dumosa* alliance (Sawyer et. al 2009) and *Lower Bajada and Fan Mojavean – Sonoran Desert Scrub* (NVCS). Sonoran creosote bush scrub occurs on well-drained, secondary soils of slopes, fans, and valleys and is the basic creosote bush scrub habitat of the Colorado Desert (Holland 1986). This vegetation community occurs through much of the Project and is dominated by creosote bush, burro bush, and has an understory of annual buckwheat *(Eriogonum* sp.) and *Cryptantha* species. This vegetation community occurs through most of the site, with ribbons of it that occur within the desert dry wash woodland on the western boundary.

2.6.2 Desert Dry Wash Woodland

Desert dry wash woodland is a sensitive vegetation community recognized with a rarity rank of S4 (CDFW 2018d) and as a BLM sensitive vegetation community (NECO 2002, DRECP 2012). Desert dry wash woodland is characteristic of desert washes and is likely to be regulated by CDFW as jurisdictional state waters. This community is synonymous with blue palo verde (*Parkinsonia florida*) - ironwood (*Olneya tesota*) (microphyll) woodland alliance (Sawyer et. al 2009) and Sonoran - Coloradan Semi Desert Wash Woodland / Scrub (NVCS). Holland (1986) describes this community as an open to relatively densely covered, drought-deciduous, microphyll (small compound leaves) riparian scrub woodland, often supported by braided wash channels that change following every surface flow event. Within the Project site, this vegetation community is dominated by an open tree layer of ironwood, blue palo verde, and smoke tree (*Psorothamnus spinosus*) of at least 2-3% cover. The understory is a modified creosote scrub with big galleta grass (*Hilaria rigida*). Desert dry wash woodland is primarily concentrated on the western portion of the site with a strip that runs through the eastern side of the Project site. Ribbons of Sonoran creosote bush scrub and desert pavement run through portions of the western desert dry wash woodland.

2.6.3 Desert Pavement

Desert pavement is primarily descriptive of soil and substrate conditions, rather than vegetation. It has a state rarity rank of S4 (CDFW 2018d) and is synonymous to the rigid spineflower-hairy desert sunflower (*Chorizanthe rigida-Geraea canescens)* desert pavement sparsely vegetated alliance (Sawyer et. al 2009). The ground surface is sandy and gravelly mixed alluvium with various rocks and gravel. The shrub layer of creosote bush is extremely sparse. Desert pavement is found primarily near the northwestern boundary with a small area near the southern boundary.

3 DATA COLLECTION METHODS

3.1 Special Status Species Definition

Special status species are those that have been afforded special recognition by federal, state, or local resource agencies or organizations, are often of relatively limited distribution, and typically have unique habitat conditions, which also may be in decline. Special status criteria include:

- Officially listed or candidates for listing by California or the federal government as endangered, threatened, or rare under the California Endangered Species Act (CESA) or Federal Endangered Species Act (FESA);
- Plants or animals which meet the criteria for listing as rare or endangered, as described in Section 15380 of the California Environmental Quality Act (CEQA);
- BLM Sensitive Species that may be designated by the BLM California State Director;
- USFWS Sensitive Species;
- Plants listed in the CNPS Inventory of Rare and Endangered Plants of California (CNPS 2020);
- Wildlife species identified by CDFW as Species of Special Concern (CNDDB 2020);
- Plants or animals included in the CDFW lists of Special Plants or Special Animals (CNDDB 2020);
- Considered special-status species in local or regional plans, policies, or regulations, such as the NECO Plan/EIS

- Protected under other statutes or regulations (e.g., Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Native Plant Protection Act, etc.)

All surveys were conducted per DRECP DFA Biological Conservation Management Action (CMA) requirements for each species within the timing recommended, including full-coverage desert tortoise surveys and 4-visit burrowing owl surveys. Any modifications are further explained within each individual sensitive species section below.

3.2 Wildlife Surveys

Full coverage wildlife surveys were conducted during the following periods:

- Fall surveys, full-coverage 10-meter transect surveys: October 12-16, 2019
- Spring surveys, full coverage, 20-m transects with 50-m buffer: March 17-20, 2020
- Burrowing owl modified surveys #2-4: May 5-6, 2020; June 15-16, 2020; July 14-15,2020

Wildlife surveys in 2019 employed belt transects approximately 10 meters (32.8 feet) apart in order to provide 100 percent (full) coverage for the proposed solar facility. Wildlife surveys were repeated in 2020 at 20-meter belt transects in conjunction with plant surveys with a 150-meter buffer, consistent with 2012 burrowing owl protocol surveys (Figure 6).

Survey crews in the fall of 2019 consisted of experienced wildlife desert biologists with at least one botanist with each crew. Survey crews in spring 2020 surveys consisted of primarily experienced botanists with at least one wildlife biologist per crew. Surveys were conducted by walking linear transects and visually searching for live individuals or sign of any sensitive species. All holes detected that may be inhabited by sensitive species were carefully inspected for potential occupancy, or sign of recent use as burrows or burrow complexes. Special emphasis was placed on searching around the bases of shrubs and along the banks of shallow washes. Burrows were carefully examined and assigned to the wildlife species that may have inhabited them based on indicator signs within the burrow or near the mouth of the burrow.

During wildlife surveys, biologists recorded all wildlife species observed, regardless of conservation status. Common species were tallied at the end of each transect and recorded throughout each day by each crew. During the spring 2020 surveys, additional avian counts were completed in the mornings during surveys, until 10 a.m.

All locational information for special status species observations and sign detected were recorded on digital Zerion iForms for any new data collected. The data was then uploaded to Collector as reference for Fall 2020 surveys to ensure that duplicate data was not taken. A handheld Global Positioning System (GPS) unit was used to collect backup data for each occurrence recorded with a unique identifier number that was also recorded on the digital Zerion iForms.

3.2.1 Desert Tortoise

Wildlife surveys conducted in fall 2019 conformed to full coverage desert tortoise protocol surveys (USFWS 2019a). All tortoise sign [e.g., live tortoises (all age classes), shell/bone/scutes, scats, burrows/pallets, tracks, eggshell fragments, and courtship rings] observed was recorded within the

known action area of the Project site. Incidental observations of desert tortoise sign were recorded in 2020 if they were not previously recorded. The condition of burrows, scat, and carcasses were categorized per the following class designations (USFWS 2009):

- Burrows:
    1. currently active, with desert tortoise or recent desert tortoise sign
    2. good condition (no evidence of recent use) - definitely desert tortoise
    3. deteriorated condition (including collapsed burrows) - definitely desert tortoise
    4. good condition - possibly desert tortoise
    5. deteriorated condition (including collapsed burrows) - possibly desert tortoise.
- Scat:
    1. wet (not from rain or dew) or freshly dried, obvious odor
    2. dried, with glaze, some odor, dark brown
    3. dried, no glaze or odor, signs of bleaching (light brown), tightly packed material
    4. dried, light brown to pale yellow, loose material, scaly appearance
    5. bleached, or consisting only of plant fiber
- Carcasses:
    1. < 1 year, fresh putrid, scutes mostly adhered, sheen on exposed scutes, unexposed bone waxy and solid;
    2. 1-2 years, scutes mostly adhered to bone, exposed scutes pale without sheen, unexposed bone silky;
    3. 2-3 years, scutes peeling off bone, unexposed scutes pale and without sheen, no growth ring peeling
    4. 4 years, shell bone falling apart, growth rings on scutes peeling; bone fissured
    5. > 4 years, disarticulated and scattered

3.2.2 Mojave Fringe-toed Lizard

There is no protocol for surveying Mojave fringe-toed lizards, but during wildlife surveys, special attention was given to the search for live individuals in soft, sandier soils where the potential for the species to occur is high. In areas with a higher density of Mojave fringe-toed lizards observed within close proximity of one another (within 20 meters), groups of lizards were tallied and represented by a single data point on Project figures.

3.2.3 Couch's Spadefoot Toad

A reconnaissance level survey for potential Couch's spadefoot toad habitat was conducted in conjunction with 2019 fall surveys searching for areas that may provide suitable habitat for reproduction. Areas where water may accumulate and retain for at least 2 weeks following heavy rain were recorded as potential Couch's spadefoot toad reproductive habitat to be inspected again following heavy rains during appropriate warmer temperatures for any sign of Couch's spadefoot toad.

3.2.4 Avian Species

3.2.3.1 Western Burrowing Owl

Survey recommendations in both the 1993 California Burrowing Owl Consortium (CBOC) Guidelines and 2012 CDFW Staff Report include baseline data collection and an assessment of site use by burrowing owl. One full-coverage survey was conducted during the breeding season during 2020 spring surveys which was consistent with Phase II of the CBOC 1993 Guidelines and partially consistent with the 2012 CDFW Staff Report. Occupancy of burrowing owl habitat is confirmed at a site when at least one burrowing owl, or its sign at or near a burrow entrance, is observed within the last three years (CDFW 2012; CBOC 1993).

The first burrowing owl survey provided a greater level of coverage than the 30-meter spacing recommended in the 1993 CBOC Guidelines and the 20-meter spacing recommended in the 2012 CDFW Staff Report. This first survey was completed in conjunction with spring plant surveys. All burrows detected during this survey were assessed for wildlife occupancy, to ensure detection of any special status species, including burrowing owl, that may have occupied a burrow. The 20-meter transect spacing also increased the likelihood of flushing live burrowing owls during the survey. All sign of burrowing owl, including individuals, feathers, tracks, white wash, pellets, and suitable burrows were recorded if present. An additional 50-meters of buffer around the Project site was also surveyed following the 2012 protocol survey.

A modification of the protocol 2012 survey recommendations was completed for the subsequent three surveys. The subsequent three surveys were modified as burrow inspections for all previously detected burrows, including mammal, potential tortoise, or burrowing owl burrows, with meandering pedestrian transects throughout the Project site where previous burrows were detected. All burrows were re-visited to check for any change in burrowing owl sign and were included as new burrowing owl sign if detected. Any new burrows observed during these burrow checks were added to the next check. These burrow checks were spaced at the same time intervals as the 2012 recommendations with at least 3 weeks of time passing between each session of burrow surveys.

3.2.3.2 Golden Eagle

Targeted surveys for golden eagles were not performed for the Project due to numerous surveys conducted in the Project vicinity and Chuckwalla Valley within the last ten years. A compilation of survey methodology and results from other projects that have conducted these surveys in the last ten years is provided in the results section of this report.

3.2.3.3 Avian Counts

Avian counts were conducted during spring 2020 surveys. Each survey team consisted of at least one avian biologist who was exclusively tasked with tallying all avian observations while walking with each survey team in the morning from the start of the survey until about 10:00 am, or earlier if weather conditions were unfavorable for avian detection (i.e. high wind). After these avian counts, the avian biologist would continue to note any incidental wildlife species observed while also continuing to help with any survey that was occurring.

3.2.5 Special Status Bat Species

Targeted surveys for bats were not conducted and one incidental observation of a bat or bat roost was detected during wildlife surveys. Acoustic bat surveys previously conducted for a nearby project currently in construction, Palen Solar Energy Project, provides supplementary information about bat populations within the project vicinity. This is further discussed in the results section of this report.

3.2.6 Other Special Status Wildlife Species

All sign of desert kit fox and American badger was recorded including live or dead individuals, scat, tracks, burrows, and burrow complexes. All burrows and burrow complexes (multiple entrance burrows that are interconnected) were mapped and attributed, if possible, to species. If a burrow could not be attributed to species, it was recorded as a "canid" burrow, which may include desert kit fox, coyote, or domestic dog. Species usage for each burrow or complex was determined by the burrow size, shape, and sign (i.e. type of scat or scratches). If fresh tracks, scratches, freshly dug dirt or scat were found at a burrow or complex, it was categorized as active. The presence of old scat without tracks would indicate that a burrow or complex was inactive.

3.2.7 Wildlife Cameras

Wildlife cameras were placed at seven locations near I-10 underpasses to determine wildlife movement in those areas – at least six camera locations were within the multispecies linkage. Cameras were secured to trees near the underpasses or hidden on wash edges among creosote bushes to deter theft. Cameras were set on high sensitivity, triggered by any movement to take photos in the daytime and evening with infrared light. Cameras were setup for one month in the spring of 2020. While cameras were in use, they were inspected weekly to ensure security and verify that battery levels and memory storage for cameras were sufficient.

3.3 Special Status Plants

Focused special status plant surveys were conducted during the following periods:

- Fall surveys: full coverage, 10-meter transect surveys – October 12, 14-16, 2019
- Spring Surveys: full coverage, 20-meter transect surveys with 50-meter buffer; March 17-20, 2020

Survey methodology was consistent with the following guiding documents:

- Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 2000)
- Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (CDFG 2009)
- CNPS Botanical Survey Guidelines (CNPS 2001)
- Survey Protocols for Survey and Manage Strategy 2: Vascular Plants (Whiteaker 1998)
- Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species (BLM 2009).

Based upon review of the literature, a list of special-status plant species with potential to occur in the vicinity of the proposed project was compiled (Appendix C).

Plant surveys performed in fall of 2019 included visual coverage across the entire survey area in conjunction with wildlife surveys. Surveys employed belt transects approximately 10 meters apart in areas with native vegetation cover, access roads, and the gen-tie routes to provide 100 percent coverage in those areas. All surveyors were trained on diagnostic features and habitat notes of sensitive species that may occur and each crew of surveyors had at least one highly experienced botanist.

A focused plant survey was performed in spring 2020 that included visual coverage across the entire Project site. Surveyors employed belt transects spaced at approximately 20-meters apart. These surveys were completed in conjunction with avian counts in the mornings. Avian biologists chosen to support these botanical surveys were also skilled in plant identification and could easily integrate with the plant survey after completing avian counts in the morning.

Prior to beginning plant surveys in both the fall and spring, reference populations of sensitive plants were visited to ensure that timing for surveys was sufficient and that most sensitive plant species would be identifiable (Table 3).

Table 3. Plant Reference Population Visits

Date	Plant Species	Location	Status
10/9/2019	Crucifixion thorn *(Castela emoryi)*	Desert Center	Observed
10/9/2019	Desert unicorn plant *(Proboscidea althaefolia)*	Desert Center	Observed
1/26/2020	Harwood's eriastrum *(Eriastrium harwoodii)*	Desert Lily Sanctuary, Hwy 62/Ironage Rd	Observed, but not yet flowering – estimated to begin flowering in 3 weeks
1/26/2020	Harwood's milkvetch *(Astragalus harwoodii)*	Desert Lily Sanctuary, Hwy 62/Ironage Rd	Too early to differentiate between other *Astragalus sp.*
1/26/2020	*Ribbed cryptantha (Cryptantha costata)*	Desert Lily Sanctuary, Hwy 62/Ironage Rd	Too early to differentiate from other *Cryptantha sp.*
1/26/2020	*Ditaxis serrata var. californica*	Desert Center	Could not find even after contacting original specimen collector in area
3/17/2020	*Harwood's eriastrum (Eriastrium harwoodii)*	Desert Lily Sanctuary, Desert Center	Observed flowering
3/17/2020	*Harwood's milkvetch (Astragalus harwoodii)*	Desert Lily Sanctuary, Desert Center	Observed flowering
3/17/2020	*Ribbed cryptantha (Cryptantha costata)*	Near Palen Solar Project	Observed

During plant surveys, botanists recorded all plant species, regardless of conservation status (Appendix E). All locational information for special status species observations were recorded on digital Zerion iForms for any new data collected. The data was then uploaded to Collector as reference for spring 2020 surveys to ensure that duplicate data from the previous fall season was not taken. A handheld Global

Positioning System (GPS) unit was used to collect backup data for each occurrence recorded with a unique identifier number that was also recorded on the digital Zerion iForms.

Table 4. Special-status Wildlife and Plant Survey Personnel and Dates *

Date Ranges	Survey Type	Surveyors
10/12/2019, 10/14/2019-10/16/2019	Fall 2019 10-m surveys, wildlife and plant	M. Adams, T. Alvey, M. Baker, M. Bassett, K. Black, M. Cloud-Hughes, E. Bowen, M. Bratton, S. Clegg, L. Chow, M. Dipane, M. Honer, S. Hoss, T. Hobbs, C. Keaton, D. Kesonie, M. Lavender, M. Lopez, A. Mach, W. McBride, M. Moon, S. Nielsen, S. Nelson, B. Payne, B. Sandstrom, C. Slaughter, E. Thorn, J. St Pierre, M. Sally, R. Woodard, Z. Webb. M. Wegmann, J. Yerger, M. Zhuo
3/17/2020-3/20/2020	Spring 2020 20-m plant surveys/BUOW survey #1	M. Adams, M. Baker, K. Black, L.Chow, M. Honer, M. Cloud-Hughes, D. Kesonie, W. McBride, M. Lavender, M. Lopez, S. Nielson, J. St Pierre, J. Yerger
5/1/2020-5/29/2020	Spring 2020 wildlife cameras at underpasses	L. Chow, Z. Webb, M. Lavender
5/5/2020-5/6/2020	BUOW survey #2	Z. Webb, L. Chow
5/20/2020-5/21/2020	Jurisdictional delineations**	L.Chow, E. Thorn, D. Kesonie, J. St Pierre, S. Nielson
6/15/2020-6/16/2020	BUOW survey #3	A. Schaub, M. Lavender
7/14/2020-7/15/2020	BUOW survey #4	Z. Webb, M. Lavender

**daily survey summaries are detailed in Table A-1 of Appendix A*

***Jurisdictional delineations methods and results are provided in a separate jurisdictional waters report for the Project*

4 RESULTS

4.1 Special Status Wildlife

Sixty-one special status wildlife species were reviewed for their potential to occur within the Project site and its vicinity using information gathered from regional plans and database records (Appendix B). Several species were determined to have a low probability of occurrence due to the absence of suitable habitat. Special status wildlife species observed within the Project site or with moderate potential to occur based on the presence of suitable habitat are discussed further in this section. A comprehensive list of wildlife species observed during previous surveys is included in Appendix D. Conservation status for wildlife species is defined below:

Federal	FE = Federally listed endangered: species in danger of extinction throughout a significant portion of its range
	FT = Federally listed, threatened: species likely to become endangered within the foreseeable future
	FCT = Proposed for federal listing as a threatened species
	BCC = Fish and Wildlife Service: Birds of Conservation Concern
	BLMS = BLM Sensitive
State	SSC = State Species of Special Concern
	CFP = California Fully Protected
	SE = State listed as endangered
	ST = State listed as threatened

WL = State watch list
CPF = California Protected Furbearing Mammal
CPGS = California Protected Game Species

4.1.1 Mojave Desert Tortoise: *ST, FT*

Background

Mojave desert tortoises (*Gopherus agassizii*) live north and west of the Colorado River in the Mojave Desert of California, southern Nevada, northwestern Arizona, and southwestern Utah, and in the Sonoran (Colorado) Desert in southern California (USFWS 1990). Desert tortoises inhabit a variety of habitats from flats and slopes dominated by creosote bush – white bursage communities, where a diversity of perennial plants is relatively high, to a variety of habitats in higher elevations. Tortoises are found most often on gentle slopes with sandy-gravel soils. Soils must be appropriately soft for digging burrows, but firm enough so that burrows do not collapse (Anderson et al., 2000). Tortoises typically prefer habitats with abundant annual forbs, grasses and cactus, which constitute its primary food sources. Plant species that have high potential for potassium excretion (high-PEP) may be critical to the diet of desert tortoise (Oftedal 2002; Oftedal et. al 2002).

The Project site is located within the Colorado Desert Recovery Unit for Mojave desert tortoise (USFWS 2012) and is less than 2 miles north of USFWS-designated critical habitat for desert tortoises, also designated as a Desert Tortoise Conservation Area in the DRECP (Figure 1, 7, and 8). The 2019 density (/km^2) of tortoises with a midline carapace length of greater than or equal to 180 mm within the Colorado Desert Recovery Unit stratums are as follows: Chuckwalla 1.8 tortoises per km^2 (just south of the project site), Joshua Tree 3.1 per km^2 (approximately six miles north of the project site), Pinto Mountains 1.7 per km^2 (approximately 25 miles northwest of the Project site), Chocolate Mountain 7 per km^2 (approximately 20 miles south of the Project site) and Fenner 2.8 per km^2 (approximately 70 miles north of the Project site) (USFWS 2020). Surveys in the Chemehuevi stratum were not conducted in 2019. In 2018 the density of tortoises within the Chemehuevi stratum was 2.9 tortoises per km^2 (approximately 60 miles from the project site) (USFWS 2019b).

Predicted desert tortoise occupancy values of 0.3 or above are appropriate for identifying suitable habitat in this low desert region (BLM 2012). Desert tortoise habitat has the lowest predicted occupancy levels on the Project site (0.4-0.5) in the northwestern and northeastern corners of the Project site. Predicted occupancy levels increases in the southwest portion of the Project site, with the highest occupancy levels of 0.6-0.7 is in the southwest portion of the site (Nussear et al. 2009). These predicted occupancy values do not account for habitat degradation resulting from existing anthropogenic features (Nussear et al. 2009), which would further reduce the occurrence probability in disturbed areas. Desert tortoise habitat connectivity is discussed in Section 4.2, Wildlife Movement.

Live desert tortoises were observed during field surveys in five different locations, consistent with the predicted occupancy model of 0.5 or higher in those areas of the Project site. Five class 1 active desert tortoise burrows were observed, two class 2 burrows in good condition, and two class 3 burrows, one class 2 pallet, two areas with desert tortoise scat, and five areas where desert tortoise tracks were observed. The most active sign observed was concentrated in the higher occupancy values (Figure 7, Appendix A-2), consistent with the predicted occupancy model.

The final footprint of the Project site will be adjusted, but using the USFWS density estimate calculations for the entirety of the pre-PUroject survey area, the average density of tortoises was 1.2 tortoise per square kilometer. To calculate the density, a standardized transect length of 2.845 km (averaged over the entire 200-acre site) at 10-meter width transects, with 5 tortoises found in total on separate transects. The average density for the pre-Project survey area was lower than the average density of the Colorado Desert Recovery Unity, which is 3.7 tortoises per square kilometer. The density estimate table used for calculations within the footprint of the surveyed Project area are included in Appendix A-3.

4.1.2 Mojave fringe-toed lizard: *SSC, BLMS*

The Mojave fringe-toed lizard (*Uma scoparia*) occupies arid, sandy, sparsely vegetated habitats and is associated with creosote scrub throughout much of its range (Jennings and Hayes 1994). It is found within and around aeolian sand habitats in the deserts of Los Angeles, Riverside, and San Bernardino Counties in California and La Paz County in Arizona (Hollingsworth and Beaman 1999; Stebbins 1985; Murphy et al. 2006). Within these regions, it occurs at more than 35 sand dune complexes in California and one in Arizona (Jarvis 2009). Nearly all records for this species are associated with present-day and historical drainages and sand dune complexes associated with three major river systems with blow sand: Amargosa River, Mojave River, and Colorado River (BLM 2015).

Mojave fringe-toed lizards normally hibernate from November to February, emerging from hibernation sites from March to April. The breeding season is April to July (Mayhew 1965). From May to September, they are active in mornings and late afternoon, but seek cover during the hottest parts of the day. They burrow in the sand for both cover from predators and protection from undesirable temperatures (Stebbins 2003), though they also will seek shelter in rodent burrows.

This species requires loose, wind-blown sand, which the Project site lacks. The DRECP distribution model does not overlap the Project site and ends just northeast of the site. There were no observations of Mojave fringe-toed lizards.

4.1.3 Couch's Spadefoot Toad: *SSC, BLMS*

Couch's spadefoot toad (*Scaphiopus couchii*) is often found in shortgrass plains, mesquite savannah, creosote bush desert, thorn forest, and tropical deciduous forest (Mexico) and other areas of low rainfall (Stebbins 2003). It is considered an opportunistic species because it only appears when rainfall forms temporary pools and potholes with water lasting longer than 10-12 days, which are required for breeding, hatching, and metamorphosis. Runoff basins at the base of sand dunes are also sites of reproduction (Mayhew 1965). In California, it is known to occur in the low desert region, especially the Colorado River corridor. It burrows underground or occupies rodent burrows when inactive.

Couch's spadefoot toad was not observed, but suitable breeding habitat may be present within the Project site in areas where water accumulation may occur. One area was identified during fall 2019 surveys as potential breeding habitat (Figure 7, Appendix A-2) where water may accumulate after rainfall near the southern boundary of the Project site. Sufficient rainfall in warmer temperatures is yet to occur to determine whether they hold enough water for breeding or occupancy of the species. It is expected to be a low potential of occurrence for the species since there have been no records of the species at nearby projects.

4.1.4 Western Burrowing Owl: *SSC, BCC, BLMS*

The Western burrowing owl *(Athene cunicularia hypugaea)* inhabits arid lands throughout much of the western United States and southern interior of western Canada (Haug et al. 1993). Suitable habitat for western burrowing owl includes open habitat with available burrowing opportunities, including agricultural fields (active and fallow), creosote scrub, desert saltbush, ephemeral washes, and ruderal areas.

Burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by ground squirrels, kit fox, desert tortoise, and other wildlife. Burrowing owls have a strong affinity for previously occupied nesting and wintering sites and will often return to previously used burrows, particularly if they had successful reproduction in previous years (Gervais et al. 2008). Burrowing owls generally depend on other species to dig suitable burrows, but they may also use anthropogenic surrogate burrows such as rubble piles or drainage pipes. If formerly occupied burrows are badly damaged or collapsed, burrows cannot repair them and must seek alternate sites. The southern California breeding season (defined as the time from pair bonding of adults to fledging of the offspring) generally occurs from February to August, with peak breeding activity from April through July (Haug et al. 1993).

In the Colorado Desert, burrowing owls generally occur at low densities in scattered locations, but they can be found in much higher densities near agricultural lands where rodent and insect prey tend to be more abundant (Gervais et al. 2008). Burrowing owls tend to be opportunistic feeders, and a large portion of their diet consists of beetles, grasshoppers, and other larger arthropods. The consumption of insects increases during the breeding season (Haug et al. 1993). Small mammals, especially mice and voles (*Microtus* and *Peromyscus* spp.) are important food items, and other prey animals include herpetofauna, young cottontail rabbits, bats, and birds such as sparrows and horned larks.

Three observations of live individuals flying/perching, three burrows with sign (whitewash, pellets, or feathers) and a burrowing owl kill site were observed (Figure 9, Appendix A-4).

4.1.5 Golden Eagle: *CFP, WL, BCC, BLMS*

Background

Golden eagles are typically year-round residents throughout most of their western United States range. They breed from late January through August with peak activity occurring from March through July (Kochert et al. 2002). Habitat for golden eagles typically includes rolling foothills, mountain areas, and deserts. Golden eagles need open terrain for hunting and prefer grasslands, deserts, savanna, and early successional stages of forest and shrub habitats. Golden eagles primarily prey on rabbits and rodents but will also take other mammals, birds, reptiles, and some carrion (Kochert et al. 2002). They generally nest in rugged, open habitats with canyons and escarpments, often with overhanging ledges and cliffs or large trees used as cover.

Recent data analysis and population modeling suggest the status of the golden eagle population in the western United States is gradually declining towards an equilibrium of about 26,000 individuals, down from an estimated 34,000 in 2009 and 2014 (USFWS 2016). The future population estimate relies on the

continuation of current ecological and biological conditions. It was estimated that 3,400 golden eagles die annually from anthropogenic causes in the United States and suggest a level of sustainable take is approximately 2,000 individuals annually (USFWS 2016). Additional unmitigated mortality will steepen the rate of decline that the golden eagle population is presently undergoing (USFWS 2016).

The Project site does not have any suitable nesting habitat for golden eagles, but there is suitable foraging habitat. The nearest known cliff nest that has the potential for golden eagle use is approximately 3 miles southeast from the Project site. No golden eagles were observed during surveys on the Project site, but there have been observations of golden eagles in flight within the vicinity.

Regional Surveys

No focused golden eagle surveys were conducted specifically for this Project. No live golden eagles were observed flying over the Project site during the field surveys described in the methods (Section 3.2.4).Golden eagle surveys and raptor surveys have been conducted on a multitude of projects within 10 miles of the Project vicinity since 2010. The most recent survey was conducted in spring 2020 – general locational information is not yet available. Type of survey and results for regional golden eagle surveys between the years of 2010-2020 are summarized in Table 5 below. The highest concentration of overlapping surveys occurs within the Project vicinity (Figure 10).

Table 5. Regional Golden Eagle Surveys

Year	Type of Survey	Associated Project (s)	Surveying Firm	Golden Eagle Observations
2010	Aerial survey	Desert Sunlight Solar Project, Genesis Solar Project, Palen Solar Project	Wildlife Research Institute	1 active nest in Coxcomb Mountains, 1 active territory in Eagle Mountains
2011	Aerial eagle (not nesting) and transect survey	Other research survey	West	No observations in area surveyed
2011	Aerial and ground	Regional Nest Survey	BioResource Consultant	No observations in area surveyed
2011	Aerial survey	Joshua Tree National Park	Wildlife Research Institute	4 territories active - Eagle Mountains-West Central, Eagle Mountains - West Northwest, Hexie Mountains - Central, Little San Bernardino - East); the Eagle Mountain territories were productive - had a total of 3 young observed
2011	Ground survey	Desert Harvest Solar Project	Bloom Biological	No active nests, 1 golden eagle sighting
2012	Aerial (not nesting) and transect survey, tracking eagles	Other research survey	West and Duerr et al	No observations in area surveyed
2012	Ground survey	Desert Sunlight Solar Project	Ironwood Consulting	No active nests - 7 golden eagle sightings (6 in Eagle Mountains, 1 in Coxcomb Mountains

Year	Type of Survey	Associated Project (s)	Surveying Firm	Golden Eagle Observations
2013	Tracking eagles	Other research survey	West and Duerr et al	No observations in area surveyed
2013	Ground survey	BLM raptor-raven nest survey	Corvus Ecological	No observations in area surveyed
2013	Ground survey	Desert Sunlight Solar Project	Corvus Ecological	No active nests, 4 golden eagle sightings
2013	Air and ground survey, camera traps	Palen Solar Project	Bloom Biological	1 subadult at bait station during all 5 weeks; 3rd year flying along cliffs
2014	Air and ground survey	BLM raptor-raven nest survey	Boarman	No observations in area surveyed
2015	Ground survey	BLM raptor-raven nest survey	Corvus Ecological	No observations in area surveyed
2020	Ground survey	BLM raptor-raven nest survey	Corvus Ecological	3 nests in Joshua Tree National Park (general locational information not yet available)
2020	Variable radius point count	Chuckwalla CHU	Corvus Ecological	General locational information not yet available

4.1.6 Le Conte's Thrasher: *SSC*

In California, Le Conte's thrasher (*Toxostoma lecontei*) is a resident in the San Joaquin Valley and the Mojave and Colorado Deserts (Weigand and Fitton 2008). This pale gray bird occurs in desert flats, washes and alluvial fans with sandy and/or alkaline soil and scattered shrubs. Preferred nest substrate includes thorny shrubs and small desert trees and nesting rarely occurs in monotypic creosote scrub habitat or Sonoran Desert woodlands (Prescott 2005). Breeding activity occurs from January to early June, with a peak from mid- March to mid-April. Le Conte's thrashers forage for food by digging and probing in the soil. They eat arthropods, small lizards and snakes, and seeds and fruit; the bulk of their diet consists of beetles, caterpillars, scorpions, and spiders. Suitable foraging habitat occurs throughout the site, and suitable nesting habitat is present in the desert dry wash woodland areas, so the potential for the species to nest on the Project site moderate-high. One live individual was observed foraging and perching on the Project site (Figure 9, Appendix A-4).

4.1.7 Prairie Falcon: *WL, BCC*

The prairie falcon (*Falco mexicanus*) is on the CDFW watch list and is a USFWS Bird of Conservation Concern. It inhabits dry environments in the North American west from southern Canada to central Mexico. It is found in open habitat at all elevations up to 3,350 m, but is associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. Prairie falcons require cliffs or bluffs for nesting though will sometimes nest in trees, on power line structures, on buildings, or inside caves or stone quarries. Ground squirrels and horned larks are the primary food source, but prairie falcons will also prey on lizards, other small birds, and small rodents (Zeiner 1990).

There were two observations of prairie falcons in flight over the Project site. The entire Project site contains suitable foraging habitat for this species but does not have suitable nesting habitat (Figure 9, Appendix A-4).

4.1.8 Loggerhead Shrike: *SSC (nesting), BCC*

Loggerhead shrikes (*Lanius ludovicianus*) are small predatory birds that are common year-round residents throughout most of the southern portion of their range, including southern California. In southern California, they are generally much more common in interior desert regions than along the coast (Humple 2008). They can be found within lowland, open habitat types, including creosote scrub and other desert habitats, sage scrub, non-native grasslands, chaparral, riparian, croplands, and areas characterized by open scattered trees and shrubs Loss of habitat to agriculture, development, and invasive species is a major threat; this species has shown a significant decline in the Sonoran Desert (Humple 2008). Loggerhead shrikes initiate their breeding season in February and may raise a second brood as late as July; they often re-nest if their first nest fails or to raise a second brood (Yosef 1996). In general, loggerhead shrikes prey upon large insects, small birds, amphibians, reptiles, and small rodents over open ground within areas of short vegetation, usually impaling prey on thorns, wire barbs, or sharp twigs to cache for later feeding (Yosef 1996). Suitable habitat for loggerhead shrike is found throughout the Project site. There were 10 observations of live individuals flying, perching, or signing. One of those observations was a nesting loggerhead shrike (Figure 9, Appendix A-4).

4.1.9 Gila Woodpecker: *CE, BLMS, BCC*

Gila woodpecker is predominantly a permanent resident across its range in areas of southeast California, southern Nevada, central Arizona, extreme southwest New Mexico, and parts of Mexico. The Gila woodpecker is an uncommon to fairly common resident in Southern California along the Colorado River, and locally near Brawley, Imperial County (Garrett and Dunn 1981). A pair of Gila woodpeckers woodpeckers was incidentally observed feeding young near the Corn Springs Campground, approximately 6 miles southwest of the Project site (Ironwood 2018). Suitable habitats include riparian woodlands, uplands with concentrations of large columnar cacti, old- growth xeric-riparian wash woodlands, and urban or suburban residential areas (Rosenberg et al. 1987; Edwards and Schnell 2000). Gila woodpeckers prefer large patches of woody riparian vegetation for nesting (greater than 49 acres), but they have also been documented in various habitat types, such as desert washes (McCreedy 2008) and residential areas (Mills et al. 1989). They excavate cavity nests in large riparian trees such as cottonwoods.

In California, their primary habitat is cottonwood-willow riparian woodland. Where Gila woodpeckers occur in dry desert wash woodlands, they excavate cavity nests in large blue palo verdes (McCreedy 2008). They also may nest in ornamental trees including palms. Availability of suitable nesting trees is a limiting factor in breeding habitat suitability (Grinnell and Miller 1944). Potentially suitable habitat within the Project site is found in desert washes in palo verde or ironwood trees large enough for cavity nests. The probability of this species nesting on the Project site is moderate since there were at least two tree cavities were observed that may be suitable for the species (Figure 9, Appendix A-4). No live individuals were observed during the surveys. Where woodpeckers occur, they generally are loud and conspicuous, and readily located by field biologists.

4.1.10 California Horned Lark: *WL*

The California horned lark (*Eremophila alpestris actia*) is found throughout California except the north coast and is less common in mountainous areas. It prefers open areas that are barren or with short vegetation including deserts, brushy flats, and agricultural areas, and includes creosote scrub. Eggs are

laid March to early June, and it frequently lays a second clutch (Zeiner 1990). There are numerous records in western Riverside County (CNDDB 2020). Suitable habitat for foraging and nesting is found throughout the Project site and California horned larks were observed frequently during the surveys. Observation locations were not mapped because of the low conservation status (WL) and widespread occurrence throughout the site.

4.1.11 Black-tailed Gnatcatcher: *WL*

Black-tailed gnatcatchers (*Polioptila melanura)* are permanent residents from southeastern California and Arizona to southern Texas and northern Mexico. They are found in arid scrublands, desert brush, and dry washes amongst creosote bush, ocotillo, mesquite, paloverdes, and cactus. They live in pairs all year-round, defend their territory, and forage for small insects amongst low shrubs and trees. The Project site contains suitable foraging and potential nesting habitat for this species throughout the site and there were several incidental observations during surveys and avian counts. Observation locations were not mapped because of the low conservation status (WL) and widespread occurrence throughout the site.

4.1.12 Sonora Yellow Warbler: *SSC, BCC*

The Sonora yellow warbler (*Setophaga petechia sonorana*) occurs principally as a migrant and summer resident from late March through early October, and breeds from April to late July (Dunn and Garrett 1997). The Sonora yellow warbler breeds only along the lower Colorado River in California, and from southern Arizona and southwest New Mexico to north-central Mexico and possibly the Colorado River Delta. It breeds in early April and nests mainly from mid-May through July (Rosenberg et al. 1991). During breeding season, it generally nests and forages in riparian shrubs and trees close to water. Its diet includes ants, bees, wasps, caterpillars, beetles, true bugs, flies, and spiders (Beal 1907, Shuford 2008).The Project site supports suitable foraging habitat during migration in the desert dry wash woodland areas, but there is no suitable nesting habitat present on the site. There were no observations of the Sonora yellow warbler on the Project site during surveys.

4.1.13 Short Eared Owl: *SSC*

The short-eared owl (*Asio flammeus*) is a widespread winter migrant in central and western California, and generally present from September through April. It is an uncommon winter migrant in southern California. Habitat requirements include grasslands, prairies, dunes, meadows, irrigated lands, and wetlands. Short-eared owls generally require dense vegetation for roosting and nesting (Shuford 2008). The Project site does not support suitable nesting habitat for short eared owl due to the sparse vegetation. However, the species may be found incidentally during migration while foraging near irrigated areas in the adjacent fish farms and residences. No live individuals were observed on the Project site during surveys.

4.1.14 Ferruginous Hawk: *WL, BCC*

The ferruginous hawk (*Buteo regalis*) is an uncommon winter resident and migrant at lower elevations and open grasslands in the Central Valley and Coast Ranges, and a fairly common winter resident of grasslands and agricultural areas in southwestern California (Garrett and Dunn 1981). This species frequents open grasslands, sagebrush flats, and desert scrub. Prey items include lagomorphs, small

mammals, reptiles and amphibians (Zeiner 1990). There is potential foraging habitat throughout the Project site that ferruginous hawks could use during wintering or migration seasons. The site is outside the Ferruginous hawk's breeding range and is not expected in the area during nesting season. There were no observations of ferruginous hawk on the Project site during surveys.

4.1.15 Swainson's Hawk: *ST, BBC*

Swainson's hawk (*Buteo swainsoni*) breeds in open habitats throughout much of the western United States and Canada, and in northern Mexico. In California, breeding populations of Swainson's hawks occur in desert, shrub and grasslands, and agricultural habitats with tree rows; however, most of the state's breeding sites are in the Great Basin and Central Valley (Woodbridge 1998). The only desert breeding occurrences are in the Antelope Valley, over 200 miles northwest of the Project site. These birds favor open habitats for foraging, and are near- exclusive insectivores as adults, but may also forage on small mammals and reptiles. The Project site provides potential migration season foraging habitat but is well outside the nesting range. Swainson's hawk may be found throughout the project site during migration. No live individuals were observed on the Project site during surveys.

4.1.16 American Peregrine Falcon: *FP, BCC*

The American peregrine falcon (*Falco peregrinus anatum*) was formerly listed under CESA and ESA but have been delisted under both Acts. In California, range its primarily central to northern California, with wintering habitat located and (more recently) nesting occurres in southern California. Migrants occur along the coast and in the western Sierra Nevada in spring and fall. It breeds mostly in woodland, forest, and coastal habitats, and favors open landscapes with cliffs as nest sites. They are found irregularly in the southern desert region, generally during migratory and winter seasons but also during breeding season in recent years. They nested historically in desert mountain ranges near the Colorado River (Rosenberg et al. 1991; Patten et al. 2003) and may be re-occupying this historical part of their nesting range as their populations recover. Their diet consists primarily of birds and bats (Zeiner 1990). Waterfowl and shorebirds make up a large proportion of their prey, and nest sites are often within foraging range of large water bodies. Suitable migratory or foraging habitat is present throughout the Project site, but no suitable nesting habitat is present. One live individual was observed incidentally as a flyover, but locational information was not collected. American peregrine falcons can be observed anywhere on the Project site in flight, so a lack of locational information does not affect its impact analysis.

4.1.17 Vaux's Swift: *SSC*

Vaux's swift (*Chaetura vauxi*) is a summer resident of northern California and a fairly common migrant throughout most of the state in spring and fall. It roosts in hollow trees and snags, and often in large flocks. Vaux's swifts feed exclusively on flying insects (Shuford 2008). The entire project site provides suitable habitat during migration for foraging, but there is no suitable nesting habitat on the project site. No Vaux's swifts were observed during surveys.

4.1.18 Mountain Plover: *SSC, BCC*

Mountain plover (*Charadrius montanus)* is found in semi-arid plains, grasslands, and plateaus. It uses open grasslands, plowed fields with little vegetation, and open sagebrush areas. Winter habitats include

desert flats, and plowed fields. Mountain plovers are insectivores, feeding primarily on large ground-dwelling insects, including grasshoppers, beetles, and crickets (Shuford 2008). Their distribution was modeled as occurring in the Chuckwalla Valley (CEC 2014a). The entire project site provides suitable habitat during migration but is unlikely to support suitable nesting habitat, since the Project site is outside its breeding range. No mountain plovers were observed on the Project site during surveys.

4.1.19 Northern Harrier: *SSC*

Northern harrier (*Circus cyaneus)* inhabits most of California at various times of the year, found up to 3000 m elevation. Northern harriers frequent meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands. It is a widespread winter resident and migrant in suitable habitat. They primarily feed on small mammals, birds, frogs, small reptiles, crustaceans, and insects (Zeiner 1990). There is suitable foraging throughout the Project site, but no suitable nesting habitat. No live individuals were observed on the Project site during surveys.

4.1.20 Yellow-breasted Chat: *SSC*

The yellow-breasted chat (*Icteria virens*) is an uncommon summer resident and migrant in coastal California, in foothills of the Sierra Nevada, and within the Colorado Desert. Breeding occurrences closest to the Project site are known from the Salton Sea and Colorado River. In southern California, yellow-breasted chats breed locally on the coast, and very locally inland (Garrett and Dunn 1981). During migration, they may be found in lower elevations of mountains in riparian habitat (McCaskie et al. 1979; Shuford 1990). The yellow-breasted chat may be found on the Project site during migration most likely within desert dry wash woodland areas, but suitable nesting habitat is not present. No yellow-breasted chats were observed on the Project site during surveys.

4.1.21 Crissal Thrasher: *SSC*

Crissal thrasher (*Toxostoma crissale*) is a year-round resident of southeastern deserts, occupying dense shrubs in desert riparian and desert wash habitats, including mesquite, ironwood, and acacia. It primarily forages on the ground, feeding on invertebrates, berries, and seeds (Bent 1948; Shuford 2008). The Project site provides limited but suitable nesting and foraging habitat primarily associated with dry wash woodlands. No crissal thrashers were observed within the Project during surveys.

4.1.22 Elf Owl: *BLMS, BCC*

Elf owl (*Micrathene whitneyi*) is found in lowland habitats that provide cover and good nesting cavities. It is most common farther east and north, in deserts with many tall saguaro cactus or large mesquites, and in canyons in the foothills, especially around sycamores or large oaks. The project site is near the western margin of its geographic range (Garret and Dunn 1981). The nearest nesting occurrence is near the Corn Springs campground and Cottonwood Springs vicinities (CNDDB 2020) Elf owls are more common and widely distributed outside of California and probably have never been common in California due to limited geographic range and generally marginal habitat. The elf owl is migratory, spending winters in Mexico and southward. It arrives in California by March, and its breeding period extends from April to mid-July (Gould 1987).

The elf owl is a secondary cavity nester (it nests in cavities of trees and cacti, generally in disused woodpecker nests). Its nesting habitat is closely correlated with nesting habitat of woodpeckers,

including Gila woodpecker (Hardy et al. 1999; Johnsgard 2002). Gila woodpeckers sometimes nest in blue palo verde and palms, and elf owls have been documented nesting in blue palo verde near Wiley's Well, east of the project site, by Robert McKernan (former Director, San Bernardino County Museum; SBCM 2012a). Trees within the desert dry wash woodland habitat could provide suitable habitat for nesting since at least two tree cavities were observed (Figure 9, Appendix A-4). No elf owls were observed on the Project site during surveys.

4.1.23 Other listed Avian Species

No suitable breeding or wintering habitat for the avian species below occur within or near the Project area. These state or federal listed bird species have been recorded at other utility-scale solar energy facilities. There is a moderate potential for them to pass within the Project vicinity during migration periods, but there is no suitable nesting or foraging habitat on the site for these species. None of these species were observed on the Project site during field surveys.

Yuma Ridgway's Rail: *ST, CFP, FE*

Yuma Ridgway's rail *(Rallus obsoletus yumanensis),* formerly known as Yuma clapper rail *(Rallus longirostris yumanensis),* nests in freshwater marshes. It is found along the lower Colorado River southward to its terminus at the Sea of Cortez, along the Gila River drainage in Arizona, at Lake Mead (and the Overton Arm) and its local tributaries, along the Virgin River in Nevada and Utah, and at the Salton Sea/Imperial Valley areas of California (CEC et. al 2014; USFWS 2014). Harrity and Conway (2019) captured 444 rails from 2016-2019 and attached transmitters to 103 rails to document annual migration and dispersal behaviors. As of December 16, 2019, they documented 24 migratory or dispersal movements (Harrity and Conway 2019). Yuma Ridgway's rail were thought to be mostly sedentary (Eddleman 1989), but recent rail mortalities at solar energy facilities and preliminary results of Harrity and Conway's (2019) telemetry study suggest that these rails fly over desert regions during dispersal and migration (Kagan et al. 2014, Harrity and Conway 2018). The transmitter data from this study confirms that rails migrate primarily at night (Harrity and Conway 2019). Most rails do not appear to follow the Colorado River corridor during migration, rather they cross vast expanses of desert upland and even open water to reach wintering grounds (Harrity and Conway 2019). These results help explain how Yuma Ridgway's rails perished at solar facilities far removed from any major sources of water or rail habitat (Kagan et al. 2014.) Outlier observations have been documented at Harper Dry Lake, East Cronese Dry Lake, and Desert Center, all at a great distance from known breeding areas (CNDDB 2020).

Southwestern Willow Flycatcher: *SE, FE*

Southwestern willow flycatcher *(Empidonax traillii extimus)* breeds in dense riparian habitats in the southwestern United States, and winters in southern Mexico, Central America, and northern South America (USFWS 2002). The willow flycatcher species is comprised of several recognized subspecies, including the southwestern willow flycatcher, which is the only subspecies that nests in the region. The closest known breeding habitat to the Project site is approximately 35 miles away along the Colorado River and adjacent to the Salton Sea (CNDDB 2020). Recent studies indicate that southwestern willow flycatchers do not migrate over the area of the desert where the Project site is located (BLM 2017). However, other willow flycatcher subspecies (not listed as threatened or endangered) may pass through

the area during migration. There is no suitable breeding habitat on the Project site and is outside the southwestern willow flycatcher's migratory routes.

Yellow billed cuckoo: *SE, FT, BCC, BLMS*

Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) breeds in expansive riparian areas in portions of California, Nevada, Arizona, and New Mexico. The closest known breeding habitat is located approximately 35 miles away along the Colorado River (CNDDB 2020). During migration, western yellow-billed cuckoos migrate across the desert and use shrubland habitats, but there have been no documented sightings of western yellow-billed cuckoo within the Development Focus Areas (DFAs) identified in the DRECP LUPA (USFWS 2016). No suitable nesting habitat is present on the Project site, although it is possible that western yellow-billed cuckoo could occur on the site briefly during migration season.

Least Bell's Vireo: *SE, FE*

Least Bell's vireo (*Vireo bellii pusillis*) breeds in riparian habitats in southern California and portions of northern Baja California, Mexico and winters in southern Baja California, Mexico (USFWS 1998). Its numbers and distribution have probably increased since its listing, although it remains absent from large parts of its former range. The closest known breeding habitat to the site is to the northwest in the Big Morongo Canyon (USFWS 2020). Least Bell's vireos are also uncommon breeders at the Anza-Borrego Desert State Park, located approximately 70 miles southwest (USFWS 2016). The subspecies Arizona Bell's vireo (*V. b. arizonae*) is not ESA-listed, but is State-listed in California as endangered, and occurs along the lower Colorado River, approximately 35 miles east of the Project site.

Although there is little information on its migration behavior (USFWS 2016), least Bell's vireo likely migrates through the Colorado Desert. It is presumed that it may use riparian habitat and possibly upland scrub habitat during migration (USFWS 2016). No suitable nesting habitat is present on the Project site, although least Bell's vireo could occur on the site briefly, during migration season.

Avian Counts

A total of seventeen avian species were observed when avian counts were conducted during spring surveys in the mornings. Appendix A-5 summarizes all avian counts observed during the survey period.

4.1.23 American Badger: *SSC*

The American badger is associated with dry open forest, shrub, and grassland communities with an adequate burrowing rodent population and friable soils. Badgers generally are associated with treeless regions, prairies, parklands, and cold desert areas (Zeiner et al. 1990). Badgers inhabit burrows and often prey on small mammals that inhabit burrows, as evidenced by claw marks along the edges of burrows. Suitable habitat exists for American badgers throughout the Project site. There are several canid burrows and complexes observed that could be used by the species although no badgers were observed and none of the burrows showed definitive badger sign.

4.1.24 Desert Kit Fox: *CPF*

Desert kit fox (*Vulpes macrotis arsipus*) is protected by the California Code of Regulations (Title 14, CCR: §460) and Fish and Game Code Section 4000 as a fur-bearing mammal. Title 14 of the California Code of Regulations, Section 460, stipulates that desert kit fox may not be taken at any time. Desert kit fox is a fossorial mammal that occurs in arid open areas, shrub grassland, and desert ecosystems within the Mojave and Sonoran Deserts. Desert kit fox typically occurs in association with its prey base, which includes small rodents, primarily kangaroo rats, rabbits, lizards, insects, and in some cases, immature desert tortoises (Zeiner et al. 1990). Burrow complexes that have multiple entrances provide shelter, escape, cover, and reproduction, but desert kit fox may utilize single burrows for temporary shelter. Litters of one to seven young are typically born in February through April (McGrew 1979).

During surveys, three active kit fox burrows and fourteen inactive kit fox burrows. In addition, there were also a total sixteen unidentified canid burrows and burrow complexes (multiple-entrance connected burrows) that could also be used by kit foxes (Figure 11, Appendix A-6). These numbers will likely change over time since kit fox distribution is dynamic and change under natural conditions due to prey availability and other environmental factors such as the presence of coyotes that prey on kit fox pups.

4.1.25 Desert Bighorn Sheep *BLMS*

The desert bighorn sheep (*Ovis canadensis nelsoni,* also called Nelson's bighorn sheep*)* is found from the Peninsular and Transverse Ranges through most of the desert mountain ranges of California, Nevada, and northern Arizona to Utah. The Project site is well outside the range of the listed threatened Peninsular bighorn sheep, which was formerly recognized as a subspecies and now considered a distinct vertebrate population segment of the desert bighorn sheep. Essential habitat for desert bighorn sheep includes steep, rocky slopes of desert mountains, and areas where surface water is available during dry seasons. In the spring, when annual plants are available, desert bighorn sheep tend to disperse downhill to bajadas and alluvial fans to forage.

Habitat in the desert mountain ranges surrounding the upper Chuckwalla Valley is occupied by desert bighorn sheep, and they occasionally use the valley floor habitat either for foraging (near the lower mountain slopes) or as movement routes among mountain ranges. Due to the project's location on the valley floor near sites with comparable land uses and human activity patterns, the project is not likely to affect bighorn sheep behavior or habitat use to any large extent. No sign or evidence of desert bighorn sheep was found during field surveys, but scat is often difficult to distinguish from burro deer. Potential for occurrence is low.

4.1.26 Burro Deer: *CPGS*

Burro deer (*Odocoileus hemionus eremicus*) is a subspecies of mule deer (*Odocoileus hemionus*) that inhabits desert dry wash woodland communities in the Colorado region of the Sonoran Desert near the Colorado River. Some burro deer are year-around residents along the Colorado River, while others are transient and move between mesic and arid desert areas in response to seasonal water and forage availability. During hot summers burro deer concentrate along the Colorado River or the Coachella Canal where water developments have been installed and where microphyll woodland is dense and provides

good forage and cover. With late summer thundershowers and cooler temperatures, burro deer move away from the Colorado River and Coachella Canal into larger washes or wash complexes in the foothills and nearby mountains (BLM CDD 2002). One old partial carcass (skull with antlers), burro deer scat and tracks were observed throughout the Project site (Figure 11, Appendix A-6). Burro deer may be crossing the site to access nearby agriculture for water sources.

4.1.27 Special Status Bats

Bat roosts occur in the vicinity of the Project site in the McCoy Mountains approximately 20 miles east, Eagles Nest Mine within the Little Maria Mountains approximately 20 miles northeast, and Paymaster Mine within the Pinto Mountains approximately 30 miles northwest of the Project site (Larry LaPre, BLM, pers. comm.; CEC 2010). It is not expected that any special status bat species would have a substantial roost on the Project site since habitat features most associated with these species (e.g. rock ledges, cliffs, large tree hollows, mine shafts) do not occur on the Project site. However, marginal roosting opportunities for bat species, such as the common canyon bat and California myotis, are available in tree cavities and soil crevices within dry desert wash woodland habitat, though limited. One live unidentified bat species was observed within an Ironwood tree cavity during surveys (Figure 11, Appendix A-6). Suitable foraging habitat for common and special status bats is found on the Project site within desert dry wash woodland and near adjacent agricultural parcels where water may be available year-round.

Seven special status bat species may forage on or near the Project site; they are discussed further below. Suitable, but limited, roosting habitat may occur for several of these species within the dry wash woodland habitat and in nearby areas such as freeway underpasses. Those that occur closest to the Project vicinity, where camera stations were established (see section 3.2.7, figures 11, 12), did not show any sign of bat roosts at the time cameras were setup. Other special status bat species known from the region typically inhabit rocky sites and would not be expected to use the Project site for roosting.

Townsend's Big-Eared Bat: *SSC, BLMS*

Townsend's big-eared bat (*Corynorhinus townsendii*) roosts in caves, mines, abandoned dwellings, and large basal hollows of large trees (e.g., redwoods). Townsend's big-eared bat occurs from sea level to approximately 9,000 feet elevation within a range of habitats. It typically forages along streams and within woodlands. The Project site does not provide roosting areas for Townsend's big eared bat but does have foraging habitat in desert dry wash woodland and access to artificial water sources at agricultural farms nearby.

California Leaf-Nosed Bat: *SSC, BLMS*

California leaf-nosed bat (*Macrotus californicus*) occurs in the deserts of California, southern Nevada, Arizona and south to northwestern Mexico. In California, it is known from eastern San Bernardino, Riverside, and San Diego counties and all of Imperial County (CEC 2012). California leaf-nosed bat relies on caves and mines for roosting habitat. Foraging habitat typically consists of riparian and desert wash habitats, which occur on the Project. California leaf-nosed bat may forage within the Project site, but it is not expected to roost due to absence of suitable caves and mines.

Pallid Bat: *SSC/BLMS*

The pallid bat (*Antrozous pallidus*) is a locally common species throughout California, and a year-round resident in most of the range. It occupies a wide variety of habitats at elevations less than 6,000 feet including grasslands, shrublands, woodlands, and forests, and is most common in open, dry habitats with rocky areas for roosting; pallid bat roosts in cliffs, caves, crevices, mines, hollow trees, and various human-made structures (Zeiner 1990). The Project site may provide suitable foraging habitat for pallid bats within the dry wash woodland but does not provide suitable roosting habitat. Acoustic bat surveys for Palen Solar Power Project (about 1 mileseast of the Project site) detected pallid bat within the Project vicinity.

Western Mastiff Bat: *SSC, BLMS*

The western mastiff bat (*Eumops perotis californicus*) is widespread throughout the southwest U.S. and into Mexico. Its distribution in California is widespread, with year-round occurrence data primarily in central and southern California (Zeiner 1990). The western mastiff bat is found in a range of habitats, including coastal, forests, woodland, and desert scrub areas where roosting sites are available (Pierson and Rainey 1998). Roosting habitat typically consists of rocky crevices in canyons and cliffs with vertical or nearly vertical walls. The majority of roost sites are at least two meters above the ground (e.g., on cliff faces) and lacking obstructions. Suitable habitat for foraging occurs throughout the Project site, but roosting habitat is lacking. Western mastiff bat was detected within the vicinity on acoustic bat surveys for Palen Solar Power Project.

Western Yellow Bat: *SSC*

The western yellow bat (*Lasiurus xanthinus*) is a CDFW Species of Special Concern. It is found in Arizona, New Mexico, Mexico, and year-round in California. It is found in arid regions, in riparian, desert riparian, desert wash and palm oasis habitat. The western yellow bat is insectivorous, and roosts and feeds in palm oases and riparian habitats (Zeiner 1990). Potential roosting habitat, though marginal, exists within the Project site in areas where desert dry wash woodland exists. Suitable habitat for foraging also occurs in those same areas. Western yellow bat was detected within the vicinity during acoustic bat surveys for the Palen Solar Power Project.

Big Free-Tailed Bat: *SSC*

The big free-tailed bat (*Nyctinomops macrotis*) is distributed in the southwest U.S., and northern South America, generally from sea level to 8,000 feet in elevation. It is rare in California, prefers rocky terrain, and roosts in tree cavities and man-made structures. It wanders in autumn, out of its normal range (Zeiner 1990). Foraging and potential roosting habitat for the big free-tailed bats occurs within the Project in desert dry wash woodland. Big free-tailed bat was detected within the Project vicinity through acoustic surveys conducted for Palen Solar Energy Project.

Pocketed Free-Tailed Bat: *SSC*

The pocketed free-tailed bat (*Nyctinomops femorosaccus*) is common in Mexico but less common in western North America, from southern California, central Arizona, southern New Mexico, and western Texas (WBWG 2018). The pocketed free-tailed bat has been documented in Riverside, San Diego, and Imperial counties. Typical habitats include pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oasis. Roosting habitat typically includes rock crevices associated with granite boulders, cliffs, or rocky canyons at a height suitable for approach and takeoff (CNDDB 2020). Pocketed free-tailed bats occur in the desert from March through August, when they then migrate out of the area (BLM 2011). Suitable habitat for foraging exists on the Project site, but roosting habitat is lacking. Call sequences that may have been pocketed free-tailed bat were detected within the Project vicinity during acoustic surveys for Palen Solar Energy Project but lacked features for definitive confirmation.

4.2 Wildlife Movement

Wildlife movement among habitat areas is a part of regular activities and may be needed for long-term population sustainability. Land use changes can impact wildlife movement across the landscape, leading to habitat fragmentation and population isolation. When habitat is converted to other uses, it separates or isolates the remaining habitat areas, which creates less habitat availability, and less opportunity for wildlife to make use of the remaining habitat, due to its physical isolation. Habitat areas may be isolated from one another by distance across unfavorable habitat, or by linear barriers such as roadways or aqueducts. Barriers may be impassable for some species, such as a wide busy road, for a slow-moving animal, or may be only minor interruptions to movement, such as a narrow, lightly travelled road. Fragmentation and subsequent population isolation can affect wildlife populations by limiting dispersal and genetic exchange, limiting movement within the home-ranges for wide-ranging species, and limiting the opportunity for populations to occupy new habitat in response to the effects of climate change. Fragmentation also increases habitat "edge" (i.e., habitat adjacent to other land uses), leading to increased exposure to invasive species, human disturbance (vehicles, trash dumping, etc.), and an overall reduction of biodiversity and alteration or degradation of ecological processes. Within the Project vicinity are existing and developing solar farms, other commercial developments, and agriculture that contributes to the fragmentation of habitat (Figure 12).

Accessibility between habitat areas (i.e., "connectivity") is important to long-term genetic diversity and demography of wildlife populations. In the short term, connectivity may also be important to individual animals' ability to occupy their home ranges, if their ranges extend across a potential movement barrier. These considerations apply to greater or lesser extent to all plants and animals. Plant populations "move" over the course of generations via pollen and seed dispersal; most birds and insects travel and disperse via flight; terrestrial species, including small mammals, reptiles, arid land amphibians, and non-flying invertebrates, disperse across land. Therefore, landscape barriers and impediments are more important considerations for movement of terrestrial species. These considerations are especially important for rare species and wide-ranging mammals, which both tend to exist in lower population densities.

In developed landscapes where remnant habitat exists as partially isolated patches surrounded by other land uses, planning for wildlife movement generally focuses on "wildlife corridors" to provide animals with access routes between habitat patches. In largely undeveloped areas, including the Chuckwalla Valley, wildlife habitat is available in extensive open space areas throughout much of the region, but specific barriers may impede or prevent movement. In these landscapes, wildlife movement planning focuses on specific sites where animals can cross linear barriers (e.g., wash crossings beneath Interstate 10), and on broader linkage areas that may support stable, long-term populations of target species and allow demographic movement and genetic exchange among populations in distant habitats (e.g., surrounding mountains).

The California Desert Connectivity Project provides a comprehensive and detailed habitat connectivity analysis for the California deserts (Penrod et al. 2012). The Connectivity Project identified a Desert Linkage Network to maintain habitat for movement between landscape blocks. The landscape blocks identified in the project vicinity are the Palen–McCoy Mountains to the northeast and the Chocolate Mountains to the southwest. Broad habitat linkages connect these landscape blocks. The DRECP identifies a wide multi-species linkage area that partially overlaps with the western edge of the Project site (Figures 1 and 12). The final design of the Project will follow all CMA requirements and may avoid or have a reduced footprint within the multi-species linkage boundaries.

In the Chuckwalla Valley, the biologically important functions of large mammal movement are the long-term demographic and genetic effects of occasional animal movement among mountain ranges and other large habitat areas. Animals such as desert bighorn sheep may travel across the valley infrequently, to reach other subpopulations in surrounding mountains. In contrast to large animal movement, desert tortoises and other less-mobile animals may live out their entire lives within a linkage area between larger habitat blocks; for these species, movement among surrounding habitat areas may take place over the course of several generations.

Movement opportunity varies for each species, depending on motility and behavioral constraints, as well as landscape impediments. For many terrestrial wildlife species, movement across the Chuckwalla Valley, including movement to and from the project site, or across the site, is limited by anthropogenic barriers or land uses. The I-10 freeway, located south of the project site, is a significant obstruction to movement by terrestrial wildlife. Some species, such as coyote, may learn to cross the freeway safely. However, the freeway presents an impassable or high-risk barrier to north-south movement for most terrestrial species. Other linear features, such as smaller paved and unpaved roads and transmission lines have only minimal effects on wildlife movement.

On the 32-mile stretch of I-10 between the Desert Center and Wiley Wells Road exits there are 24 crossings that provide safe access under the freeway (CEC, 2010). Other than these crossings, the freeway is a nearly complete barrier to north-south terrestrial wildlife movement in the Chuckwalla Valley. A survey of potential tortoise accessibility across the I-10 investigated these 24 crossings (oriented approximately in a north-south direction) for suitability for large mammals, small mammals, and reptiles (CEC, 2010). The survey found that fencing was often missing or in disrepair, was not tethered to the underpasses, and does not function to funnel wildlife under the interstate. The study concluded the underpasses provide connectivity and safe movement corridors between habitat areas to

the north and south of the I-10, but the fencing does not prevent animals from accessing I-10. Wildlife species and sign detected at the undercrossings included lizards, rodents, rabbit, roadrunner, ground squirrel, fox, coyote, bobcat, and burro deer. Additionally, the CDFW and USFWS have documented burro deer using I-10 undercrossings. Six of these undercrossings are located within the multi-species linkage area (Figure 12).

Wildlife cameras set up for the duration of one month during spring 2020 season at seven of these I-10 undercrossings near the Project site, identified several species using those corridors. Six of the seven camera locations were within the multi-species linkage area. Table 6 summarizes the species detected by the wildlife cameras using these undercrossings (Figures 11, 12).

Table 6. Wildlife Camera Observations

Species Observed	Camera Station Number						
	C08	C09	C10	C11	C12	C13	C14
Burro deer (*Odocoileus hemionus eremicus*)			x	x	x	x	
Bobcat (*Lynx rufus)*					x		
Coyote (*Canis latrans)*	x		x		x	x	x
Desert kit fox *(Vulpes macrotis)*	x						x
Black-tailed jackrabbit (*Lepus californicus*)			x		x	x	x
Desert wood rat *(Neotoma lepida)*			x	x			
Round-tailed ground squirrel (*Xerospermophilus tereticaudus)*							x
Desert kangaroo rat (*Dipodymis deserti)*					x		
Rodent (unknown)			x	x	x		
Eurasian collared dove (Streptopelia decaocto)						x	
Avian species (unknown)			x	x	x		
Hummingbird species (*Trochilide sp)*			x				
Desert iguana *(Dipsosaurus dorsalis)*			x				
Desert spiny lizard *(Sceloporus magister)*				x			
Western whiptail lizard *(Aspidoscelis tigris)*				x			
Insect (*Lepidoptera sp*)		x			x		

4.3 Special Status Plant Species

Forty-two special status plant species were reviewed for their potential to occur within the Project site and its vicinity based on regional plans and database records (Appendix C). The probability of occurrence is defined as follows:

- Present: Species was observed at the time of the survey
- High: Both a historical record exists of the species within the project site or its immediate vicinity (approximately 5 miles) and the habitat requirements associated with the species occur within the project site.
- Moderate: Either a historical record exists of the species within the immediate vicinity of the project site (approximately 5 miles) or the habitat requirements associated with the species occur within the project site.
- Low: No records exist of the species occurring within the project site or its immediate vicinity and/or habitats needed to support the species are of poor quality.
- Minimal: Species was not observed during focused surveys conducted at an appropriate time for identification of the species, or species is restricted to habitats that do not occur within the project site

Special status species detected within the Project site or having moderate potential to occur based on the presence of suitable habitat are discussed further in this section. Special status species observed are identified in Appendix A-6 and mapped on Figure 13.

4.3.1 Crucifixion Thorn: *CRPR 2B.2*

Crucifixion thorn (*Castela emoryi*) has 177 records occurring within California. In Riverside County, several records are near or within Desert Center, including Desert Sunlight Solar Farm just north of the Project and at Athos Solar Project (CCH 2020). There is suitable habitat for crucifixion thorn within wash areas of the Project site. It is a large conspicuous shrub and can be located and identified at any time of year, even in a year of poor rainfall. It was not observed on the Project site during surveys.

4.3.2 Glandular Ditaxis: *CRPR 2B.2*

Glandular ditaxis (*Ditaxis claryana*) is an annual or short-lived perennial that blooms in the fall following the start of the rainy season that occurs in Sonoran desert scrub. There are 49 occurrences in the Consortium of California Herbaria (CCH 2020) and there is one record within Desert Center and another near Corn Springs ACEC, south of I-10 (CNDDB 2020). Suitable habitat does occur within the Project site, but it was not observed during plant surveys.

4.3.3 California Ditaxis: *CRPR 3.2*

California ditaxis (*Ditaxis serrata* var. *californica*) has a CRPR of 3.2 and a NatureServe rank of G3G4/S2 S, which indicates more information is needed about the status of this species. California ditaxis may be a glabrous variety of the common *Ditaxis neomexicana* (CEC 2010). It occupies Sonoran Desert scrub vegetation and prefers sandy washes and alluvial fans of the foothills and lower desert slopes, from 100 to 3,000 feet amsl. It is known to occur in San Bernardino, Riverside, Imperial, and San Diego counties of California and in Sonora, Mexico (CNPS 2020). There are 45 records of this species in California, primarily

from Riverside County (CCH 2020). There is suitable habitat on the Project site, but it was not observed during surveys.

4.3.4 Utah Milkvine: *CRPR 4.2*

Utah milkvine (*Cynanchum utahense* [=*Funastrum utahense*]) has 149 records from the Consortium of California Herbaria database primarily from San Bernardino and San Diego counties, but there are also several records in Riverside county. There is one record of this species north of Desert Center and another record just southwest of Palen Lake. This twining perennial occurs in sandy, gravelly Mojavean desert scrub. Suitable habitat exists throughout the Project, but Utah milkvetch was not observed during surveys.

4.3.5 Desert Unicorn Plant: *CRPR 4.3*

Desert unicorn plant (*Proboscidea althaeifolia*) has limited distribution but is not very threatened in California. It is a low-growing, perennial species that occurs in sandy washes within Sonoran desert scrub vegetation in San Bernardino, Imperial, Riverside, and San Diego counties of California. There are 36 records in Riverside County, several of which are from the Chuckwalla Mountains and Desert Center area (CCH 2020). It is a late-season bloomer (May to August) but has large and distinctive seed pods that can be detected during the spring season and fleshy root structure that can remain dormant in dry years (BLM 2011). Suitable habitat occurs within the Project site, but it was not observed during surveys.

4.3.6 Creosote Bush Rings: *BLMS*

No creosote bush rings were observed on the Project site during surveys.

4.3.7 Cacti, Yucca, and Native Trees

Native cacti, succulents, and trees are generally not ranked as special status plant species but the harvesting of these native plants is regulated under the California Native Plant Protection Act (Fish and Game Code §§ 1900-1913) and the California Desert Native Plant Act of 1981 (Food and Agricultural Code § 80001 et. seq.; Fish & Game Code §§ 1925-1926). Any vegetation to be salvaged and removed from the site (such as cactus or yucca) would be subject to sale at appraised value, according to CFR 43:5420.0-6. If the cacti or yucca is salvaged and/or transplanted offsite, as approved by BLM, then this resource is not subject to sale but remains in BLM ownership (Figure 13, Appendix A-7). These species include:

- fishhook cactus (*Mammillaria tetrancistra*)
- barrel cactus (*Ferocactus cylindraceus)*
- beavertail cactus *(Opuntia basilaris)*
- ocotillo (*Fouquieria splendens* ssp. *splendens)*

Additionally, five species of native trees were found within the Project site:

- desert ironwood (*Olneya tesota*)
- blue palo verde (*Parkisonia florida*)
- honey mesquite (*Prosopis glandulosa*)
- smoke tree (*Psorothamnus spinosus*)

- catclaw acacia (*Senegalia greggii*)

4.4 Invasive Weeds

Invasive weeds are non-native (exotic) plants included on the weed lists of the California Invasive Plant Council (Cal-IPC), or those weeds of special concern identified by the BLM. There are also some weeds designated as "noxious" by California Department of Food and Agriculture (CDFA) or the U.S. Department of Agriculture. Invasive weeds are of concern in wild lands because of their potential to degrade habitat and disrupt the ecological functions (Cal-IPC 2020). The following invasive weeds were identified on the Project site during Ironwood's field surveys and summarized in Appendix A-8 (Figure 13).

Sahara Mustard (*Brassica tournefortii)*

Sahara mustard has a highly invasive rating on Cal-IPC (Cal-IPC 2020). It has severe ecological impacts on physical processes, plant and animal communities, and vegetation structure, as well as having reproductive biology and other attributes that are conducive to moderate to high rates of dispersal and establishment (Cal-IPC 2020). Sahara mustard is native to the deserts of North Africa, the Middle East, and the Mediterranean regions of southern Europe (Bossard et al. 2000). Initial establishment of this species in California occurred through the importation of date palms from the Middle East to the Coachella Valley during the early 1900s (Bossard et al. 2000). Sahara mustard currently occurs across Riverside County, as well as all neighboring counties (Cal-IPC 2020). Sahara mustard was found throughout the Project site during surveys

Flixweed *(Descurainia sophia*)

Flixweed has a rating of limited on the Cal-IPC and is not listed on the CDFA noxious weed list (Cal-IPC, 2020, CDFA, 2020). It is invasive but its ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Ecological amplitude and distribution are generally limited, but it may be locally persistent and problematic. *Descurainia sophia* is an annual or biennial (family Brassicaceae) found throughout California along roadsides, in agricultural fields, disturbed desert areas, scrub, grasslands and woodlands. It is most common in the northeastern region, particularly in the Great Basin. It tends to prefer well-drained sandy or stony soils. It produces abundant seed, which can be spread by soil or water movement, and by clinging to animals, humans, and vehicle tires, but its rate of spread is relatively slow except in disturbed areas. Flixweed may invade recently disturbed areas and then become less dominant as native species become re-established, Cal-IPC, 2020). It was found throughout the Project site.

Mediterranean grass (*Schismus barbatus* and *S. arabicus*)

Mediterranean grass has a limited invasive potential (CAL-IPC 2020) and is not listed by CDFA. It is an annual grass found in both central and southern California, particularly in disturbed areas and deserts, probably introduced at the turn of the century (CDFA 2020). It contributes to increased fire ignition and spread due to accumulation of dry thatch during dry seasons. Wildfire, in turn, contributes to the type-conversion of desert shrubland into annual grassland. These species' reproductive biology and other attributes result in low to moderate rates of invasiveness. Spread may occur from seed dispersal

associated with soil disturbance, vegetation cutting, and from vehicle tires and footwear. Increase of these species is most likely to occur in areas where it already exists. Mediterranean grass is prevalent throughout Sonoran creosote bush scrub of the Project site. BLM and other agencies recognize that because of its widespread distribution, Mediterranean grass is not feasible to eradicate. It occurs throughout the Project site.

London rocket *(Sisymbrium irio)*

London rocket has a moderate rating by the Cal-IPC, indicating that the species has substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure. Ecological amplitude and distribution may range from limited to widespread. It is a winter annual forb/herb (family Brassicaceae), which can be found in abandoned fields, waste places, roadsides, and orchards. It matures earlier in the year than native species, allowing it to out-compete them. It is not listed on the CDFA noxious weed list. The species distribution is generally spreading in California desert regions, (Cal-IPC, 2020). During surveys, this species was generally limited to areas directly underneath desert ironwood (*Olneya tesota)* trees or other large shrubs on the Project site.

Non-native, naturalized species

Other non-native plant species observed on the Project that are not considered invasive but have become naturalized includes Hedge mustard *(Sisymbrium orientale).*

5.0 REFERENCES

AECOM. 2009. Palen Solar Power Project Biological Technical Report. Riverside County, California. Submitted to Solar Millennium, LLC, Berkeley, California, and Chevron Energy.

AECOM. 2010. Fall Botanical Surveys. Palen Solar Power Project. CEC Docket No. 09-AFC-7. TN 58879. May 17, 2010.

Andersen, M. C., J. M. Watts, J. E. Freilich, S. R. Yool, G. I. Wakefield, J. F. McCauley and P. B. Fahnestock. 2000. Regression-tree modeling of desert tortoise habitat in the central Mojave Desert. Ecological Applications 10(3): 890-900.

Andre, Silverman, pers. comm. 2010. Cited in CEC Revised Staff Assessment, Palen Solar Project, Part 2.

Aspen Environmental Group (Aspen). 2019. Project Memorandum – Arica Solar Project and Victory Pass Solar Project: Biological Resources Survey Work Plan. September 23, 2019.

Averill-Murray, Roy C., C. Darst, N. Strout, and M. Wong. 2013. Conserving Population Linkages for The Mojave Desert Tortoise (*Gopherus agassizii*). Herpetological Conservation and Biology 8(1):1-15. Published: 30 April 2013.

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. The Jepson manual: vascular plants of California, second edition. University of California Press, Berkeley.

Barrett, S. L. 1990. Home range and habitat of the desert tortoise (Xerobates agassizii) in the Picacho mountains of Arizona. Herpetologica 46(2): 202-206.

Beal, F. E. L. 1907. Birds of California in relation to the fruit industry, part 1. U.S. Dept. Agri. Biol. Surv. Bull. 30.

Bent, A. C. 1948. Life histories of North American nuthatches, wrens, thrashers, and their allies. U.S. Natl. Mus. Bull. 195. 475pp.

Berry, K.H. 1986. Desert tortoise (*Gopherus agassizii*) relocation: Implications of social behavior and movements. Herpetological 42:113-125.

Bitter, Dave. 2010. Investigator's Annual Report, Joshua Tree National Park. Golden Eagle Survey Findings. JOTR 00157.

Bitter, Dave. 2011. Investigator's Annual Report, Joshua Tree National Park. Golden Eagle Survey Findings. JOTR-00157.

Bleich, V. C., J. D. Wehausen, R. R. Ramey II, and J. L. Rechel. 1996. Metapopulation theory and mountain sheep: implications for conservation. Pages 353-373 in D. R. McCullough, editor. Metapopulations and wildlife conservation. Island Press, Washington D.C., USA.

Bloom Biological, Inc. (BBI). 2013a. (TN 200010) Palen Solar Electric Generating Facility Spring 2013 Avian Survey Results. Prepared for Palen Solar Holdings, Inc., Oakland, California. Prepared by BBI, Lake Forest, California. July 2013.

Bloom Biological, Inc. (BBI). 2013b. Palen Solar Electric Generating Facility Summer 2013 Avian Survey Results. Prepared for Palen Solar Holdings, Inc., Oakland, California. Prepared by BBI, Lake Forest, California. August 2013.

Bloom Biological, Inc. (BBI). 2013c. Palen Solar Electric Generating System 2013 Golden Eagle Nesting Survey Results. Prepared for Palen Solar Holdings, Inc., Oakland, California. Prepared by BBI, Lake Forest, California. October 2013.

Bloom Biological, Inc. (BBI). 2013d. Palen Solar Electric Generating System Winter 2013 Golden Eagle Survey Results. Prepared for Palen Solar Holdings, Inc., Oakland, California. Prepared by BBI, Lake Forest, California. March 2013.

Bloom Biological, Inc. (BBI). 2013e. (TN 70242) PSEGS Winter 2013 Golden Eagle Survey Results. Prepared for BrightSource Energy, Inc. March 2013.

Bureau of Land Management California Desert District (BLM CDD) and California Department of Fish and Game Inland, Desert, and Eastern Sierra Region. 2002. Proposed Northern and Eastern Colorado Desert Coordinated Management Plan and Final EIS, July 2002.

Bureau of Land Management (BLM). 2009. Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plants.

Bureau of Land Management (BLM). 2010. Special Status Animals in California, Including BLM Designated Sensitive Species.

Bureau of Land Management (BLM). 2011. Plan Amendment and Final EIS for the Palen Solar Power Project. Palm Springs -South Coast Field Office. May 2011.

Bureau of Land Management (BLM). 2012. Results of 2012 Golden Eagle Nesting Surveys of the California Desert and Northern California Districts. Prepared by BioResource Consultants, November 2012.

Bureau of Land Management (BLM). 2013. Golden Eagle Nest Occurrences, DRECP. Dataset in Databasin.org . https://databasin.org/datasets/9e7e4a80961f468887322ddd8e840777. Last accessed July 2020.

Bureau of Land Management (BLM). 2013. Draft Supplemental EIS for the Palen Solar Electric Generating System. Palm Springs -South Coast Field Office. July 2013.

Bureau of Land Management (BLM). 2016. Desert Renewable Energy Conservation Plan: Land Use Plan Amendment and Final Environmental Impact Statement. Prepared by U.S. Bureau of Land Management in partnership with U.S. Fish and Wildlife Service, California Energy Commission, and California Department of Fish and Wildlife. BLM/CA/PL-2016/03+1793+8321. October 2015.

Bossard, C.C. J.M Randall and M.C. Hoshovsky, 2000. Invasive Plants of California's Wildlands. University of California Press, Berkeley, CA.

Brown, P. E., and W. E. Rainey. 2014. Bat Habitat Assessment for Palen Solar Electric Generation System. Conducted for Alice E. Karl and Associates. Conducted by Brown-Berry Biological Consulting. May 17, 2014.

California Burrowing Owl Consortium (CBOC). 1993. Burrowing Owl Survey Protocol and Mitigation Guidelines. Prepared by the California Burrowing Owl Consortium. April 1993.

California Invasive Plant Council (Cal-IPC). 2020. California Invasive Plant Inventory Database. Available at: <http://www.cal-ipc.org/paf.> (Accessed July 2020).

California Department of Food and Agriculture (CDFA). 2020. Amend Section 4500. Noxious Weed Species. http://www.cdfa.ca.gov/plant/ipc/encycloweedia/encycloweedia_hp.htm. (Accessed July 2020).

California Department of Fish and Game (CDFG). 2000. Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened and Endangered Plants and Natural Communities.

California Department of Fish and Wildlife. (CDFW). 2012. Staff Report on Burrowing Owl Mitigation. March 7.

California Department of Fish and Wildlife. (CDFW). 2020a. Natural Diversity Database. July 2020. Special Animals List. Periodic publication. 51 pp.

California Department of Fish and Wildlife. (CDFW). 2020b. A Status Review of Townsend's Big-Eared Bat (*Corynorhinus townsendii*) in California.

California Department of Fish and Wildlife. (CDFW). 2020c. Natural Diversity Database Special Vascular Plants, Bryophytes, and Lichens List. Quarterly Publication. 73 pp. July 2020.

California Department of Fish and Wildlife. (CDFW). 2020d. California Sensitive Natural Communities. https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities. July 2020.

California Energy Commission (CEC). 2010. RSA (Revised Staff Assessment). Palen Solar Project, Part 2. September 2010. (TN 58497)

California Energy Commission (CEC), California Energy Commission, California Department of Fish and Wildlife, U.S. Bureau of Land Management, U.S. Fish and Wildlife Service. 2014a. Draft Desert Renewable Energy Conservation Plan (DRECP) and Environmental Impact Report/Environmental Impact Statement. July 2020 www.drecp.org.

California Energy Commission (CEC), California Energy Commission, California Department of Fish and Wildlife, U.S. Bureau of Land Management, U.S. Fish and Wildlife Service. 2014b. Draft Desert Renewable Energy Conservation Plan (DRECP) and Environmental Impact Report/Environmental Impact Statement. Appendix Q, Baseline Biological Report.

California Energy Commission (CEC), California Energy Commission, California Department of Fish and Wildlife, U.S. Bureau of Land Management, U.S. Fish and Wildlife Service. 2014c. Draft Desert Renewable Energy Conservation Plan (DRECP) and Environmental Impact Report/Environmental Impact Statement. Appendix B, Species Profiles.

California Energy Commission (CEC), California Energy Commission, California Department of Fish and Wildlife, U.S. Bureau of Land Management, U.S. Fish and Wildlife Service. 2014d. Draft Desert Renewable Energy Conservation Plan (DRECP) and Environmental Impact Report/Environmental Impact Statement. Volume III Section 7, Environmental Setting/Affected Environment, Biological Resources.

California Geological Survey. 2015. Comments and Additional Information for Incorporation into the Draft Desert Renewable Energy Conservation Plan (DRECP) and Environmental Impact Report/Environmental Impact Statement (EIR/EIS). February 5, 2015.

California Native Plant Society (CNPS). 2007. Vegetation Survey and Classification for the Northern & Eastern Colorado Desert Coordinated Management Plan (NECO).

California Native Plant Society (CNPS). 2020. CNPS Inventory of Rare and Endangered Plants, Riverside County. Available at: < http://www.rareplants.cnps.org/> Accessed July 2020

California Natural Diversity Data Base (CNDDB). 2020. Aztec Mines, Corn Spring, East of Aztec Mines, East of Victory Pass, Ford Dry Lake, Palen Lake, Palen Mountains, Pilot Mountain, and Sidewinder Well 7.5 minute USGS quadrangles.

Consortium of California Herbaria (CCH). 2020. Search results for taxa from CNPS Inventory in Riverside County, retrieved July 2020. Available at: http://ucjeps.berkeley.edu/consortium/

Corvus Ecological. Personal communication regarding Chuckwalla raptor surveys. August 2020

Davis, F. and Soong, O. 2013. Mojave fringe-toed lizard - Species Distribution Model, DRECP. Bren School of Environmental Science & Management. University of California, Santa Barbara Conservation Biology Institute. Jun 25, 2013 (modified Dec 3, 2013).

D'Antonio, C.M. 1990a. Invasion of coastal plant communities in California by the introduced iceplant, *Carpobrotus edulis* (Aizoaceae). Ph.D dissertation, University of California, Santa Barbara, CA .

Desert Research Institute (DRI) 2013. Geomorphic Assessment of Sand Transport for the Modified Project (Palen Solar Electric Generating System). Draft Final Report. Prepared for Aspen Environmental Group. Prepared by Dr. N. Lancaster and Dr. T. Bullard, Division of Earth and Ecosystem Sciences and Dr. J. Gillies Division of Atmospheric Sciences. July 23, 2013.

Duda, J. J., A. J. Krzysik and J. E. Freilich (1999). "Effects of drought on desert tortoise movement and activity." Journal of Wildlife Management 63(4): 1181-1192.

Dunn, J. L., and Garrett, K. L. 1997. A Field Guide to Warblers of North America. Houghton Mifflin, Boston.

EDAW AECOM. 2009. Palen Solar Power Project Burrowing Owl Technical Report. July 2009.

EDAW AECOM and Bloom Biological, Inc. (BBI). 2009. Palen Solar Power Project Avian Point Count Survey Technical Report. Prepared for Solar Millennium, LLC and Chevron Energy Solutions. August 2009.

Edwards, H.H., and G.D. Schnell. 2000. Gila Woodpecker (*Melanerpes uropygialis*). *The Birds of North America Online* (A. Poole, Ed.). Ithaca, New York: Cornell Lab of Ornithology; Accessed April 28, 2011. http://bna.birds.cornell.edu/bna/species/532.

Epps, C. W., P. J. Palsboll, J. D. Wehausen, R. R. Ramey II, and D. R. McCullough. 2005. Highways block gene flow and cause rapid decline in genetic diversity of desert bighorn sheep. Ecology Letters 8: 1029-1038.

Evens, JM and S.L. Hartman. 2007. Vegetation Survey and Classification for the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO). California Native Plant Society. Sacramento, CA.

Galati and Blek, LLP. 2010. Applicant's ground-based and field-verified delineation of desert dry wash woodland

Garrett, K., and J. Dunn. 1981. *Birds of Southern California: Status and Distribution*. Los Angeles, California: Los Angeles Audubon Society.

Gervais, J. A., D. K. Rosenberg, and L. A. Comrack. 2008. Burrowing owl (*Athene cunicularia*). Pages 218-226 in California bird species of special concern: a ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California (W. D. Shuford and T. Gardali, editors). Western Field ornithologists and California Department of Fish and Game, Studies of Western Birds 1: 1-450.

Hagerty, B. E., K. E. Nussear, T. C. Esque and C. R. Tracy. 2011. Making molehills out of mountains: landscape genetics of the Mojave desert tortoise. Landscape Ecology 26(2): 267-280.

Harless, M. L., A. D. Walde, D. K. Delaney, L. L. Pater and W. K. Hayes.2009. Home range, spatial overlap, and burrow use of the desert tortoise in the West Mojave desert. Copeia(2): 378-389.

Harrity, E.J. and C.J. Conway. 2018. Dispersal and Migration Behavior of Yuma Ridgway's rails. Wildlife Research Report #2018-01. Idaho Cooperative Fish and Wildlife Research Unit. Moscow, Idaho.

Harrity, E.J. and C.J. Conway. 2019. Dispersal and Migration Behavior of Yuma Ridgway's Rails. 2019 Annual Report. Wildlife Research Report #2019-01. Idaho Cooperative Fish and Wildlife Research Unit, Moscow, Idaho.

Haug, E.A., B.A. Millsap, and M.S. Martell. 1993. Burrowing Owl (*Speotyto cunicularia*). In A. Poole and F. Gill, eds. The Birds of North America, No. 61. The Academy of Natural Sciences, Philadelphia, Pennsylvania, and The American Ornithologists' Union, Washington, D.C.

Hollingsworth, B. D., and K. R. Beaman. 1999. Mojave Fringe-Toed Lizards (*Uma scoparia*). Species Accounts – West Mojave Plan www.blm.gov/ca/pdfs/cdd_pdfs/fringe1.PDF

Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. The Resources Agency, Department of Fish and Wildlife, State of California.

Humple, D. 2008. Loggerhead Shrike (*Lanius ludovicianus*). In. Shuford, W. D., and Gardali, T., eds. California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Ironwood Consulting (Ironwood). 2017. Biological Resource Technical Report – Palen Solar PV Project. Submitted to EDF Renewable Energy. April 12, 2017.

Ironwood Consulting (Ironwood). 2019. Biological Resource Technical Report – Athos Renewable Energy Project. Submitted to Aspen Environmental Group. January 2019.

Jarvis, J. M. 2009. The Natural History of the Mojave Fringe-Toed Lizard *Uma scoparia*: The Northern Lineage, Amargosa River, CA. Master's Thesis. California State University, Fullerton.

Jennings, M. R. and M. P. Hayes. 1994. Amphibian and reptile species of special concern in California. California Department of Fish and Game. Rancho Cordova 255 p.

Jepson, Willis Linn, and J. C. Hickman. 1993. The Jepson manual: higher plants of California. Berkeley, CA: University of California Press.

Jones, L.C., and R.E. Lovich. 2009. Lizards of the American Southwest. Tucson, Arizona: Rio Nuevo Publishers. September 30, 2009.

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. National Fish and Wildlife Forensics Laboratory. Ashland, Oregon.

Karl, A. 2013a. Summary of Spring Wildlife and Plant Surveys. Letter report to California Energy Commission dated May 16, 2013.

Kenney, M. 2010. Geomorphic Evaluation of Potentially Affected Aeolian Sand Migration Regions for Reconfigured Alternatives 2 and 3 Associated with the Wind Fence, Palen Solar Power Project (PSPP), Chuckwalla Valley, Riverside County, CA. July 20, 2010.

Kochert, M.N., K. Steenhof, C.L. McIntyre, and E.H. Craig. 2002. Golden Eagle (Aquila chrysaetos). In The Birds of North America, No. 684, edited by A. Poole and F. Gill. The Birds of North America, Inc. Philadelphia.

Lancaster, J. T., Bedrossian, T. L., and Holland, P., 2014, Eolian System Mapping for the Desert Renewable Energy Conservation Plan, California Geological Survey, 54p., 4 plates (multiple map scales).

Levenstein, K., A. Chatfield, W. Erickson, and K. Bay. 2014. Fall 2013 Avian Field Surveys for the Palen Solar Electric Generating System, Riverside County, California. Prepared for Palen Solar Holdings, LLC. February 13, 2014.

Levenstein, K. and C. Nations. 2013. Fall 2013 Nocturnal Migration Surveys for the Palen Solar Electric Generating System, Riverside County, California. Final Report. Prepared for Palen Solar Holdings, LLC. Prepared by Western EcoSystems Technology, Inc. (WEST), Cheyenne, Wyoming.

MacKay, P. 2003. Mojave Desert wildflowers: a field guide to wildflowers, trees, and shrubs of the Mojave Desert, including the Mojave National Preserve, Death Valley National Park, and Joshua Tree National Park. A Falcon Guide. Guilford, CT: Falcon. 338 p. 65313.

Mayhew, W. W. 1965. Adaptations of the amphibian, *Scaphiopus couchii* to desert conditions. American Midland Naturalist: pp 95-109.

Mayhew, W. W. 1965. Reproduction in the sand-dwelling lizard *Uma inornata*. Herpetologica 21, pp. 39-55.

McCaskie, G., P. De Benedictis, R. Erickson, and J. Morlan. 1979. Birds of northern California, an annotated field list. 2nd ed. Golden Gate Audubon Soc., Berkeley. 84pp.

McCreedy, C. 2008. Gila Woodpecker (*Melanerpes uropygialis*). The Desert Bird Conservation Plan. California Partners in Flight. Accessed April 28, 2011. http://www.prbo.org/calpif/htmldocs/desert.html.

McGrew, J.C. 1979. *Vulpes macrotis*. Mammalian Species 123:1–6.

Mills, S.G., J.B. Dunning, Jr., and J.M. Bates. 1989. Effects of Urbanization on Breeding Bird Community Structure in Southwestern Desert Habitats. The Condor 91:416–428.

Muhs, D.R., Reynolds, R.R., Been, J., Skipp, G., 2003. Eolian sand transport pathways in the southwestern United States: importance of the Colorado River and local sources. Quaternary International, 104, 3-18.

Munz, Philip A, and David D. Keck, 1973. A California flora and supplement. Berkeley, CA: University of California Press.

Murphy, R. W., T. L. Trepanier, and D. J. Morafka. 2006. Conservation genetics, evolution and distinct population segments of the Mojave fringe-toed lizard, *Uma scoparia*. Journal of Arid Environments 67:226–247.

Nussear, K.E., Esque, T.C., Inman, R.D., Gass, Leila, Thomas, K.A., Wallace, C.S.A., Blainey, J.B., Miller, D.M., and Webb, R.H. 2009. Modeling habitat of the desert tortoise (*Gopherus agassizii*) in the Mojave and parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona: U.S. Geological Survey Open-File Report 2009-1102, 18 p.

O'Connor, M. P., L. C. Zimmerman, D. E. Ruby, S. J. Bulova and J. R. Spotila. 1994. Home range size and movements by desert tortoises, *Gopherus agassizii*, in the eastern Mojave Desert. Herpetological Monographs 8: 60-71.

Oftedal OT. 2002. Nutritional ecology of the desert tortoise in the Mohave and Sonoran deserts, Chapter 9. In Van Devender TR, editor. The Sonoran Desert Tortoise: Natural History, Biology, and Conservation. Tucson: The University of Arizona Press and Arizona-Sonora Desert Museum, pp. 194–241.

Oftedal OT, Hillard S, Morafka DJ. 2002. Selective spring foraging by juvenile desert tortoises (*Gopherus agassizii*) in the Mojave Desert: evidence of an adaptive nutritional strategy. Chelonian Conservation Biology 4: 341–352.

Pagel, J.E., D.M. Whittington, and G.T. Allen. 2010. Interim Golden Eagle inventory and monitoring protocols; and other recommendations. Division of Migratory Bird Management, U.S. Fish and Wildlife Service

Palen Solar Holdings, LLC. 2013. Final Sand Transport Study for the Palen Solar Electric Generating System. Prepared by Fred L. Nials, Geoarchaeological Consultant to Centerline. July 23, 2013.

Peterson, C. C. 1996. Ecological energetics of the desert tortoise (*Gopherus agassizii*): Effects of rainfall and drought. Ecology 77(6): 1831-1844.

Philip Williams and Associates (PWA). 2010. Geomorphic Assessment and Sand Transport Impacts Analysis of the Palen Solar Power Project, Appendix C Biology Report. August 2010.

Pierson, E.D., and W.E. Rainey. 1998. Western mastiff bat, *Eumops perotis*. In Terrestrial Mammal Species of Special Concern in California, edited by B.C. Bolster. www.dfg.ca.gov/wildlife/nongame/ssc/docs/mammal/species/17.pdf.

Potter, C. and J. Weigand, 2016. Analysis of Desert Sand Dune Migration Patterns from Landsat Image Time Series for the Southern California Desert. Journal of Remote Sensing & GIS. May 16, 2016.

Prescott, B.G. 2005. Le Conte's Thrasher Species Account, West Mojave Plan, Bureau of Land Management. Final environmental impact report and statement for the West Mojave plan: a habitat conservation plan and California desert conservation area plan amendment. Moreno Valley (CA): U.S. Dept. of the Interior, Bureau of Land Management, California Desert District.

Rosenberg, K.V., S.B. Terill, and G.H. Rosenberg. 1987. Value of Suburban Habitats to Desert Riparian Birds. Wilson Bulletin 99(4):642–654.

Rosenberg, K. V., Ohmart, R. D., Hunter, W. C., and Anderson, B. W. 1991. Birds of the Lower Colorado River Valley. Univ. Ariz. Press, Tucson

Rostal, D. C., V. A. Lance, J. S. Grumbles and A. C. Alberts. 1994. Seasonal reproductive cycle of the desert tortoise (*Gopherus agassizii*) in the eastern Mojave Desert. Herpetological Monographs 0(8): 72-82.

Sawyer, J.O., Jr. and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society, Sacramento, California.

Sawyer, J.O., Jr., T. Keeler-Wolf, and J. M. Evans. 2009. A Manual of California Vegetation. Second edition. California Native Plant Society Press, Sacramento, CA.

Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at https://websoilsurvey.nrcs.usda.gov/. Accessed July 2020

Solar Millennium. 2010a. Spring Survey Protocols, Biological Resources. Palen Solar Power Project. CEC Docket No. 09-AFC-7. April 22 2010.

Solar Millennium. 2010b. Wildlife Movement and Desert Tortoise Habitat Connectivity. Palen Solar Power Project. CEC Docket No. 09-AFC-7. May 17, 2010.

Solar Millennium. 2010c. (TN 58454). Palen Solar Power Project golden Eagle Survey Results. Dated September 13, 2010.

Solar Millennium. 2010d. (TN 58106). Palen Solar Power Project Application for Certification Responses to CEC Information Requests Reconfigured Alternatives 2 and 3 Biological Resources 09-AFC-7. Dated July 21, 2010.

Stebbins, R. C. 2003. Western reptiles and amphibians. Houghton Mifflin Company, New York, New York. 3rd ed.

Tetratech and A. E. Karl. 2011. Biological Resources Technical Report, McCoy Solar Energy Project, Riverside County, CA.

Turner, F. B., D. C. Weaver and J. C. Rorabaugh. 1984. Effects of reduction in windblown sand on the abundance of the fringe-toed lizard (*Uma inornata*) in the Coachella Valley, California. Copeia (2): 370-378.

U. S. Fish and Wildlife Service (USFWS). 1992. Field Survey Protocol for Any Federal Action that May Occur Within the Range of the Desert Tortoise.

U. S. Fish and Wildlife Service (USFWS). 1990. Endangered and threatened wildlife and plants: Determination of threatened status for the Mojave population of the desert tortoise. USFWS. Ventura, CA. 50 CFR Part 17.

U. S. Fish and Wildlife Service (USFWS). 1994. Endangered and threatened wildlife and plants: proposed determination of critical habitat for the Mojave population of the desert tortoise. 17: 45748-45768.

U.S. Fish and Wildlife Service(USFWS). 2009. Desert Tortoise (Mojave Population) Field Manual: (*Gopherus agassizii*). Region 8, Sacramento, California.

U.S. Fish and Wildlife Service (USFWS). 2010a. Revised pre-project survey protocols for the desert tortoise (*Gopherus agassizii*).

U. S. Fish and Wildlife Service (USFWS). 2010b. Mojave Population of the Desert Tortoise (Gopherus agassizii) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service. Desert Tortoise Recovery Office. Reno, Nevada. September 30, 2010.

U. S. Fish and Wildlife Service (USFWS). 2010c. Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*). U. S. Fish and Wildlife Service (USFWS). 2011. Revised recovery plan for the Mojave population of the desert tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 222 pp.

U. S. Fish and Wildlife Service (USFWS). 2012. Biological Opinion for the K Road Moapa Solar Project, Moapa River Indian Reservation, Clark County, Nevada. File No. 84320-2011-F-0430 & 1-5-05-FW-536, Tier 5. March 7, 2012.

U.S. Fish and Wildlife Service (USFWS). 2016. Bald and Golden Eagles: Population demographics and estimation of sustainable take in the United States, 2016 update. Division of Migratory Bird Management, Washington D.C., USA.

U.S. Fish and Wildlife Service (USFWS). 2019a. Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service (USFWS) October 8, 2019. 22 pp.

U.S. Fish and Wildlife Service (USFWS). 2019b. Range-wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2018 Annual Report. Report by the Desert Tortoise Recovery office, U.S. Fish and Wildlife Service, Reno, Nevada.

U.S. Fish and Wildlife Service (USFWS). 2020. Range-wide Monitoring of the Mojave Desert Tortoise (*Gopherus agassizii*): 2019 Annual Reporting DRAFT. Report by the Desert Tortoise Recovery Office, U.S. Fish and Wildlife Service, Reno, Nevada.

Wehausen, J. D. 2005. Nutrient predictability, birthing seasons, and lamb recruitment for desert bighorn sheep. Pages 37-50 in J. Goerrissen and J. M. Andre, editors. Proceedings of the Sweeney Granite Mountains Desert Research Center 1978-2003: a quarter century of research and teaching. University of California, Riverside, USA.

Weigand, J. and S. Fitton. 2008. Le Conte's Thrasher (*Toxostoma lecontei*). *In* The Draft Desert Bird Conservation Plan: a strategy for reversing the decline of desert-associated birds in California. California Partners in Flight: http://www.prbo.org/calpif/htmldocs/desert.html

WEST, Inc. 2016. Draft Bird and Bat Conservation Strategy for the Palen Solar Photovoltaic Project. October 24, 2016.

Western Bat Working Group (WBWG). 2018. Species Account and status designations. http://wbwg.org/western-bat-species/. Accessed August 2018.

Western Regional Climate Center. 2016. Blythe airport and Eagle Mountain. http://www.wrcc.dri.edu/. Accessed July 15, 2016.

Whiteaker, L.; Henderson, J.; Holmes, R.; Hoover, L.; Lesher, R.; Lippert, J.; Olson, E.; Potash, L.; Seevers J.; Stein M.; Wogen N. 1998. Survey Protocol for Survey and Manage Strategy 2 Vascular Plants. V 2.0.

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

Yosef, R. 1996. Loggerhead Shrike (*Lanius ludovicianus*). In: The Birds of North America, No. 231 (A. Poole and F. Gill [eds.]). The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, D.C.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California, in California Wildlife Habitat Relationships System, California Department of Fish and Wildlife, California Interagency Wildlife Task Group.

Zimbelman, JR; Williams, SH; Tchakerian VP. 1995. Sand transport paths in the Mojave Desert, southwestern United States. In: Tchakerian, VP, ed. Desert Aeolian processes. London: Chapman and Hall: pp 101-129.

Photo 1. Vegetation community – Sonoran creosote bush scrub

Photo 2. Vegetation community – desert dry wash woodland

Photo 3. Vegetation community – desert pavement

Photo 4. Desert tortoise live individual

Photo 5. Inactive kit fox den

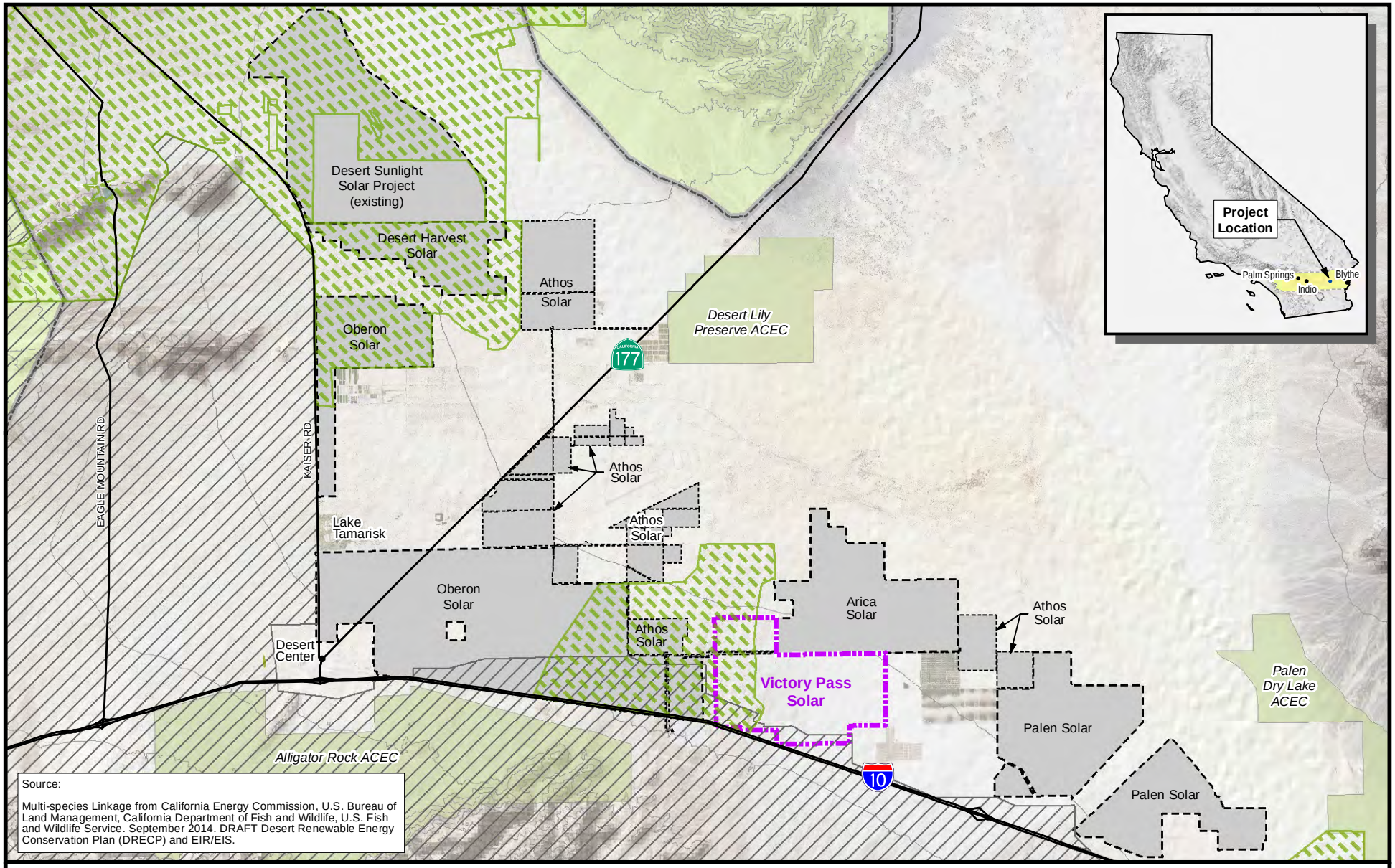
Photo 6. Unidentified bat species in tree cavity, foot showing

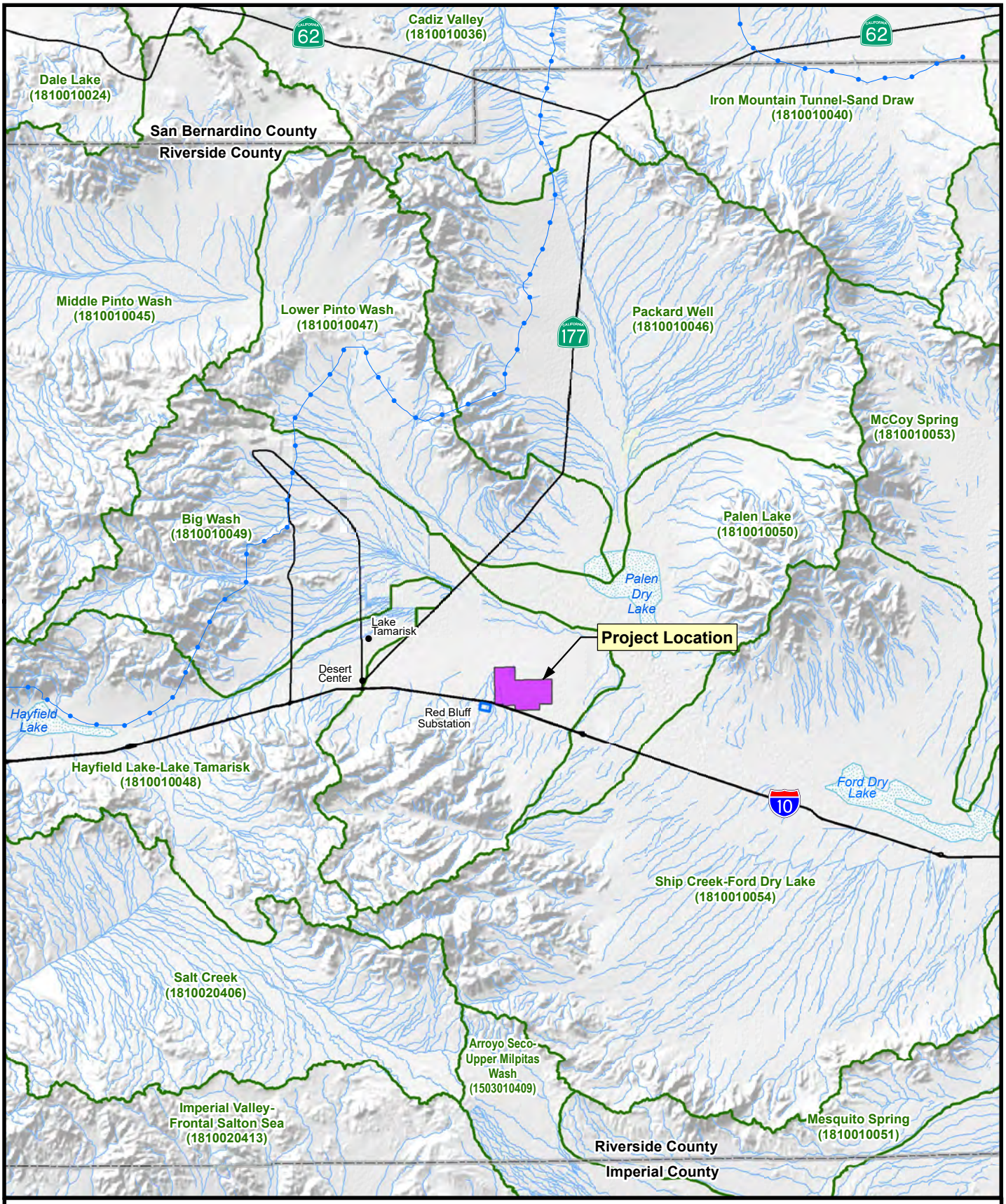
Photo 7. Camera station – burro deer

Photo 8. Camera station – bobcat

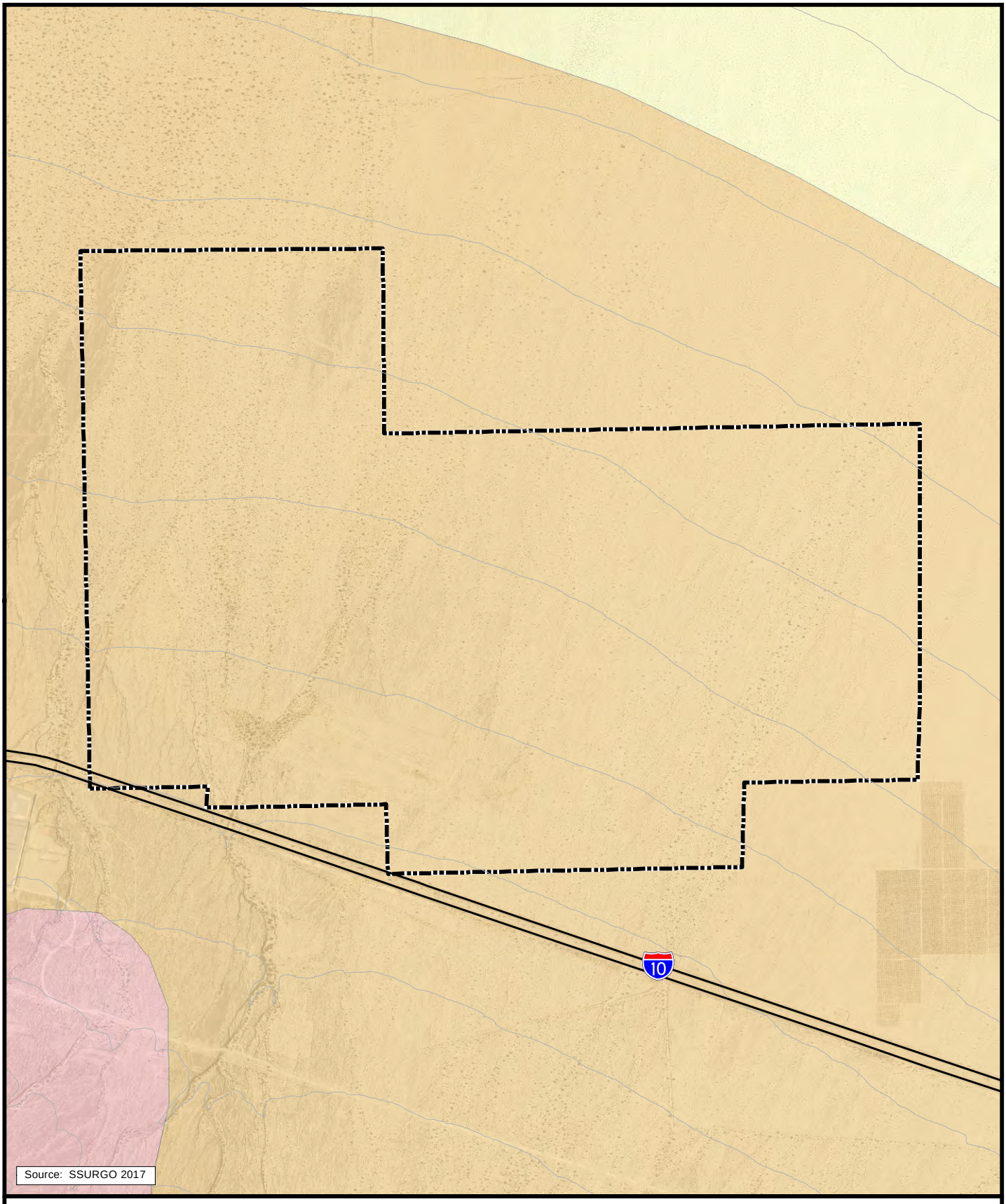
Photo 9. Camera station – coyote

Photo 10. Camera station - jackrabbit


P:\GIS\Ironwood\Shared\Projects\ProjectsVictory_PassVicinity.mxd
Project Location
Palm Springs
Blythe
Indio
Desert Sunlight Solar Project (existing)
Desert Harvest Solar
Athos Solar
Oberon Solar
Desert Lily Preserve ACEC
177
EAGLE MOUNTAIN RD
KAISER RD
Athos Solar
Lake Tamarisk
Athos Solar
Oberon Solar
Arica Solar
Athos Solar
Athos Solar
Desert Center
Victory Pass Solar
Palen Dry Lake ACEC
Palen Solar
Alligator Rock ACEC
10
Palen Solar
Source:
Multi-species Linkage from California Energy Commission, U.S. Bureau of Land Management, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service. September 2014. DRAFT Desert Renewable Energy Conservation Plan (DRECP) and EIR/EIS.
Ironwood Consulting
0
1
2
Miles
Victory Pass Solar Project
Desert Tortoise Conservation Area
Multi-Species Linkage Area
Area of Critical Environmental Concern (ACEC)
Joshua Tree National Park
Solar Project Boundary
FIGURE 1
General Vicinity
Victory Pass Solar


P:\GIS\Ironwood\Shared\Projects\Projects\Victory_Pass\Hydro.mxd
Cadiz Valley
(1810010036)
62
62
Dale Lake
(1810010024)
San Bernardino County
Riverside County
Iron Mountain Tunnel-Sand Draw
(1810010040)
Middle Pinto Wash
(1810010045)
Lower Pinto Wash
(1810010047)
177
Packard Well
(1810010046)
McCoy Spring
(1810010053)
Big Wash
(1810010049)
Palen Lake
(1810010050)
Palen
Dry
Lake
Lake
Tamarisk
Project Location
Desert
Center
Hayfield
Lake
Red Bluff
Substation
Hayfield Lake-Lake Tamarisk
(1810010048)
10
Ford Dry
Lake
Ship Creek-Ford Dry Lake
(1810010054)
Salt Creek
(1810020406)
Arroyo Seco-
Upper Milpitas
Wash
(1503010409)
Imperial Valley-
Frontal Salton Sea
(1810020413)
Mesquito Spring
(1810010051)
Riverside County
Imperial County
Ironwood
Consulting
0
4
Miles
Victory Pass Solar Project
Ephemeral Drainage
Aqueduct
Intermittent Water Feature
Watershed Boundary
FIGURE 2
Hydrologic Unit Map
Victory Pass Solar

P:\GIS\Ironwood\Shared\Projects\Projects\Victory_Pass\Soils.mxd



Ironwood
Consulting

0 1,000 2,000
Feet

Victory Pass Solar
Project Boundary

Soils

Rillito-Gunsight (s1140)

Rositas-Dune land-
Carsitas (s1136)

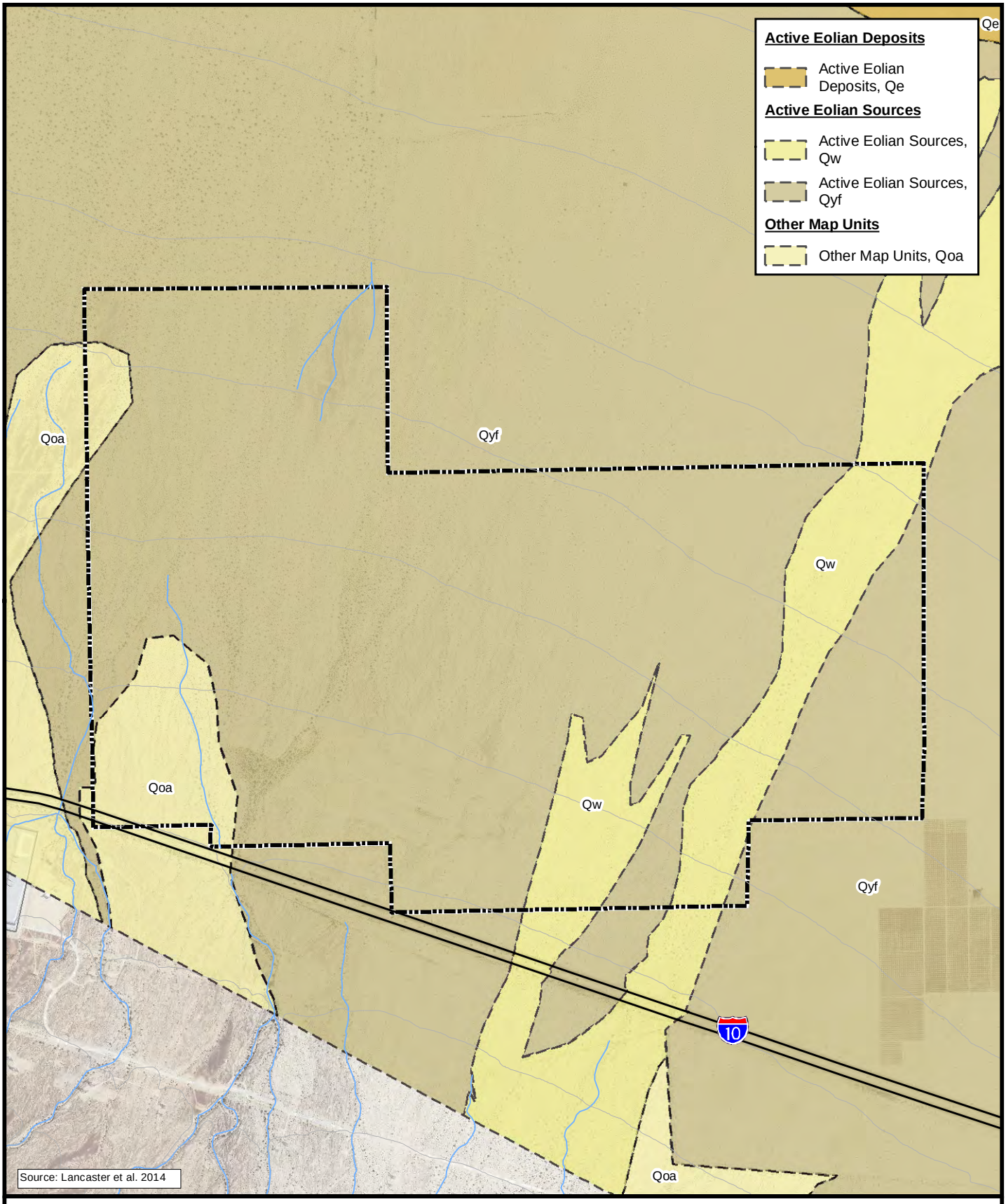
Vaiva-Quilotosa-Hyder-
Cipriano-Cherioni (s1141)

FIGURE 3

Soils

Victory Pass Solar

P:\GIS\Ironwood\Shared\Projects\Projects\Victory_Pass\Aeolian_Sand_Transport.mxd



Ironwood
Consulting

0 1,000 2,000
Feet

Ephemeral Drainage

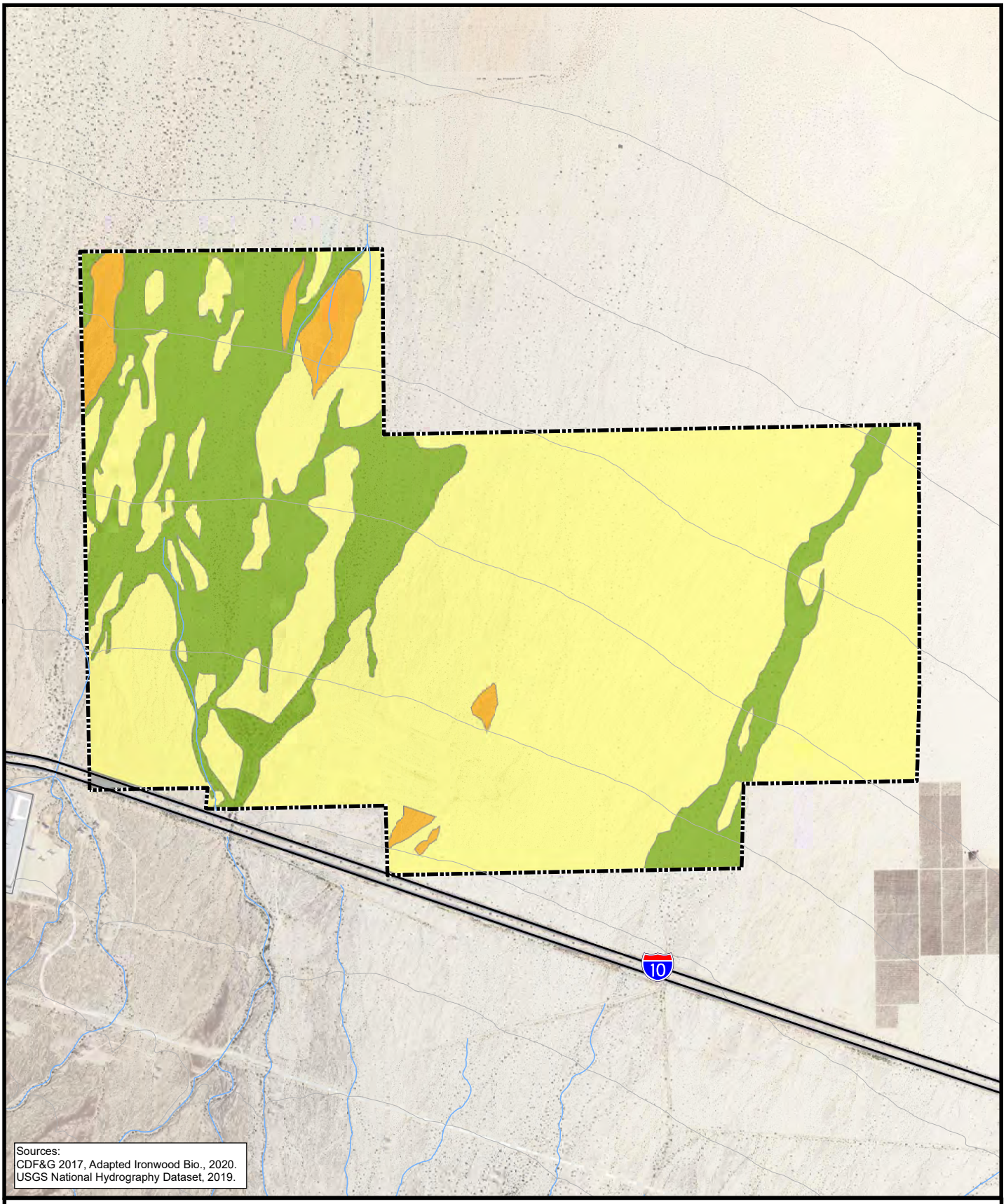
Victory Pass Solar Project Boundary

FIGURE 4

Aeolian Sand Transport

Victory Pass Solar

P:\GIS\Ironwood\Shared\Projects\Projects\Victory_Pass\Veg_20200625.mxd



Sources:
CDF&G 2017, Adapted Ironwood Bio., 2020.
USGS National Hydrography Dataset, 2019.

Ironwood
Consulting

0 1,000 2,000
Feet

Vegetation Communities

- Dry Desert Wash Woodland
- Sonoran Creosote Bush Scrub
- Desert Pavement
- Urban
- Ephemeral Drainage
- Victory Pass Solar Project Boundary

FIGURE 5

Vegetation Communities

Victory Pass Solar

P:\GIS\Ironwood\Shared\Projects\Projects\Victory_Pass\Survey_20210325.mxd

Ironwood
Consulting

0 1,000 2,000
Feet

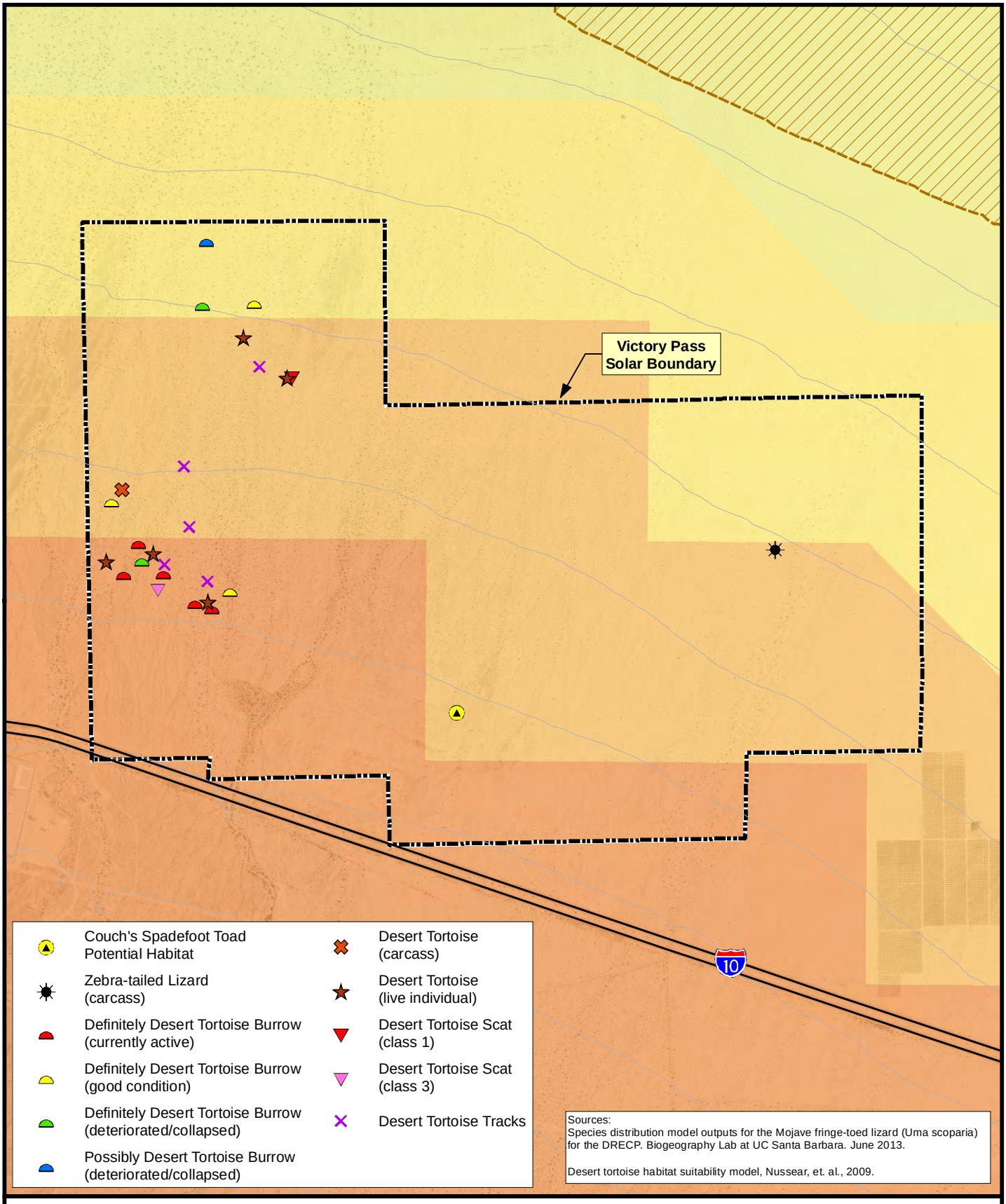
Avian Count Survey Line
10-meter Survey Area (Fall 2019)
BUOW Surveys #2 - 4 (Spring 2020)
20-meter Survey Area (Spring 2020)
Victory Pass Solar Project Boundary

FIGURE 6

Study Area

Victory Pass Solar

P:\GIS\Ironwood\Shared\Projects\Projects\Victory_Pass\Reptiles_Aug_2020.mxd



Ironwood
Consulting

Mojave Fringe-toed Lizard
Species Distribution Model

0 1,000 2,00
Feet

Predicted Desert Tortoise Occupancy

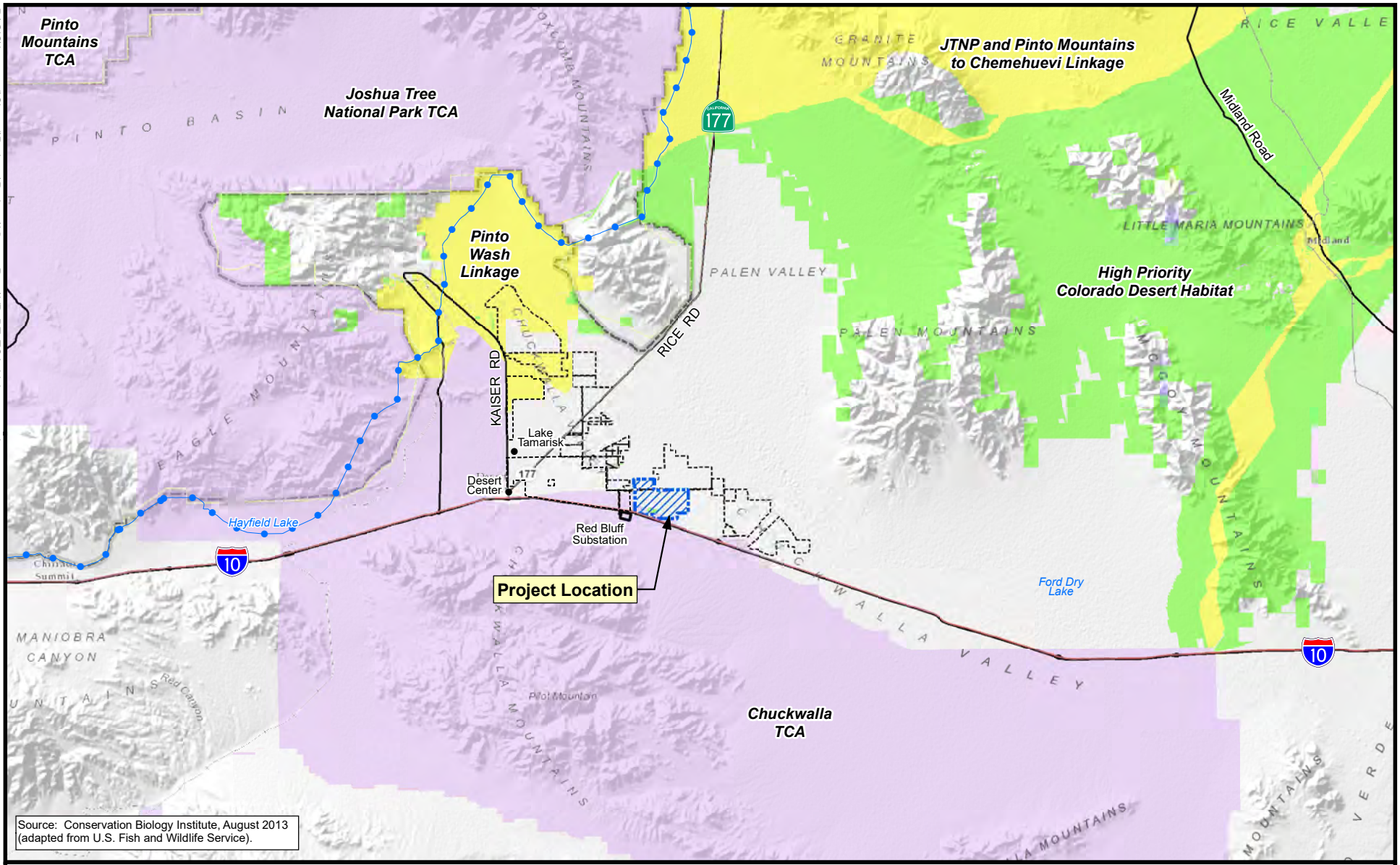
0	0.4 - 0.5
0 - 0.1	0.5 - 0.6
0.1 - 0.2	0.6 - 0.7
0.2 - 0.3	0.7 - 0.8
0.3 - 0.4	0.8 - 0.9

FIGURE 7

Noteworthy Reptile and Amphibian Observations

Victory Pass Solar

P:\GIS\Ironwood\Shared\Projects\Projects\Victory_Pass\VP_DT_TCA_Linkages.mxd



Ironwood Consulting

0 5 Miles

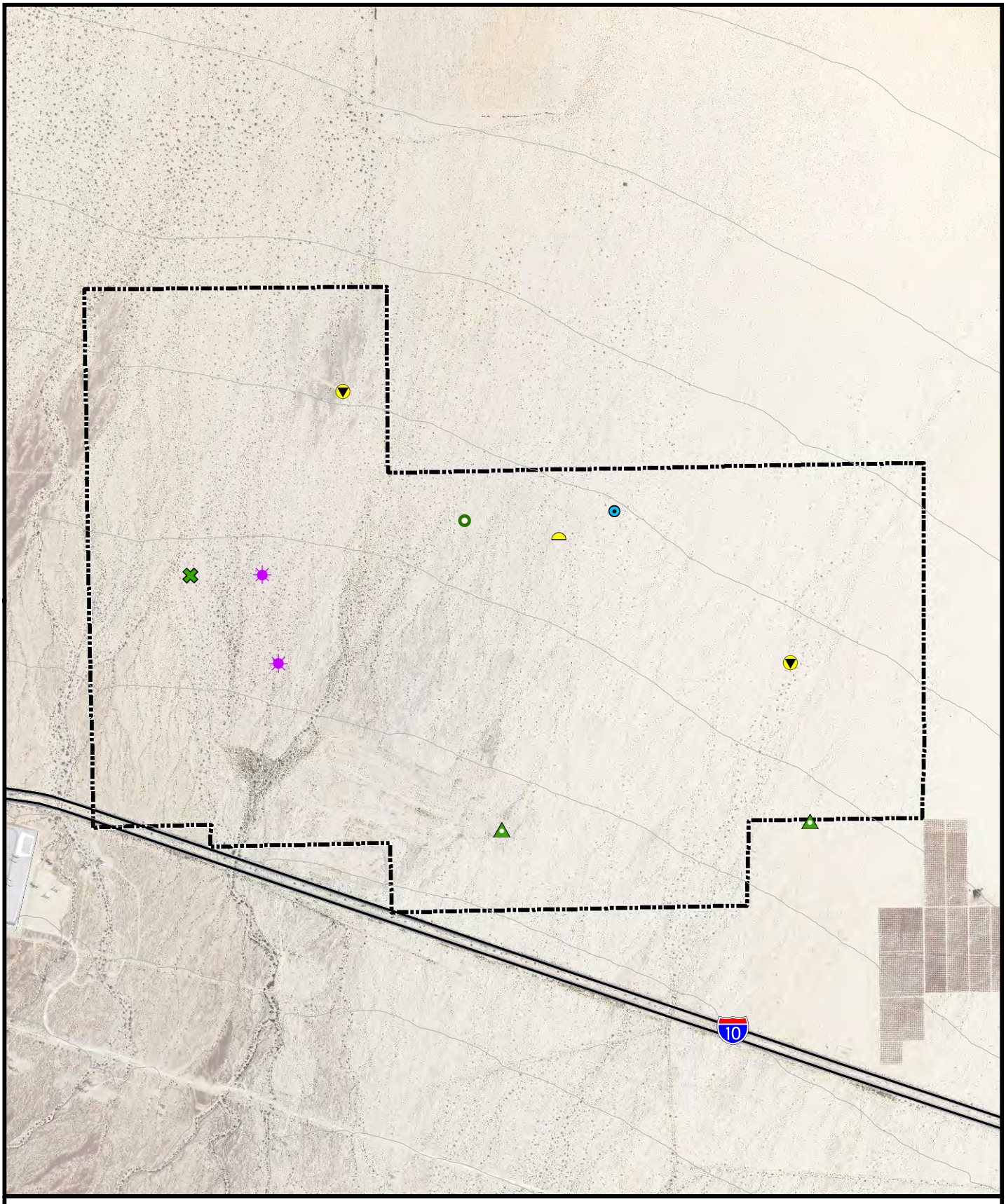
- Aqueduct
- Victory Pass Solar Project Location
- Other Solar Generating Sites (developed and proposed)
- High Priority Habitat
- Linkage
- Tortoise Conservation Area

FIGURE 8

Desert Tortoise Conservation Areas (TCAs) and Linkages

Victory Pass Solar

P:\GIS\Ironwood\Shared\Projects\Projects\Victory_Pass\Avian.mxd



Ironwood
Consulting

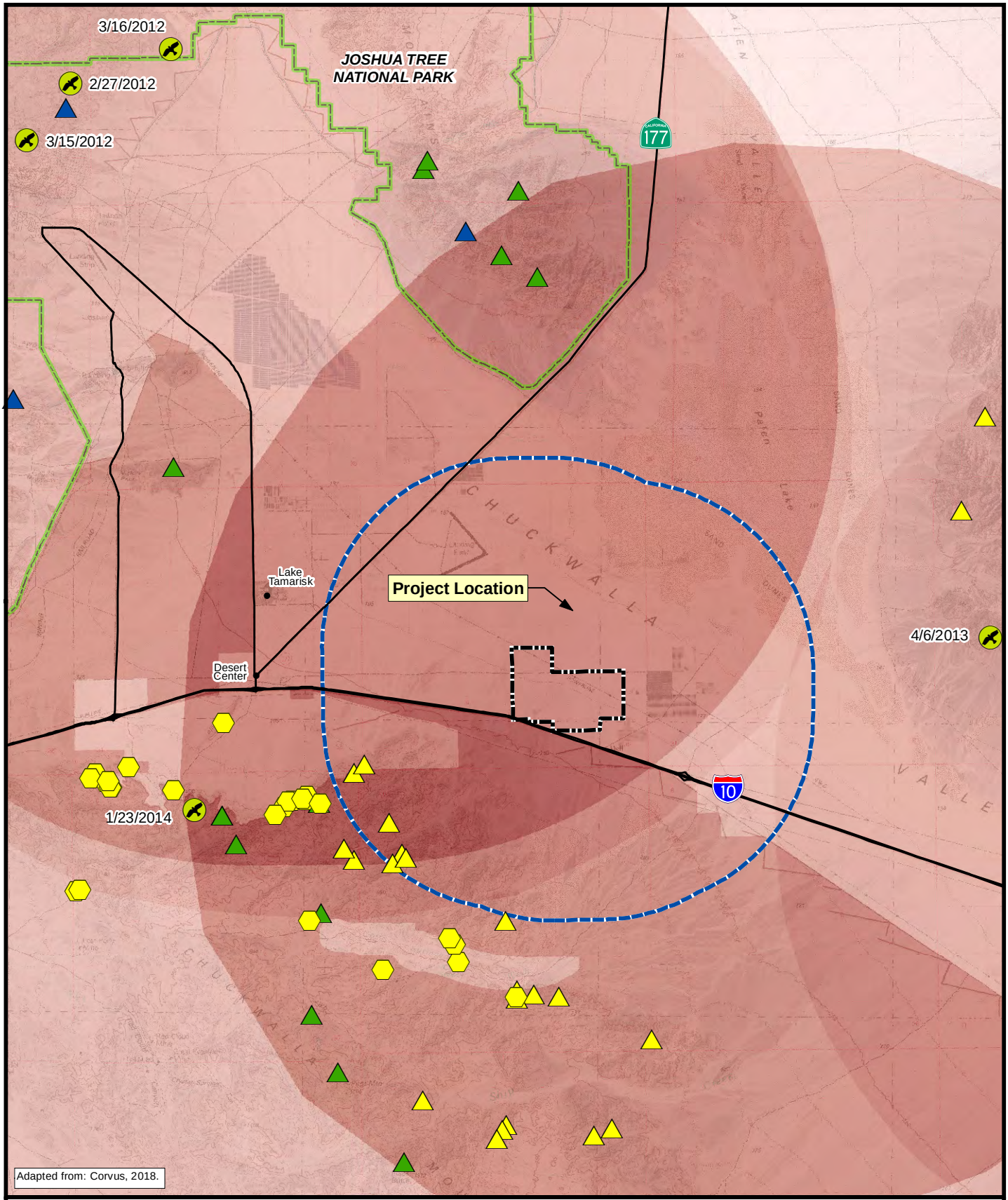
0 1,000 2,000
Feet

- Burrowing Owl (live individual at burrow)
- Burrowing Owl (live individual flushed or in flight)
- Burrowing Owl Burrow with Sign
- Burrowing Owl (kill site with sign)
- Common Raven (inactive stick nest)
- Tree Cavity with Old Nesting Material
- Prairie Falcon (live individual)
- Victory Pass Solar Project Boundary

FIGURE 9

Noteworthy Avian Observations

Victory Pass Solar



P:\GIS\Ironwood\Shared\Projects\Projects\Victory_Pass\GOEA.mxd

Ironwood
Consulting

0 2
Miles

Season Last Surveyed
- 2011-2012
- 2013-2014
- 2014-2015

- Cliff Nests Monitored During BLM Raven Surveys
- GOEA Sighting (Date of Sighting)
- Victory Pass Solar Project Boundary
- Joshua Tree National Park
- Victory Pass Solar Project 4-mile Buffer

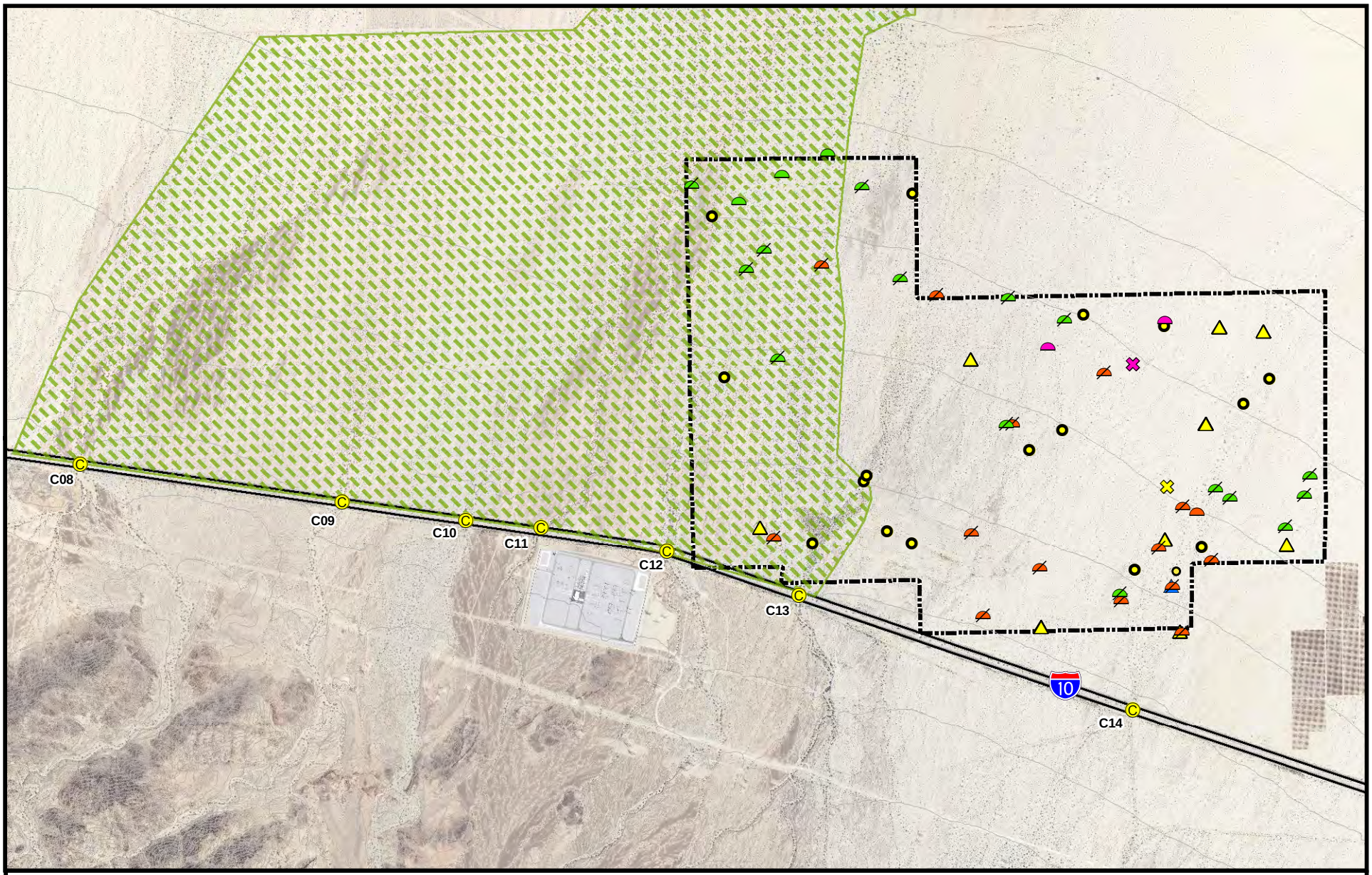
Number of Surveys Conducted
- 12
- 8
- 5
- 1

FIGURE 10

Golden Eagle Survey Results 2010-2015

Victory Pass Solar

P:\GIS\Ironwood\Shared\Projects\Projects\Victory_Pass\Mammal_Aug_2020_wide.mxd



Ironwood
Consulting

0 1,000 2,000
Feet

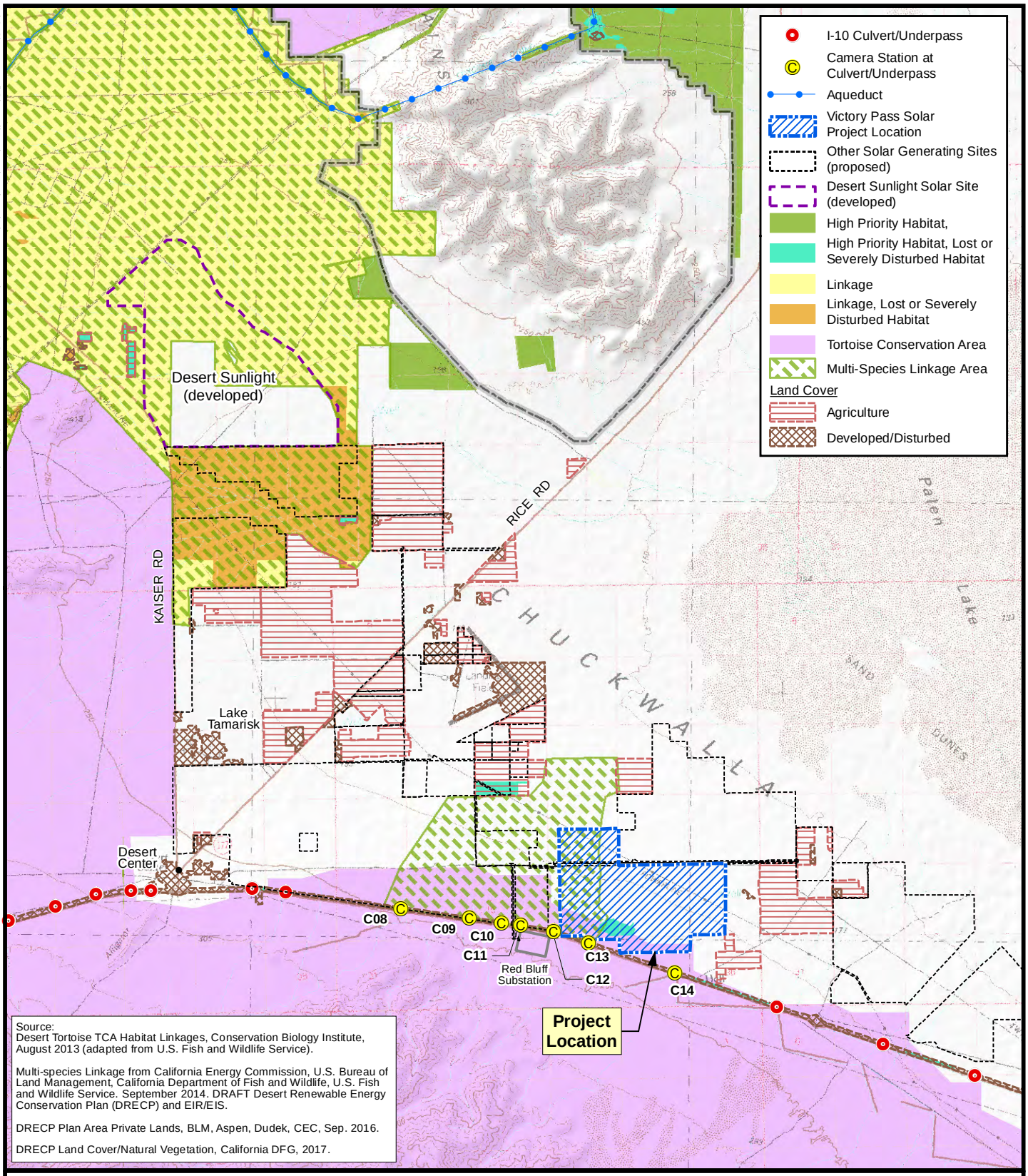
- Camera Station
- Multi-Species Linkage Area
- Victory Pass Solar Project Boundary
- Bat Species (live individual)
- Burro Deer (scat)
- Buro Deer (tracks)
- Burro Deer (carcass)
- Canid Burrow Complex (inactive)
- Canid Burrow (active)
- Canid Burrow (inactive)
- Coyote Burrow (inactive)
- Coyote Carcass
- Kit Fox Burrow (active)
- Kit Fox Burrow (inactive)

FIGURE 11

Noteworthy Mammal Observations

Victory Pass Solar

P:\GIS\Ironwood\Shared\Projects\Projects\Victory_Pass\DT_Local_Connect_Expanded.mxd



Ironwood
Consulting

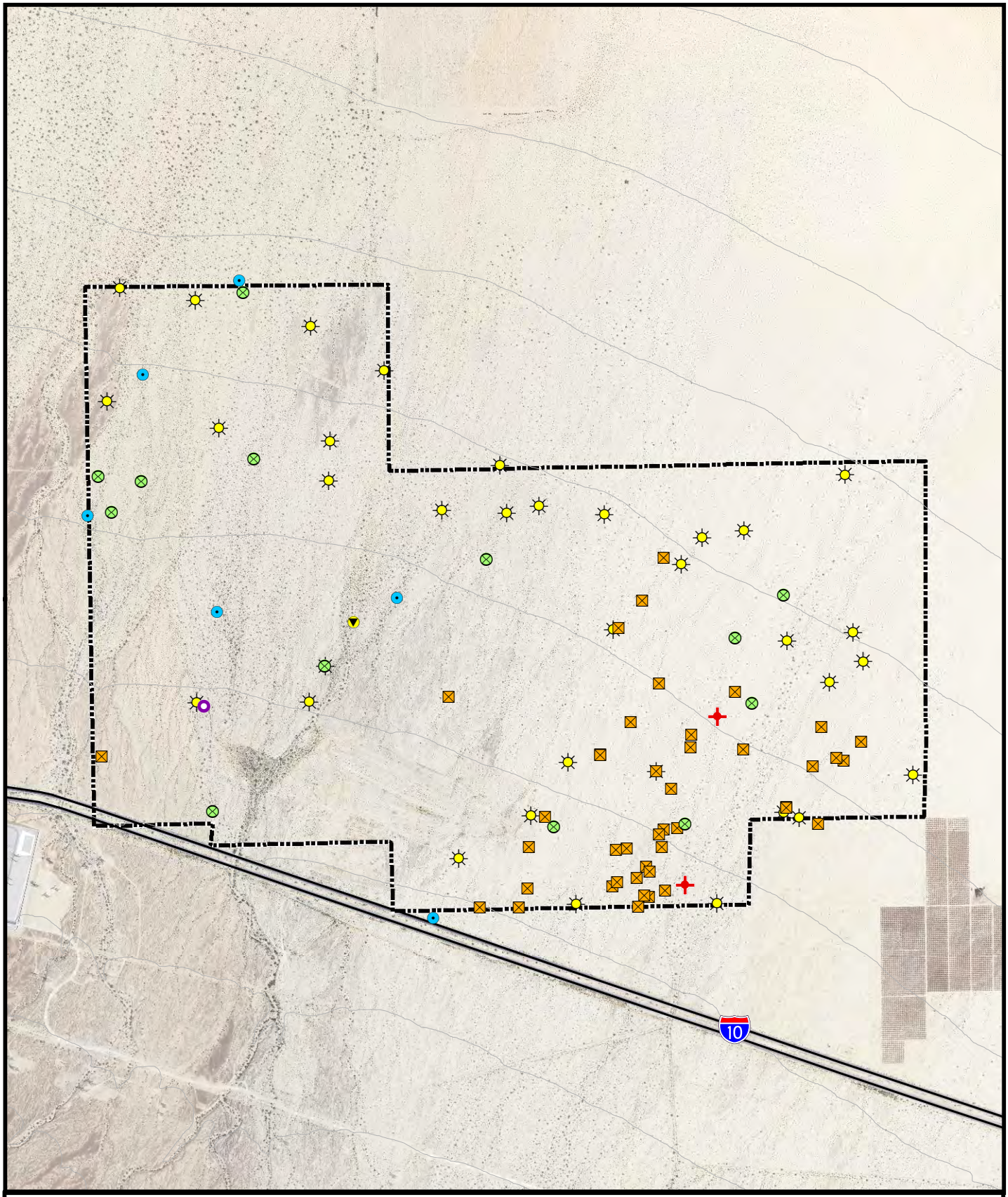
0 2
Miles

FIGURE 12

Wildlife Connectivity

Victory Pass Solar

P:\GIS\Ironwood\Shared\Projects\Projects\Victory_Pass\Plants_Aug_2020.mxd



Ironwood
Consulting

0 1,000 2,000
Feet

Cactus

- *Ferocactus cylindraceus* (Barrel cactus)
- *Fouquieria splendens* (Ocotillo)
- *Mammillaria tetrancistra* (Fishook cactus)
- *Opuntia basilaris* (beavertail cactus)

Invasive Species

- *Brassica tournefortii*• (Sahara mustard)
- *Sisymbrium irio* (Tumble mustard)
- *Sisymbrium orientale*
- Victory Pass Solar Project Boundary

FIGURE 13

Noteworthy Plant Observations

Victory Pass Solar

APPENDIX A

Summary of Surveys 2019-2020
Victory Pass Solar Project

A-1 Daily Survey Summary

Date	Survey Type	Surveyors	Weather	Average Survey Hours
10/12/2019	Fall Wildlife & Plant	M. Baker, M. Basset, K. Black, M. Bratton, S. Clegg, M. Cloud-Hughes, A. Drummer, K. Hayes, T. Hobbs, M. Honer, C. Keaton, D. Kesonie, M. Lavender, A. Layden, W. McBride, C.McClurg, M. Moon, S. Nelson, S. Nielsen, B. Payne, J. St. Pierre, M. Sally, C. Slaughter, E. Thorn, A. Walters, Z. Webb, J. Yerger, M. Zhou	55-79°F	10
10/14/2019	Fall Wildlife & Plant	M. Baker, K. Black, M. Bratton, S. Clegg, M. Cloud-Hughes, A. Drummer, K. Hayes, C. Keaton, D. Kesonie, M. Lavender, W. McBride, M. Moon, S. Nelson, S. Nielsen, B. Payne, J. St. Pierre, M. Sally, C. Slaughter, A. Walters, R. Woodard, J. Yerger, M. Zhou	44-83°F	10
10/15/2019	Fall Wildlife & Plant	M. Baker, K. Black, M. Bratton, L. Chow, S. Clegg, M. Cloud-Hughes, A. Drummer, K. Hayes, S. Hoss, C. Keaton, D. Kesonie, M. Lavender, W. McBride, M. Moon, S. Nelson, S. Nielsen, B. Payne, J. St. Pierre, M. Sally, C. Slaughter, E. Thorn, A. Walters, R. Woodard, J. Yerger, M. Zhou	49-82°F	10
10/16/2019	Fall Wildlife & Plant	M. Baker, K. Black, E. Bowen, M. Bratton, S. Clegg, M. Cloud-Hughes, A. Drummer, K. Hayes, S. Hoss, C. Keaton, D. Kesonie, M. Lavender, W. McBride, M. Moon, S. Nelson, S. Nielsen, B. Payne, J. St. Pierre, M. Sally, C. Slaughter, A. Walters, R. Woodard, J. Yerger, M. Zhou	57-88°F	10
3/17/2020	Spring Plant & Avian	M. Baker, K. Black, L. Chow, M. Cloud-Hughes, D. Kesonie, M. Lavender, W. McBride, S. Nielsen, J. St. Pierre,	47-68 °F, wind 0-5mph	10
3/18/2020	Spring Plant & Avian	M. Baker, K. Black, L. Chow, M. Cloud-Hughes, D. Kesonie, M. Lavender, W. McBride, S. Nielsen, J. St. Pierre	41-63 °F, wind 0-2mph	10
3/19/2020	Spring Plant & Avian	M. Baker, K. Black, M. Cloud-Hughes, D. Kesonie, M. Lavender, W. McBride, S. Nielsen, J. St. Pierre	47-58°F, wind 0-5 mph	10

Date	Survey Type	Surveyors	Weather	Average Survey Hours
3/20/2020	Spring Plant & Avian	M. Baker, K. Black, M. Cloud-Hughes, D. Kesonie, M. Lavender, W. McBride, S. Nielsen, J. St. Pierre	47-63 °F, wind 0-2 mph	10
5/1/2020-5/29/2020	Spring 2020 wildlife cameras at underpasses	L. Chow, Z. Webb, M. Lavender	varied	10
5/5/2020	BUOW Survey #2	L. Chow, Z. Webb	58-98°F	10
5/6/2020	BUOW Survey #2	L. Chow, Z. Webb	58-98°F	11
5/20/2020	Jurisdictional Delineation Survey	L. Chow, D. Kesonie, S. Nielsen, J. St. Pierre, E. Thorn,	51-80°F	10
6/15/2020	BUOW Survey #3	M. Lavender, A. Schaub	58-93°F	11
6/16/2020	BUOW Survey #3	M. Lavender, A. Schaub	66-97°F	11
7/14/2020	BUOW Survey #4	M. Lavender, Z. Webb	73-103°F	11
7/15/2020	BUOW Survey #4	M. Lavender, Z. Webb	73-103°F	11

A-2. Noteworthy Reptile and Amphibian Observations

Species	Sign Type	Notes	Date
Desert tortoise	Live individual	Adult female	10/15/2019
Desert tortoise	Live individual	Adult male	10/15/2019
Desert tortoise	Live individual	Adult male	10/16/2019
Desert tortoise	Live individual	Adult male	3/17/2020
Desert tortoise	Live individual	Adult female	3/20/2020
Desert tortoise	Burrow	Class 1: definitely desert tortoise. currently active	10/15/2019
Desert tortoise	Burrow	Class 1: definitely desert tortoise. currently active	10/16/2019
Desert tortoise	Burrow	Class 1: definitely desert tortoise. currently active	10/16/2019
Desert tortoise	Burrow	Class 1: definitely desert tortoise. currently active	10/15/2019
Desert tortoise	Burrow	Class 2: definitely desert tortoise, good condition	10/15/2019
Desert tortoise	Burrow	Class 2: definitely desert tortoise, good condition	10/15/2019
Desert tortoise	Burrow	Class 3: definitely desert tortoise, deteriorated/collapsed	10/16/2019
Desert tortoise	Burrow	Class 3: definitely desert tortoise, deteriorated/collapsed	10/16/2019
Desert tortoise	Burrow	Class 5: Possibly desert tortoise, deteriorated/collapsed	10/16/2019
Desert tortoise	Pallet	Class 1: definitely desert tortoise. currently active	10/15/2019
Desert tortoise	Pallet	Class 2: definitely desert tortoise, good condition	10/16/2019
Desert tortoise	Scat	Class 1: wet (not from rain or dew) or freshly dried; obvious odor	3/17/2020
Desert tortoise	Scat	Class 3: dried; no glaze or odor; signs of bleaching (light brown), tightly packed material	10/15/2019
Desert tortoise	Tracks	-	10/15/2019
Desert tortoise	Tracks	-	10/15/2019
Desert tortoise	Tracks	-	10/15/2019
Desert tortoise	Tracks	-	10/15/2019
Desert tortoise	Tracks	-	10/15/2019
Desert tortoise	Carcass	Class 1: < 1 year, fresh putrid, scutes mostly adhered, sheen on exposed scutes, unexposed bone waxy and solid; adult male	3/20/2020
Couch's spadefoot toad	Potential habitat	-	10/15/2019

A-3. Desert Tortoise Density Estimates within Pre-Project Survey Area

USFWS Desert Tortoise Pre-Project Survey Guidance

What is the estimated number of tortoises in the action area and project footprint? *See below*

INSTRUCTIONS ***Use this tab when all your transects were of equal length[1].***

Parameters	Action area	Project footprint
Number of tortoises > 180 mm MCL =	9.3	9.3
Lower 95%CI =	6.74	6.74
Upper 95%CI =	12.93	12.93
Number of hatchlings (young-of-year) =	12.1	12.1
Number of tortoises < 180 mm MCL, not young-of-year =	48.6	48.6
Project-impacted area (acres)	2000	2000
D (tortoises/km2) in surveyed area =	1.2	
Average density in Recovery Unit =	3.7	
Project/site name	Victory Pass	
Desert tortoise Recovery Unit	Colorado Desert	
Survey start date	Oct 12 2019	
Survey end date	Oct 16 2019	
Pre-survey Oct-March rainfall (mm)	66	
Total length of transects walked (L, km) =	809	
Transect length (km)	2.845	
Number of transects walked (k) =	284.50	
Number of tortoises found during surveys (n) =	5	

Transects all the same length	
Number of tortoises ≥ 180 mm MCL (n_i)	**Number of transects on which (n_i) tortoises were seen**
0	279.50
1	5
2	0
3	0
4	0
5	0

The transect length was averaged across the 2000-acre survey area

A-4. Noteworthy Avian Observations

Species	Sign Type	Comments	Date
Burrowing owl	Live individual	Flying, flushed from small nearby burrow	10/12/2019
Burrowing owl	Live individual	Flying	10/14/2019
Burrowing owl	Live individual at burrow	Flying, flushed from small nearby burrow	10/15/2019
Burrowing owl	Burrow	Pellets, whitewash	10/16/2019
Burrowing owl	Burrow	Pellets	3/20/2020
Burrowing owl	Burrow	White wash	7/15/2020
Burrowing owl	Kill site	Feathers of all types	10/15/2019
LeConte's thrasher	Live individual	Foraging, perching	3/17/2020
Prairie falcon	Live individual	Flying	10/12/2019
Prairie falcon	Live individual	Flying	3/18/2020
Loggerhead shrike	Live individual	Perching	3/17/2020
Loggerhead shrike	Live individual	Perching	3/17/2020
Loggerhead shrike	Live individual	Flying, perching, singing	3/17/2020
Loggerhead shrike	Live individual	Perching, singing; pair	3/17/2020
Loggerhead shrike	Live individual	Flying, perching	3/17/2020
Loggerhead shrike	Live individual	Singing	3/19/2020
Loggerhead shrike	Live individual	Perching	3/19/2020
Loggerhead shrike	Live individual	Flying, perching; fledgling	3/19/2020
Loggerhead shrike	Live individual	Flying, perching	3/20/2020
Loggerhead shrike	Live individual	Flying, nesting	3/19/2020
Red-tailed hawk	Live individual	Resting on wooden pole line, nest, eggs	3/17/2020
Common raven	Inactive stick nest	Inactive stick nest in Ironwood tree	10/14/2019
Common raven	Inactive stick nest	Inactive stick nest on power pole	10/15/2019
Other	Tree cavity w/ old nesting material	Cavity with mouse in it -could be used by a bird or bat	10/15/2019
Other	Tree cavity w/ old nesting material	-	10/15/2019
Unknown	Carcass	Bones and flight feathers	3/19/2020

A-5. Avian Count Summary

Avian Species	Date				Total Individuals
	03/17/20	03/18/20	03/19/20	03/20/20	
Black-throated sparrow *(Amphispiza bilineata)*			1	1	2
Brewer's sparrow *(Spizella breweri)*			1		1
Cliff swallow *(Petrochelidon pyrrhonota)*	11	1		7	19
Common raven *(Corvus corax)*	2				2
Cooper's hawk *(Accipiter cooperii)*			1		1
Costa's hummingbird *(Callipepla gambelii)*			2		2
Eurasian collared dove (*Streptopelia decaocto)*		1			1
Horned lark (*Eremophila alpestris*)		2	5	2	9
House finch *(Haemorhous mexicanus)*	1				1
Loggerhead shrike *(Lanius ludovicianus)*	1		1	2	4
Mourning dove *(Zenaida macroura)*			2		2
Northern mockingbird *(Mimus polyglottos)*		2			2
Osprey *(Pandion haliaetus)*	1				1
Swallow sp.				2	2
Turkey vulture *(Cathartes aura)*	3		5	3	11
Verdin *(Auriparus flaviceps)*		1	2		3
Violet-Green Swallow *(Tachycineta thalassina)*	1		1	2	4
Total Species	7	5	10	7	67

A-6. Noteworthy Mammal Observations

Mammal Species	Mammal Sign Types	Live, Active, or Recent Sign?	Notes	Date
Bat	Live individual	Live	Cavity in ironwood	10/14/2019
Burro deer	Carcass	-	Skull with antlers	3/17/2020
Burro deer	Dig marks/tracks	-	-	10/12/2019
Burro deer	Dig marks/tracks	-	-	10/14/2019
Burro deer	Dig marks/tracks	-	-	10/14/2019
Burro deer	Dig marks/tracks	-	-	10/14/2019
Burro deer	Dig marks/tracks	-	-	10/15/2019
Burro deer	Dig marks/tracks, scat	-	-	10/12/2019
Burro deer	Dig marks/tracks, scat	-	-	10/12/2019
Burro deer	Dig marks/tracks, scat	-	-	10/12/2019
Burro deer	Dig marks/tracks, scat	-	-	10/15/2019
Burro deer	Scat	-	-	10/12/2019
Burro deer	Scat	-	-	10/12/2019
Burro deer	Scat	-	-	10/12/2019
Burro deer	Scat	-	-	10/12/2019
Burro deer	Scat	-	-	10/12/2019
Burro deer	Scat	-	-	10/14/2019
Burro deer	Scat	-	-	10/14/2019
Burro deer	Scat	-	-	10/14/2019
Burro deer	Scat	-	-	10/15/2019
Burro deer	Scat	-	-	10/15/2019
Burro deer	Scat	-	-	10/15/2019
Burro deer	Scat	-	-	10/16/2019
Burro deer	Scat	-	-	10/16/2019
Burro deer	Scat	-	-	10/16/2019
Burro deer	Scat	-	-	10/16/2019
Burro deer	Scat	-	-	10/16/2019
Desert kit fox	Burrow	Active	Scat	10/16/2019
Desert kit fox	Burrow	Active	Scat	10/16/2019
Desert kit fox	Burrow	Active	Dig marks, tracks, scat	3/17/2020
Desert kit fox	Burrow	Inactive	-	10/12/2019
Desert kit fox	Burrow	Inactive	-	10/12/2019
Desert kit fox	Burrow	Inactive	-	10/12/2019
Desert kit fox	Burrow	Inactive	-	10/12/2019

Mammal Species	Mammal Sign Types	Live, Active, or Recent Sign?	Notes	Date
Desert kit fox	Burrow	Inactive	-	10/12/2019
Desert kit fox	Burrow	Inactive	-	10/14/2019
Desert kit fox	Burrow	Inactive	-	10/14/2019
Desert kit fox	Burrow	Inactive	-	10/14/2019
Desert kit fox	Burrow	Inactive	-	10/15/2019
Desert kit fox	Burrow	Inactive	-	10/15/2019
Desert kit fox	Burrow	Inactive	-	10/16/2019
Desert kit fox	Burrow	Inactive	-	10/16/2019
Desert kit fox	Burrow	Inactive	-	10/16/2019
Desert kit fox	Burrow	Inactive	Scat	10/14/2019
Coyote	Burrow	Active	-	10/12/2019
Coyote	Burrow, scat	Active	-	10/15/2019
Coyote	Carcass	-	Fairly recent, fur, bones	3/17/2020
Canid	Burrow	Active	Scat	10/12/2019
Canid	Burrow complex	Inactive	2 entrances	10/14/2019
Canid	Burrow	Inactive	-	10/12/2019
Canid	Burrow	Inactive	-	10/14/2019
Canid	Burrow	Inactive	-	10/14/2019
Canid	Burrow	Inactive	-	10/14/2019
Canid	Burrow	Inactive	-	10/14/2019
Canid	Burrow	Inactive	-	10/14/2019
Canid	Burrow	Inactive	-	10/14/2019
Canid	Burrow	Inactive	-	10/14/2019
Canid	Burrow	Inactive	-	10/14/2019
Canid	Burrow	Inactive	-	10/14/2019
Canid	Burrow	Inactive	-	10/15/2019
Canid	Burrow	Inactive	-	10/15/2019
Canid	Burrow	Inactive	-	10/15/2019
Canid	Burrow	Inactive	-	10/15/2019

A-7. Noteworthy Plant Species Observed

Plant Species	Phenology	Comments	Date
Opuntia basilaris (beavertail cactus)	Vegetative	-	10/16/2019
Ferocactus cylindraceus (barrel cactus)	Flower only	-	3/19/2020
Mammillaria tetrancistra (fishook cactus)	Other	-	3/19/2020
Mammillaria tetrancistra (fishook cactus)	Other	-	3/20/2020
Mammillaria tetrancistra (fishook cactus)	Vegetative	-	10/12/2019
Mammillaria tetrancistra (fishook cactus)	Vegetative	-	10/14/2019
Mammillaria tetrancistra (fishook cactus)	Vegetative	-	10/14/2019
Mammillaria tetrancistra (fishook cactus)	Vegetative	-	10/15/2019
Mammillaria tetrancistra (fishook cactus)	Vegetative	-	10/15/2019
Mammillaria tetrancistra (fishook cactus)	Vegetative	-	3/17/2020
Mammillaria tetrancistra (fishook cactus)	Vegetative	-	3/18/2020
Mammillaria tetrancistra (fishook cactus)	Vegetative	-	3/19/2020
Mammillaria tetrancistra (fishook cactus)	Vegetative	-	3/20/2020
Mammillaria tetrancistra (fishook cactus)	Vegetative	-	3/20/2020
Fouquieria splendens (ocotillo)	Flower / fruit	-	10/14/2019
Fouquieria splendens (ocotillo)	Flower only	-	3/18/2020
Fouquieria splendens (ocotillo)	Flower only	-	3/19/2020
Fouquieria splendens (ocotillo)	Flower only	-	3/20/2020
Fouquieria splendens (ocotillo)	Flower only	-	3/20/2020
Fouquieria splendens (ocotillo)	Fruit only	-	10/12/2019
Fouquieria splendens (ocotillo)	Fruit only	-	10/12/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/12/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/12/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/12/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/12/2019
Fouquieria splendens (ocotillo)	Fruit only	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	2 individuals	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019

Plant Species	Phenology	Comments	Date
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	2 individuals	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/14/2019
Fouquieria splendens (ocotillo)	Vegetative	-	10/15/2019
Fouquieria splendens (ocotillo)	Vegetative	-	3/19/2020
Fouquieria splendens (ocotillo)	Vegetative	-	3/20/2020
Fouquieria splendens (ocotillo)	Vegetative	-	3/20/2020
Fouquieria splendens (ocotillo)	Vegetative	-	3/20/2020
Fouquieria splendens (ocotillo)	Vegetative	2 individuals	3/20/2020

A-8. Invasive Plant Species

Invasive Species	Phenology	Comments	Date
Brassica tournefortii (Sahara mustard)	Flower/fruit	-	3/19/2020
Brassica tournefortii (Sahara mustard)	Flower only	-	3/16/2020
Brassica tournefortii (Sahara mustard)	Fruit only	Low density	10/12/2019
Brassica tournefortii (Sahara mustard)	Fruit only	Low density	10/12/2019
Brassica tournefortii (Sahara mustard)	Fruit only	Low density	10/12/2019
Brassica tournefortii (Sahara mustard)	Fruit only	Low density	10/14/2019
Brassica tournefortii (Sahara mustard)	Fruit only	Low density	10/14/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/12/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	3 individuals	10/12/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	23 individuals	10/12/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/12/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/12/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/12/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/14/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/14/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/14/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	19 individuals	10/14/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	1 individual	10/14/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/14/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	12 individuals	10/14/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/14/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	1 individual.	10/14/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/14/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	18 individuals	10/15/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	Sparse individuals	10/15/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	17 individuals	10/15/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/15/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	Sparse population	10/15/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/15/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/15/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	8 individuals	10/15/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/16/2019
Brassica tournefortii (Sahara mustard)	Plant dried up / not chlorophytic	-	10/16/2019
Brassica tournefortii (Sahara mustard)	Vegetative	Low density	10/15/2019
Sisymbrium irio (tumble mustard)	Flower / fruit	-	3/17/2020

Invasive Species	Phenology	Comments	Date
Sisymbrium irio (tumble mustard)	Flower / fruit	-	3/19/2020
Sisymbrium irio (tumble mustard)	Flower / fruit	-	3/19/2020
Sisymbrium irio (tumble mustard)	Flower / fruit	-	3/19/2020
Sisymbrium irio (tumble mustard)	Flower / fruit	-	3/16/2020
Sisymbrium irio (tumble mustard)	Vegetative	-	3/20/2020
Sisymbrium orientale (oriental hedge mustard)	Flower / fruit	-	3/18/2020
Sisymbrium orientale (oriental hedge mustard)	Flower / fruit	-	3/18/2020

APPENDIX B

Potential for Special Status Wildlife Species to Occur
Victory Pass Solar Project

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
AMPHIBIAN and REPTILES			
Couch's spadefoot toad *Scaphiopus couchii*	Occurs along desert washes, desert riparian, palm oasis, desert succulent shrub, and desert scrub habitats. Also found in cultivated cropland areas. Breeds in temporary pools within rocky streambeds, washes, agricultural fields, in road depressions, railroad tracks, and cattle tanks. Pools of water must persist 7 to 8 days to facilitate eggs hatching and larvae transformation	Federal: None State: SSC BLM sensitive	Low Not observed Potential to occur near water accumulation areas – unconfirmed; no sufficient levels of warm season rain to date
Agassiz's desert tortoise *Gopherus agassizii*	Higher populations in creosote bush communities with friable soils for burrow construction, with extensive annual blooms, but found in almost every desert habitat	Federal: FT State: ST State: ST	High observed live individuals
Mojave fringe-toed lizard *Uma scoparia*	Restricted to fine, loose, wind-blown deposits in sand dunes, dry lakebeds, riverbanks, desert washes, sparse alkali scrub and desert shrub habitats	Federal: None State: SSC BLM sensitive	Low Not observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
BIRDS			
Golden eagle **(Nesting and wintering)** *Aquila chrysaetos*	Typically rolling foothills, mountain areas, sage-juniper flats, desert. Nests on cliffs of all heights and in large trees in open areas. Rugged, open habitats with canyons and escarpments used most frequently for nesting.	Federal: BCC State: CFP, WL BLM sensitive	Nesting - lacks suitable habitat Foraging year-round – low-moderate (uncommon) Not observed
Short-eared owl (Nesting) *Asio flammeus*	Year-round residents in N. California and other parts of CA during wintering. Require open country that supports small mammals that also provides adequate vegetation to provide cover for nests includes salt- and freshwater marshes, irrigated alfalfa or grain fields, and ungrazed grasslands and old pastures.	Federal: None State: SSC	Nesting - lacks suitable habitat Migration or seasonal foraging - moderate not observed
Western burrowing owl *Athene cunicularia hypugaea*	A yearlong resident of open, dry grassland and desert habitats. Uses rodent or other burrows for roosting and nesting cover. In the Colorado Desert, generally occur at low densities in scattered populations	Federal: BCC State: SSC BLM sensitive	Nesting – occurs Foraging - occurs Live individuals and sign observed
Redhead (Nesting) *Aythya americana*	During breeding season may be found along the Colorado River and Salton Sea. Breeds locally in the Central Valley, coastal Southern California, eastern Kern County, and the Salton Sea. Nests in fresh water emergent wetland bordering open water.	Federal: None State: SSC	Nesting - lacks suitable habitat Potential migration flyover-moderate Distant from nearest records - Nearest breeding habitat in Salton Sea, not observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
Ferruginous hawk (Wintering) *Buteo regalis*	Most common in grassland and agricultural areas in the southwest. Found in open terrain from grasslands to deserts and are usually associated with concentrations of small mammals.	Federal: BCC State: WL	Nesting – lacks suitable habitat and outside range Wintering/migration - moderate Not observed
Swainson's hawk *Buteo swainsoni*	Require large areas of open landscape for foraging, including grasslands and agricultural lands that provide low-growing vegetation for hunting and high rodent prey populations. Typically nest in large native trees such as valley oak, cottonwood, walnut, willow, and occasionally in nonnative trees within riparian woodlands, roadside trees, trees along field borders, isolated trees, small groves, and on the edges of remnant oak woodlands	Federal: BCC State: ST	Nesting – lacks suitable habitat, outside range Foraging – moderate, may forage or flyover Project site during migration Not observed
Costa's hummingbird (Nesting) *Calypte costae*	Primary habitats are desert wash, edges of desert riparian and valley foothill riparian	Federal: BCC State: None	Nesting – low, marginal habitat Foraging – moderate Not observed
Vaux's swift (Nesting) *Chaetura vauxi*	Not known to breed in Riverside or Southern California. They prefer to nest in the hollows inside of large old conifer trees, especially snags, which are entirely lacking from the Project site.	Federal: None State: SSC	Nesting – lacks suitable habitat Migration – moderate, potential flyover Not observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
Mountain plover (Wintering) *Charadrius montanus*	Habitat includes short-grass prairie or their equivalents, and in southern California deserts are associated primarily with agricultural areas	Federal: BCC State: SSC BLM sensitive	Nesting/wintering – lacks habitat, outside range Migration – moderate, flyover Not observed
Black tern *Chlidonias niger*	Restricted to freshwater habitats while breeding, can be fairly common on bays, salt ponds, river mouths, and pelagic waters in spring and fall migration (Grinnell and Miller 1944, Cogswell, 1977)	Federal: None State: SSC	nesting – lacks habitat migration – low, uncommon not observed
Northern harrier (Nesting) *Circus cyaneus*	Does not commonly breed in desert regions of California, where suitable habitat is limited, but winters broadly throughout California in areas with suitable habitat. Northern harriers forage in open habitats including deserts, pasturelands, grasslands, and old fields.	Federal: None State: SSC	Nesting – lacks habitat Foraging/migration - moderate Not observed
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	Breeds along the major river valleys in southern and western New Mexico, and central and southern Arizona. In California, the western yellow-billed cuckoo's breeding distribution is now thought to be restricted to isolated sites in the Sacramento, Amargosa, Kern, Santa Ana, and Colorado River valleys.	Federal: FT, BCC State: SE BLM sensitive	Nesting – lacks habitat, outside range Foraging/migration – low, uncommon Not observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
Gilded flicker *Colaptes chrysoides*	Stands of giant cactus, Joshua tree, and riparian groves of cottonwoods and tree willows in warm desert lowlands and foothills. Nests primarily in cactus, but also will use cottonwoods and willows of riparian woodlands. May be nearly extinct in California.	Federal: BCC State: SE BLM sensitive	Nesting – low, marginal habitat Migration/foraging – low marginal habitat Not observed, distant from nearest record
Black swift (Nesting) *Cypseloides niger*	Nests in moist crevice or cave on sea cliffs or above the surf, or on cliffs behind, or adjacent to, waterfalls in deep canyons. Forages widely over many habitats.	Federal: BCC State: SSC	Nesting – lacks suitable habitat Migration – low, uncommon not observed
Willow flycatcher (Nesting) *Empidonax traillii* **Southwestern willow flycatcher** *E. t. extimus*	Most often occurs in broad, open river valleys or large mountain meadows with lush growth of shrubby willows (Serena 1982). Common spring (mid-May to early June) and fall (mid- August to early September) migrant at lower elevations, primarily in riparian habitats throughout the state exclusive of the North Coast.	Federal: None State: SE Federal: FE State: SE	Nesting/wintering- lacks suitable habitat Migration – low, uncommon Not observed Nesting/wintering – lacks suitable habitat Migration – low, uncommon migrant Not observed
California horned lark *Eremophila alpestris actia*	A common to abundant resident in a variety of open habitats, usually where trees and large shrubs are absent. Found from grasslands along the coast and deserts near sea level to alpine dwarf-shrub habitat above treeline. In winter, flocks in desert lowlands and other areas augmented by winter visitants, many migrating from outside the state (Garrett and Dunn 1981).	Federal: None State: WL	Nesting/wintering – high, suitable habitat Foraging - high Observed throughout Project site

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
Prairie falcon (Nesting) *Falco mexicanus*	Occurs in annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub. Typically nests at cliffs and bluffs	Federal: BCC State: WL	Nesting – lacks habitat Foraging - high Not observed
American peregrine falcon (Nesting) *Falco peregrinus anatum*	Rare in the arid southeast, occur and are suspected to breed in the lower Colorado River Valley. Peregrine falcons require open habitat for foraging and prefer breeding sites near water. Nesting habitat includes cliffs, steep banks, dunes, mounds, and some human-made structures	Federal: BCC State: CFP	Nesting – lacks habitat foraging/migration- moderate Observed in flight
Sandhill crane (Wintering) *Grus canadensis*	Breeds in open wetland habitats surrounded by shrubs or trees. They nest in marshes, bogs, wet meadows, prairies, burned-over aspen stands, and other moist habitats, preferring those with standing water. Outside of known wintering grounds, extremely rare except during migration over much of interior California.	Federal: None State: SSC	Nesting/wintering/foraging – lacks habitat, outside range Migration – moderate (flyover) not observed
Yellow-breasted chat (Nesting) *Icteria virens*	This species occupies shrubby riparian habitat with an open canopy, and will nest in non- native species, including tamarisk.	Federal: None State: SSC	Nesting - lacks habitat Migration – moderate (flyover) Not observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
Loggerhead shrike (Nesting) *Lanius ludovicianus*	Open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Highest density occurs in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats	Federal: BCC State: SSC	Nesting/foraging - high Observed throughout Project site
Gila woodpecker *Melanerpes uropygialis*	In California, this species is found primarily along the Colorado River and in small numbers in Imperial County. In southeastern California, Gila woodpeckers formerly were associated with desert washes extending up to 1 mile from the Colorado River; however, their range may be expanding	Federal: BCC State: SE BLM sensitive	Nesting – low, in desert dry wash woodland Foraging – moderate in desert dry wash woodland not observed
Elf owl *Micrathene whitneyi*	A very rarely seen spring and summer resident of the Colorado River Valley. Nests in desert riparian habitat with cottonwood, sycamore, willow or mesquite; absent from desert riparian habitat dominated by saltcedar	Federal: BCC State: SE BLM sensitive	Nesting – low, in desert dry wash woodland Foraging – moderate, in desert dry wash woodland Not observed
Long-billed curlew (Nesting) *Numenius americanus*	Preferred breeding and winter habitats include large coastal estuaries, upland herbaceous areas, and croplands. On estuaries, feeding occurs mostly on intertidal mudflats.	Federal: BCC State: WL	Nesting/foraging – lacks suitable habitat Migration – moderate, flyover Not observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
Lucy's warbler (Nesting) *Oreothlypis luciae*	An uncommon to common, summer resident and breeder along the Colorado River, common locally in a few other desert areas, and rare near Salton Sea. It occurs in desert typical nesting habitat, mesquite wash and desert riparian habitats, may use abandoned verdin nests	Federal: BCC State: SSC BLM sensitive	Nesting – low in desert dry wash woodland Foraging – moderate in desert dry wash woodland Not observed
American white pelican (Nesting colony) *Pelecanus erythrorhynchos*	Common spring and fall migrant at Salton Sea and Colorado River. Migrant flocks pass overhead almost any month, but mainly in spring and fall throughout the state, especially in southern California (Cogswell 1977, McCaskie et al. 1979, Garrett and Dunn 1981)	Federal: None State: SSC	Nesting/wintering/foraging – lacks suitable habitat Migration - moderate, overflight Not observed
Black-tailed gnatcatcher *Polioptila melanura*	A year-round resident in southwestern U.S. and central and northern Mexico, in California, is found in the southeast desert wash habitat from Palm Springs and Joshua Tree National Park south, and along the Colorado River. It is now rare in eastern Mojave Desert north to the Amargosa River, Inyo County. This species nests primarily in wooded desert wash habitat, but also occurs in creosote scrub habitat during the non-breeding season.	Federal: None State: WL	Nesting/foraging – Moderate to high occurrence Suitable habitat present Observed throughout Project site
Vesper sparrow ***Pooecetes gramineus***	Fairly common locally in southern deserts in the winter and during migration. Occupies grasslands, croplands, and open brushlands.	Federal: None State: SSC	Nesting/wintering – lacks suitable habitat Migration - moderate Not observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
Purple martin *Progne subis*	The historical breeding range of the purple martin includes southern California, though populations have shrunk dramatically and neither includes the Colorado Desert. Habitat requirements include adequate nest sites and availability of large aerial insects, and therefore are most abundant near wetlands and other water sources.	Federal: None State: SSC	Nesting/wintering – lacks suitable habitat Migration - moderate, flyover Not observed
Vermilion flycatcher (Nesting) *Pyrocephalus rubinus*	They are usually found near water in arid scrub, farmlands, parks, golf courses, desert, savanna, cultivated lands, and riparian woodlands; nesting substrate includes cottonwood, willow, and mesquite.	Federal: None State: SSC	Nesting/wintering – lacks suitable habitat Migration/foraging- moderate Not observed
Ridgway's (Yuma) clapper rail *Rallus obsoletus yumanensis*	Occurs in inland areas in the southwestern United States. This subspecies is partially migratory, with many birds wintering in brackish marshes along the Gulf of California. Some remain on their breeding grounds throughout the year; for example, the Salton Sea (south) Christmas Bird Count frequently records this species in the fresh-water marshes in and around the Imperial Wildlife Area (Wister Unit). Nesting and foraging habitat occurs only along the Lower Colorado River (from Topock Marsh southward) and around the Salton Sea	Federal: FE State: ST, CFP	Nesting/wintering – lacks suitable habitat Migration / dispersal – low, rare (overflight) Not observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
Bank swallow (Nesting) *Riparia riparia*	A neotropical migrant found primarily in riparian and other lowland habitats in California west of the deserts during the spring-fall period. Uses holes dug in cliffs and river banks for cover. Will also roost on logs, shoreline vegetation, and telephone wires.	Federal: None State: ST BLM sensitive	Nesting/wintering – lacks suitable habitat Migration – moderate, flyover Not observed
Sonora Yellow warbler (Nesting) *Setophaga petechia sonorana*	In southeastern California, this species is known only from the lower Colorado River Valley from the middle of San Bernardino County through Riverside and Imperial Counties. This species commonly uses wet, deciduous thickets for breeding, and seeks a variety of wooded, scrubby habitats in winter	Federal: BCC State: SSC	Nesting/wintering – lacks suitable habitat Migration – moderate Not observed
Lawrence's goldfinch (Nesting) *Spinus lawrencei*	Highly erratic and localized in occurrence. Rather common along western edge of southern deserts. Breeds in open oak or other arid woodland and chaparral, near water. Typical habitats in southern California include desert riparian, palm oasis, pinyon-juniper, and lower montane habitats.	Federal: BCC State: none	Nesting/wintering - low, marginal habitat Migration moderate Not observed
Bendire's thrasher *Toxostoma bendirei*	Favors open grassland, shrubland, or woodland with scattered shrubs, primarily in areas that contain large cholla, Joshua tree, Spanish bayonet, Mojave yucca, palo verde, mesquite, catclaw, desert-thorn, or agave.	Federal: BCC State: SSC BLM sensitive	Nesting – low, marginal habitat Foraging – moderate Not observed
Crissal thrasher ***Toxostoma crissale***	This species prefers habitats characterized by dense, low scrubby vegetation, which, at lower elevations, includes desert and foothill scrub and riparian brush.	Federal: None State: SSC	Nesting/wintering - low, marginal habitat Migration moderate Not observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
Le Conte's thrasher *Toxostoma lecontei*	Occurs primarily in open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; also occurs in Joshua tree habitat with scattered shrubs.	Federal: None State: SSC	Nesting/foraging high Observed
***Arizona* Bell's vireo** *Vireo bellii arizonae*	Subspecies *V. b. pusillus* (endemic to California and Baja California - state and federally listed) and *V. b. arizonae* are state listed. Bell's vireo is a rare, local, summer resident below about 600 m (2000 ft) in willows and other low, dense valley foothill riparian habitat and lower portions of canyons mostly in San Benito and Monterey Co.; in coastal southern California from Santa Barbara Co. south; and along the western edge of the deserts in desert riparian habitat.	Federal: BCC State: SE BLM sensitive	Nesting/wintering – lacks suitable habitat Migration moderate Not observed
Least Bell's vireo *V. b. pusillus*		Federal: FE State: SE	Nesting/wintering – lacks suitable habitat Migration moderate Not observed
Yellow-headed blackbird (Nesting) *Xanthocephalus xanthocephalus*	Nests in fresh emergent wetland with dense vegetation and deep water, often along borders of lakes or ponds. Forages in emergent wetland and moist, open areas, especially cropland and muddy shores of lacustrine habitat. Occurs as a migrant and local breeder in deserts	Federal: None State: SSC	Nesting/wintering/foraging – lacks suitable habitat Migration – moderate, flyover Not observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
MAMMALS			
Burro deer *Odocoileus hemionus eremicus*	Occur in early to intermediate successional stages of most forest, woodland, and brush habitats. Prefer a mosaic of various-aged vegetation that provides woody cover, meadow and shrubby openings, and free water	Federal: None State: CPGS	High – sign observed throughout Project site
Desert bighorn sheep *Ovis canadensis nelsoni*	Habitats used include alpine dwarf-shrub, low sage, sagebrush, bitterbrush, pinyon-juniper, palm oasis, desert riparian, desert succulent shrub, desert scrub, subalpine conifer, perennial grassland, montane chaparral, montane riparian (DeForge 1980, Monson and Sumner 1980, Wehausen 1980). Use rocky, steep terrain for escape and bedding. Remain near rugged terrain while feeding in open habitat	Federal: BLMS State: CFP	Low - unsuitable habitat except as infrequent dispersal between mountain ranges Not observed
Yuma mountain lion *Puma concolor browni*	Primarily inhabit the low mountains and extensive wash systems in and around Chuckwalla Bench, Chuckwalla Mountains, Chocolate Mountains, Picacho Mountains, Milpitas Wash, Vinagre Wash, and other washes in that area. Mountain lions typically occur in habitat areas with extensive, well- developed riparian or shrubby vegetation interspersed with irregular terrain, rocky outcrops, and community edges. Restricted to the southern Colorado Desert from Joshua Tree National Park south and east to the Colorado River.	Federal: None State: SSC	Low – marginal habitat Not observed
American badger *Taxidea taxus*	Suitable habitat for badgers is characterized by herbaceous, shrub, and open stages of most habitats with dry, friable soils.	Federal: None State: SSC	Moderate to high Potential sign observed on site

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
Desert kit fox *Vulpes macrotis arsipus*	Lives in annual grasslands or grassy open vegetation dominated by scattered brush, shrubs, and scrub. Cover provided by occur. Active dens/complexes with sign observed. dens they dig in open, level areas with loose-textured, sandy and loamy soils.	Federal: None State: CPF	High Burrows, complexes, scat observed
BATS			
Pallid bat *Antrozous pallidus*	Inhabit low elevation (less than 6,000 feet) rocky, arid deserts and canyonlands. Typical roosting habitat is not shrub/steppe grasslands. Day and night roosts include crevices in rocky outcrops and cliffs, however, roosting opportunities may exist outside caves, mines, trees with exfoliating bark, and various human structures (WBWG, 2005)	Federal: None State: SSC BLM sensitive	Roosting - low Foraging - moderate Not observed
Townsend's big-eared bat *Corynorhinus townsendii*	Habitat associations include coniferous forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Foraging associations include edge habitats along streams, adjacent to and within a variety of wooded habitats.	Federal: None State: SSC BLM sensitive	Roosting low-moderate Foraging - moderate Not observed
Big brown bat *Eptesicus fuscus*	widespread and abundant species has been recorded in virtually every North American vegetation type. Uncommon in hot desert habitats and is absent only from the highest alpine meadows and talus slopes. Vagrant individuals may be seen in any habitat. Uses buildings and other human-made structures for roosting to such an extent that natural roosting habits are under documented	Federal: None State: none	Roosting – lacks suitable habitat Foraging – low, distant from nearest records Not observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
Spotted bat *Euderma maculatum*	Arid, low desert habitats to high elevation conifer forests and prominent rock features appear to be a necessary feature for roosting	Federal: None State: SSC BLM sensitive	Roosting/foraging – lacks suitable habitat Distant from nearest records Not observed
Western mastiff bat *Eumops perotis*	Variety of habitats, from desert scrub to chaparral to oak woodland and into the ponderosa pine belt and high elevation meadows of mixed conifer forests	Federal: None State: SSC BLM sensitive	Roosting - low Foraging - moderate Not observed
Hoary bat *Lasiurus cinereus*	Highly associated with forested habitats. Usually are located at the edge of a clearing, although more unusual roosting sites have been reported in caves, beneath rock ledges, woodpecker holes, squirrel nests, building sides, and in dried palm fronds on palm trees.	Federal: None State: None	Roosting – low Foraging - moderate Not observed
Western yellow bat *Lasiurus xanthinus*	Recorded below 600 m (2000 ft) in valley foothill riparian, desert riparian, desert wash. This species occurs year-round in California.	Federal: None State: SSC	Foraging and roosting moderate in desert dry wash habitat Not observed
California leaf-nosed bat *Macrotus californicus*	species depends on either caves or mines for roosting habitat. All major maternity, mating, and overwintering sites are in mines or caves (BLM CDD, 2002). California leaf-nosed bat forage almost exclusively among desert wash vegetation within 10 km of their roost (WBWG, 2005)	Federal: None State: SSC BLM sensitive	Roosting/wintering – lacks suitable habitat Foraging – moderate in desert dry wash woodland Not observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE
Arizona myotis *Myotis occultus*	Commonly known from conifer forests from 6,000 to 9,000 feet in elevation, although maternity roosts are known from much lower elevations including areas along the Colorado River in California.	Federal: None State: SSC	Nesting – low Foraging – low, distant from nearest records in Blythe Not observed
Cave myotis *Myotis velifer*	Found primarily at lower elevations of the arid southwest in areas dominated by creosote bush, palo verde, and cactus. This species is a "cave dweller" and caves are the main roosts although this species may also use mines, buildings, and bridges for roosts	Federal: None State: SSC BLM sensitive	Roosting – low Foraging – moderate, but distant from nearest records in Mule Mountains Not observed
Yuma myotis *Myotis yumanensis*	Associated with permanent sources of water, typically rivers and streams, feeding primarily on aquatic emergent insects. Also use tinajas (small pools in bedrock) in the arid west. Occurs in a variety of habitats including riparian, arid scrublands and deserts, and forests. Roosts in bridges, buildings, cliff crevices, caves, mines, and trees.	Federal: None State: None BLM sensitive	Roosting - low Foraging – moderate, but distant from nearest records in Blythe Not observed
Pocketed free-tailed bat *Nyctinomops femorosaccus*	Known to occur in the desert from Mar-Aug, when they then migrate out of the area. In California, found primarily in creosote bush and chaparral habitats in proximity to granite boulders, cliffs, or rocky canyons.	Federal: None State: SSC	roosting – low foraging – moderate, but distant from nearest records in Orocopia Mountains Not observed
Big free-tailed bat *Nyctinomops macrotis*	Found generally sea level to 8,000 feet in elevation. This species occurs in desert shrub. It roosts mostly in the crevices of rocks although may roost in buildings, caves, and tree cavities	Federal: None State: SSC	Roosting - low Foraging - moderate Not observed

Conservation Status

Federal	FE = Federally listed endangered: species in danger of extinction throughout a significant portion of its range
	FT = Federally listed, threatened: species likely to become endangered within the foreseeable future
	FCT = Proposed for federal listing as a threatened species
	BCC = Fish and Wildlife Service: Birds of Conservation Concern:
	BLMS = Bureau of Land Management Sensitive
State	SSC = State Species of Special Concern
	CFP = California Fully Protected
	SE = State listed as endangered
	ST = State listed as threatened
	WL = State watch list
	CPF = California Protected Furbearing Mammal
	CPGS = California Protected Game Species

** Species not detected during previous surveys may have the potential to occur on the Project site in the future.

APPENDIX C

Potential for Special Status Plant Species to Occur
Victory Pass Solar Project

PLANT SPECIES	FORM; HABITAT; DISTRIBUTION (COUNTIES)	CONSERVATION STATUS	ELEVATION (meters)	BLOOMING PERIOD	POTENTIAL TO OCCUR ON THE PROJECT SITE
Chaparral sand verbena *Abronia villosa* var. *aurita*	Annual herb; sandy – chaparral, coastal scrub, desert dunes; Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura; Palen sand dunes, Desert Lily Sanctuary	Federal: none CRPR: 1B.1 BLM sensitive	75 - 1600	Jan-Sep	Minimal – no suitable habitat Not observed
Angel trumpets *Acleisanthes longiflora*	Perrenial herb; sonoran desert scrub (carbonate); known in CA only from one occurrence in the Maria Mountains	Federal: none CRPR: 2B.3	90 - 95	May	Low – distant from known records Not observed
Desert sand parsley *Ammoselinum giganteum/ Spermolepis gigantea*	Annual herb; Sonoran Desert scrub, Riverside- known in CA only from Hayfields Dry Lake	Federal: none CRPR: 2B.1	~152	Mar-Apr	Minimal – no suitable habitat Not observed
Small-flowered androstephium *Androstephium breviflorum*	Perennial bulbiferous herb; desert dunes, Mojavean desert scrub (bajada); San Bernardino, Riverside, Inyo; Eastern edge of Eagle Mountains	Federal: none CRPR: 2B.2	220 - 800	Mar-Apr	Minimal – no suitable habitat Not observed

PLANT SPECIES	FORM; HABITAT; DISTRIBUTION (COUNTIES)	CONSERVATION STATUS	ELEVATION (meters)	BLOOMING PERIOD	POTENTIAL TO OCCUR ON THE PROJECT SITE
Harwood's milkvetch *Astragalus insularis* var. *harwoodii*	Annual herb; sandy or gravelly - desert dunes, Mojavean Desert scrub; Riverside, San Bernardino, San Diego, Inyo	Federal: none CRPR: 2B.2	0-710	Jan-May	Minimal – no suitable habitat Not observed
Coachella Valley milkvetch *Astragalus lentiginosus* var. *coachellae*	Annual/perennial herb; Desert dunes - Sonoran desert scrub (sandy); endemic to Coachella Valley	Federal: FE CRPR: 1B.2 BLM sensitive	40-655	Feb-May	Minimal – no suitable habitat, outside range Not observed
California ayenia *Ayenia compacta*	Perennial herb; Mojavean desert scrub Sonoran desert scrub; Riverside, San Bernardino, San Diego; Chuckwalla Mountains	Federal: none CRPR: 2B.3	150-1095	Mar-Apr	Low – marginal habitat Not observed
Pink fairy duster *Calliandra eriophylla*	Perennial deciduous shrub Sonoran Desert scrub (sandy or rocky); Imperial, Riverside, San Diego; south of Ford Dry Lake	Federal: none CRPR: 2B.3	120 - 1500	Jan-Mar	Low – marginal habitat Not observed
Sand evening-primrose *Chylisimia [Camissonia] arenaria*	Annual / perennial herb; Sonoran Desert scrub (sandy or rocky); Imperial, Riverside, San Bernardino; Hayfield Lake and Orocopia Mountains	Federal: none CRPR: 2B.2	70-915	Nov-May	Minimal – no suitable habitat Not observed
Crucifixion thorn *Castela emoryi*	Perennial deciduous shrub; gravelly - Mojavean desert scrub, Playas, Sonoran Desert scrub, Imperial, Inyo, Riverside, San Bernardino	Federal: none CRPR: 2B.2	90-725	Apr-Oct	Moderate Not observed

PLANT SPECIES	FORM; HABITAT; DISTRIBUTION (COUNTIES)	CONSERVATION STATUS	ELEVATION (meters)	BLOOMING PERIOD	POTENTIAL TO OCCUR ON THE PROJECT SITE
Abram's spurge *Chamaesyce abramsiana*	Annual herb; sandy - Mojavean desert scrub, Sonoran Desert scrub, Imperial, San Bernardino, San Diego, Riverside; Hayfields Lake	Federal: none CRPR: 2B.2	5-1310	Aug-Nov	Minimal – no suitable habitat Not observed
Arizona spurge *Chamaesyce arizonica*	Perennial herb; Sonoran Desert scrub (sandy); Imperial, Riverside, San Diego; Santa Rosa Mountains	Federal: none CRPR: 2B.3	50-300	Mar-Apr	Low - distant from known records Not observed
Flat-seeded spurge *Chamaesyce platysperma*	Annual herb; Desert dunes - Sonoran Desert scrub (sandy); Imperial Riverside, San Bernardino, San Diego; Coachella Valley	Federal: none CRPR: 1B.2 BLM sensitive	65-100	Feb-Sep	Low - distant from known records Not observed
Las Animas colubrina *Colubrina californica*	Perennial deciduous shrub; Mojavean desert scrub, Sonoran desert scrub Imperial; Riverside, San Diego; Chuckwalla Mountains	Federal: none CRPR: 2B.3	10-1000	Apr-Jun	Low – marginal habitat Not observed
Spiny abrojo *Condalia globosa* var. *pubescens*	Perennial deciduous shrub, Sonoran desert scrub, Imperial, Riverside, San Diego	Federal: none CRPR: 4.2	85-1000	Mar-Nov	Low – marginal habitat Not observed
Foxtail cactus *Coryphantha alversonii*	Perennial stem succulent; sandy or rocky, usually granitic - Mojavean desert scrub, Sonoran desert scrub; Imperial, Riverside, Imperial	Federal: none CRPR: 4.3	75-1525	Apr-Jun	Low- marginal habitat Not observed

PLANT SPECIES	FORM; HABITAT; DISTRIBUTION (COUNTIES)	CONSERVATION STATUS	ELEVATION (meters)	BLOOMING PERIOD	POTENTIAL TO OCCUR ON THE PROJECT SITE
Ribbed cryptantha *Cryptantha costata*	Annual herb; sandy - Desert dunes, Mojavean desert scrub, Sonoran desert scrub; Imperial, Inyo, Riverside, San Bernardino, San Diego	Federal: none CRPR: 4.3	-560	Feb-May	Minimal – no suitable habitat Not observed
Winged cryptantha *Cryptantha holoptera*	Annual herb; Mojavean desert scrub - Sonoran desert scrub Imperial, Inyo, Riverside, San Bernardino, San Diego; McCoy Mountains	Federal: none CRPR: 4.3	100-1690	Mar-Apr	Low - distant from known records Not observed
Wiggins' cholla *Cylindropuntia wigginsii*	Perennial stem succulent. Sonoran desert scrub (sandy) Imperial, Riverside, San Bernardino, San Diego; Palo Verde	Federal: none CRPR: 3.3	30-885	Mar	Low - distant from known records Not observed
Utah milkvine *(Funastrum [Cynanchum} utahense*]	Perennial herb; sandy or gravelly - Mojavean desert scrub, Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego	Federal: none CRPR: 4.2	100-1435	Mar-Oct	Moderate Not observed
Glandular ditaxis *Ditaxis claryana*	Perennial herb; sandy; Mojavean desert scrub; Sonoran desert scrub; Imperial, Riverside, San Diego	Federal: none CRPR: 2B.2	0-465	Oct-Mar	Moderate Not observed
California ditaxis *Ditaxis serrata* var. *californica*	Perennial herb; Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego	Federal: none CRPR: 3.2	30-1000	Mar-Dec	Moderate Not observed
Cottontop cactus *Echinocactus polycephalus var polycephalus*	Perennial stem succulent. Rocky hills, silt valleys; Sonoran desert scrub; Imperial, Inyo, Riverside, San Bernardino, San Diego	Federal: none CRPR: CBR	<1400	Mar-Aug	Moderate Not observed

PLANT SPECIES	FORM; HABITAT; DISTRIBUTION (COUNTIES)	CONSERVATION STATUS	ELEVATION (meters)	BLOOMING PERIOD	POTENTIAL TO OCCUR ON THE PROJECT SITE
Harwood's Eriastrum *Eriastrum harwoodii*	Annual herb; Desert dunes; Riverside, San Bernardino, San Diego	Federal: none CRPR: 1B.2	125-915	Mar-Jun	Minimal – lacks suitable habitat Not observed
California satintail *Imperata brevifolia*	Perennial rhizomatous herb; Chaparral, Coastal scrub, Mojavean desert scrub, Meadows and seeps (often alkali), Riparian scrub; Butte, Fresno, Imperial, Inyo, Kern, Lake, Los Angeles, Orange, Riverside, San Bernardino, Tehama, Tulare, Ventura	Federal: none CRPR: 2B.1	0-1215	Sep-May	Low - distant from known records Not observed
Pink velvet mallow *Horsfordia alata*	Perennial shrub; Sonoran desert scrub (rocky); Imperial, Riverside; Palm Springs	Federal: none CRPR: 4.3	100-500	Feb-Dec	Low - distant from known records Not observed
Bitter hymenoxys *Hymenoxys odorata*	Annual herb sandy; Riparian scrub, Sonoran desert scrub; San Bernardino, Riverside, Imperial; near Blythe	Federal: none CRPR: 2B.1	45-150	Feb-Nov	Low - distant from known records Not observed
Spearleaf *Matelea parvifolia*	Perennial herb; rocky - Mojavean desert scrub, Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego; Hayfield Lake	Federal: none CRPR: 2B.3	440-1095	Mar-May	Minimal – no suitable habitat Not observed
Argus blazing star *Mentzelia puberula*	Perennial herb; sandy or rocky - Mojavean desert scrub Sonoran desert scrub, Imperial, Riverside, San Bernardino	Federal: none CRPR: 2B.2	90-1280	Mar-May	Moderate Not observed
Slender wooly heads *Nemacaulis denudata var. gracilis*	Annual herb; coastal dunes, desert dunes, Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego; Arica Mountains	Federal: none CRPR: 2B.2	-450	Mar-May	Low - distant from known records Not observed

PLANT SPECIES	FORM; HABITAT; DISTRIBUTION (COUNTIES)	CONSERVATION STATUS	ELEVATION (meters)	BLOOMING PERIOD	POTENTIAL TO OCCUR ON THE PROJECT SITE
Narrow-leaved sandpaper plant *Petalonyx linearis*	Perrenial shrub; sandy or rocky canyons, generally in creosote bush scrub; Riverside County, Joshua Tree SE Coxcomb Mountains	Federal: none CRPR: 2B.3	<1000	Mar-May	Minimal – lacks suitable habitat Not observed
Lobed cherry *Physalis lobata*	Perennial herb; Mojavean desert scrub (decomposed granitic), Playas; San Bernardino; Hwy 62	Federal: none CRPR: 2B.3	500-800	May-Jan	Low - distant from known records Not observed
Desert portulaca *Portulaca halimoides*	Annual herb; Joshua tree woodland (sandy, San Bernardino, Riverside	Federal: none CRPR: 4.2	1000-2000	Sep	Minimal- unsuitable elevation Not observed
Desert unicorn plant *Proboscidea althaeifolia*	Perennial herb; gently sloping sandy flats and washes, sometimes roadsides, Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego	Federal: none CRPR: 4.3	85-1000	May-Oct	Moderate Not observed
Orocopia sage *Salvia greatae*	Perennial evergreen shrub; Mojavean desert scrub, Sonoran desert scrub; Imperial, Riverside, San Bernardino; Orocopia and Chocolate Mountains	Federal: none CRPR: 1B.3 BLM sensitive	-865	Mar-Apr	Minimal – unsuitable habitat Not observed
Desert spikemoss *Selaginella eremophila*	Perennial rhizomatous herb; chaparral, Sonoran desert scrub (gravelly or rocky); Imperial, Riverside, San Diego; Orocopia Mountains	Federal: none CRPR: 2B.2	200-1295	May-Jul	Minimal – unsuitable habitat Not observed
Cove's cassia *Senna covesii*	Perennial herb; dry, sandy desert washes and slopes, Sonoran desert scrub; Imperial, Riverside, Kern, San Bernardino, San Diego	Federal: none CRPR: 2B.2	225-1295	Mar-Aug	Minimal – unsuitable elevation Not observed

PLANT SPECIES	FORM; HABITAT; DISTRIBUTION (COUNTIES)	CONSERVATION STATUS	ELEVATION (meters)	BLOOMING PERIOD	POTENTIAL TO OCCUR ON THE PROJECT SITE
Mesquite nest straw *Stylocline sonorensis*	Annual herb; Sonoran desert scrub (sandy) Known in CA from only a single collection (1930) at Hayfields Dry Lake Possibly extirpated after 1930 by development	Federal: none CRPR: 2A	+/- 400	Apr	Low - distant from known records Not observed
Dwarf germander *Teucrium cubense ssp. depressum*	Annual herb; desert dunes, playas margins; Sonoran desert scrub, Imperial, Riverside; Hayfield Lake	Federal: none CRPR: 2B.2	45-400	Mar-Nov	Low - distant from known records Not observed
Jackass clover *Wislizenia refracta ssp. refracta*	Annual herb; desert dunes, Mojavean desert scrub, playas, sonoran desert scrub, Riverside, San Bernardino	Federal: none CRPR: 2B.2	600-800	Apr-Nov	Minimal – lacks suitable habitat Not observed
Palmer's jackass clover Wislizenia refracta ssp. Palmeri	Perennial deciduous shrub; Chenopod scrub, Desert dunes, Sonoran desert scrub, Sonoran thorn woodland, Riverside, San Diego; Palen sand dunes, Palen Mountains	Federal: none CRPR: 2B.2	0-300	Jan-Dec	Minimal – lacks suitable habitat Not observed
"Palen Lake atriplex" *Atriplex sp. nov. J. Andre* *(Atriplex canescens* var. *macilenta)*	Perennial shrub; Saline habitats, playa margins of Palen Dry Lake; Riverside	Federal: none CRPR: none BLM sensitive	<160	May-Jun	Minimal – lack suitable habitat Not observed

Federal FE = Federally listed endangered: species in danger of extinction throughout a significant portion of its range
FT = Federally listed, threatened: species likely to become endangered within the foreseeable future

California Rare Plant Rank (CRPR)

CRPR 1A = Presumed extirpated in California and either rare or extinct elsewhere
CRPR 1B = Rare, threatened, or endangered in California and elsewhere
CRPR 2A = Presumed extirpated in California but more common elsewhere
CRPR 2B = Rare, threatened, or endangered in California but more common elsewhere
CRPR 3 = Plants which need more information
CRPR 4 = Limited distribution – a watch list
CBR = Considered, But Rejected
.1 = Seriously endangered in California (high degree/immediacy of threat; over 80% of occurrences threatened)
.2 = Fairly endangered in California (moderate degree/immediacy of threat; 20%-80% of occurrences threatened)
.3 = Not very endangered in California (low degree/immediacy of threats or no current threats known; <20% of occurrences threatened or no current threats known)

Bureau of Land Management

BLM Sensitive = may be designated by the BLM California State Director for the following groups of species: proposed or candidate species for listing under the federal ESA, ESA delisted species in the five years following delisting, species listed under the California ESA, California State Species of Special Concern (SSC), California State Fully Protected Species (FP), and California rare plants ranked as List 1B (plants rare, threatened, or endangered in California and elsewhere) identified in the California Department of Fish and Wildlife Special Vascular Plants, Bryophytes, and Lichens List (current version online at https://www.wildlife.ca.gov/Conservation/Plants/Info), unless the State Director decides on a case-by-case basis that a particular List 1B species does not warrant sensitive status. (BLM Manual 6840, 2008 and BLM Manual 6840-1, 1996)

APPENDIX D

Victory Pass Solar Project
Wildlife Species Observed
Fall 2019-Spring 2020

COMMON NAME	SCIENTIFIC NAME
Mammals	
bat species	
black tailed jackrabbit	*Lepus californicus*
burro deer	***Odocoileus hemionus***
coyote	*Canis latrans*
desert cottontail rabbit	*Sylvilagus audubonii*
desert kit fox	***Vulpes macrotis***
desert wood rat	*Neotoma lepida*
round tail ground squirrel	*Xerospermophilus tereticaudus*
Reptiles	
desert horned lizard	*Phrynosoma platyrhinos*
desert iguana	*Dipsosaurus dorsalis*
desert tortoise	***Gopherus agassizii***
leopard lizard	*Gambelia wislizenii*
long-tailed bush lizard	*Urosaurus graciosus*
side blotched lizard	*Uta stansburiana*
Sidewinder	*Crotalus cerastes*
western whiptail lizard	*Aspidoscelis tigris*
zebra-tailed lizard	*Calisaurus draconoides*
Birds	
Anna's hummingbird	*Calypte anna*
Barn Swallow	*Hirundo rustica*
Bewick's wren	Thryomanes bewickii
black tailed gnatcatcher	*Polioptila melanura*
black throated gray warbler	Setophaga nigrescens
black throated sparrow	*Amphispiza bilineata*
blue grey gnatcatcher	*Polioptila caerulea*
Brewer's sparrow	*Spizella breweri*
burrowing owl	***Athene cunicularia***
chipping sparrow	Spizella passerina

COMMON NAME	SCIENTIFIC NAME
Cliff swallow	*Petrochelidon pyrrhonota*
common poorwill	*Phalaenoptilus nuttallii*
common raven	*Corvus corax*
Cooper's hawk	*Accipiter cooperii*
Costa's hummingbird	*Calypte costae*
double crested cormorant	*Phalacrocorax auritus*
Eurasian collared-dove	*Streptopelia decaocto*
Gambel's quail	*Callipepla gambelii*
greater roadrunner	*Geococcyx californianus*
horned lark	*Eremophila alpestris*
house finch	*Carpodacus menicanus*
killdeer	*Charadrius vociferus*
lesser nighthawk	*Chordeiles acutipennis*
loggerhead shrike	***Lanius ludovicianus***
mourning dove	*Zenaida macroura*
northern mockingbird	Mimus polyglottos
orange-crowned warbler	Vermivora celata
osprey	*Pandio haliaetus*
peregrine falcon	Falco peregrinus
red tailed hawk	*Buteo jamaicensis*
red-winged blackbird	*Agelaius phoeniceus*
rock wren	*Salpinctes obsoletus*
sage thrasher	*Oreoscoptes montanus*
sagebrush sparrow	*Artemisiospiza nevadensis*
Say's phoebe	*Sayornis saya*
snow goose	*Chen caerulescens*
tree swallow	*Tachycineta bicolor*
turkey vulture	*Cathartes aura*
verdin	*Auriparus flaviceps*
violet green swallow	*Tacycineta thalassina*
white-crowned sparrow	*Zonotrichia leucophrys*
White-throated swift	*Aeronautes saxatalis*
yellow-rumped (Audubon's) warbler	*Setophaga coronata*

BOLD = special status species

APPENDIX E

Victory Pass Solar Project
Plants Species Observed
Fall 2019-Spring 2020

FAMILY	*SCIENTIFIC NAME*	COMMON NAME
Amaranthaceae	*Tidestromia suffruticosa var. oblongifolia*	honeysweet
Apocynaceae	*Asclepias albicans*	white stemmed milkweed
Apocynaceae	*Funastrum hirtellum*	hairy milkweed
Asteraceae	*Ambrosia dumosa*	white bursage
Asteraceae	*Ambrosia salsola*	cheesebush
Asteraceae	*Atrichoceris platyphylla*	gravel ghost
Asteraceae	*Baileya pauciradiata*	lax flower
Asteraceae	*Baileya pleniradiata*	wooly marigold
Asteraceae	*Bebbia juncea var. aspera*	rush sweetbush
Asteraceae	*Calycoseris wrightii*	white tackstem
Asteraceae	*Chaenactis carphoclinia*	pebble pincushion
Asteraceae	*Chaenactis fremontii*	Fremont's pincushion
Asteraceae	*Chaenactis stevioides*	desert pincushion
Asteraceae	*Encelia farinosa*	brittlebush
Asteraceae	*Geraea canescens*	desert sunflower
Asteraceae	*Logfia depressa*	dwarf cottonrose
Asteraceae	*Malacothrix glabrata*	desert dandelion
Asteraceae	*Monoptilon bellioides*	Mojave desert star
Asteraceae	*Palafoxia arida var. arida*	Spanish needle
Asteraceae	*Pectis papposa var. papposa*	chinch weed
Asteraceae	*Perityle emoryi*	Emory's rockdaisy
Asteraceae	*Psathyrotes ramosissima*	turtleback
Asteraceae	*Rafinesquia neomexicana*	desert chicory
Asteraceae	*Senecio mohavense*	Mohave groundsel

FAMILY	*SCIENTIFIC NAME*	COMMON NAME
Asteraceae	*Stephanomeria pauciflora*	wire lettuce
Boraginaceae	*Amsinckia menziesii*	fiddleneck
Boraginaceae	*Amsinckia tessellata*	devil's lettuce
Boraginaceae	*Cryptantha angustifolia*	narrow leaved cryptantha
Boraginaceae	*Cryptantha barbigera*	bearded cryptantha
Boraginaceae	*Cryptantha dumetorum*	bush loving cryptantha
Boraginaceae	*Cryptantha maritima*	Guadalupe cryptantha
Boraginaceae	*Cryptantha nevadensis*	Nevada forget me not
Boraginaceae	*Cryptantha pterocarya*	winged nut forget-me-not
Boraginaceae	*Eucrypta micrantha*	desert eucrypta
Boraginaceae	*Nama demissa var. demissa*	purple mat
Boraginaceae	*Pectocarya heterocarpa*	chuckwalla pectocarya
Boraginaceae	*Pectocarya platycarpa*	broad nutted comb-bur
Boraginaceae	*Phacelia crenulata*	notch leaved phacelia
Boraginaceae	*Phacelia crenulata var. ambigua*	purplestem phacelia
Boraginaceae	*Phacelia crenulata var. crenulata*	heliotrope phacelia
Boraginaceae	*Phacelia distans*	common phacelia
Boraginaceae	*Tiquilia plicata*	fanleaf crinklemat
Brassicaceae	**Brassica tournefortii*	Sahara mustard
Brassicaceae	*Caulanthus lasiophyllus*	California mustard
Brassicaceae	*Descurainia pinnata*	western tansy mustard
Brassicaceae	**Descurainia sophia*	herb sophia
Brassicaceae	*Dithyrea californica*	spectacle pod
Brassicaceae	*Lepidium lasiocarpum*	pepperweed
Brassicaceae	**Sisymbrium irio*	London rocket
Brassicaceae	**Sisymbrium orientale*	hedge mustard
Cactaceae	*Cylindropuntia echinocarpa*	golden cholla
Cactaceae	*Cylindropuntia ramosissima*	diamond cholla
Cactaceae	*Mammillaria tetrancistra*	fishhook cactus
Cactaceae	*Opuntia basilaris*	Beavertail cactus
Campanulaceae	*Nemacladus orientalis*	eastern glandular nemacladus
Campanulaceae	*Nemacladus tenuis*	nemacladus

FAMILY	*SCIENTIFIC NAME*	COMMON NAME
Caryophyllaceae	*Achyronychia cooperi*	frost mat
Cucurbitaceae	*Brandegea bigelovii*	desert starvine
Euphorbiaceae	*Ditaxis lanceolata*	narrowleaf ditaxis
Euphorbiaceae	*Ditaxis neomexicana*	New Mexico ditaxis
Euphorbiaceae	*Euphorbia polycarpa*	smallseed sandmat
Euphorbiaceae	*Euphorbia setiloba*	Yuma sandmat
Fabaceae	*Acmispon strigosus*	strigose lotus
Fabaceae	*Dalea mollissima*	silky dalea
Fabaceae	*Lupinus arizonicus*	Arizona lupine
Fabaceae	*Marina parryi*	Parry's false prairie clover
Fabaceae	*Olneya tesota*	desert ironwood
Fabaceae	*Parkinsonia florida*	blue palo verde
Fabaceae	*Psorothamnus emoryi*	indigo bush
Fabaceae	*Psorothamnus schottii*	Schott's indigo bush
Fabaceae	*Psorothamnus spinosus*	smoke tree
Fabaceae	*Senegalia greggii*	catclaw acacia
Fouquieriaceae	*Fouquieria splendens*	ocotillo
Geraniaceae	*Erodium texanum*	desert heron's bill
Krameriaceae	*Krameria bicolor*	white rhatany
Lamiaceae	*Condea emoryi (= Hyptis emoryi)*	desert lavender
Lamiaceae	*Salvia columbariae*	chia sage
Liliaceae	*Hesperocallis undulata*	desert lily
Loasaceae	*Mentzelia albicaulis*	white stemmed stickleaf
Loasaceae	*Mentzelia involucrata*	whitebract blazingstar
Malvaceae	*Eremalche rotundifolia*	desert fivespot
Malvaceae	*Sphaeralcea ambigua*	desert globemallow
Nyctaginaceae	*Abronia villosa var. villosa*	hairy sand verbena
Nyctaginaceae	*Allionia incarnata*	windmills
Nyctaginaceae	*Mirabilis laevis*	desert wishbone bush
Onagraceae	*Chylismia claviformis*	browneyes
Onagraceae	*Eremothera boothii subsp. condensata*	Booth's suncup
Onagraceae	*Eremothera refracta*	narrow leaved primrose
Onagraceae	*Oenothera deltoides subsp. deltoides*	birdcage desert primrose

FAMILY	*SCIENTIFIC NAME*	COMMON NAME
Papaveraceae	*Eschscholzia glyptosperma*	desert gold poppy
Papaveraceae	*Eschscholzia minutiflora*	small flowered poppy
Plantaginaceae	*Mohavea confertiflora*	ghost plant
Plantaginaceae	*Plantago ovata*	wooly plantain
Poaceae	*Aristida adscensionis*	three-awn
Poaceae	*Aristida purpurea*	purple three-awn
Poaceae	*Hilaria rigida*	big galleta grass
Poaceae	**Schismus barbatus*	common mediterranean grass
Polemoniaceae	*Aliciella latifolia*	broad leaf gilia
Polemoniaceae	*Gilia stellata*	star gilia
Polemoniaceae	*Linanthus jonesii*	Jones linanthus
Polemoniaceae	*Loeseliastrum matthewsii*	desert calico
Polemoniaceae	*Loeseliastrum schottii*	Schott's gilia
Polygonaceae	*Chorizanthe brevicornu*	brittle spineflower
Polygonaceae	*Chorizanthe rigida*	devil's spineflower
Polygonaceae	*Eriogonum inflatum*	desert trumpet
Polygonaceae	*Eriogonum thomasii*	Thomas' buckwheat
Simaroubaceae	***Castela emoryi***	**crucifixion thorn**
Solanaceae	*Datura discolor*	small datura
Solanaceae	*Datura wrightii*	jimson weed
Solanaceae	*Lycium andersonii*	Anderson's desert thorn
Solanaceae	*Physalis crassifolia*	ground cherry
Zygophyllaceae	*Fagonia laevis*	California fagonia
Zygophyllaceae	*Larrea tridentata*	creosote bush

BOLD = special status species

*= non-native species