

# Appendix C

## Biological Resources

C.1 Biological Resources Technical Report

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C.3 Bird and Bat Conservation Strategy

C.4 Spring 2019 Plant Survey Memo

C.5 Multi-Species Relocation and Management Plan

# Appendix C.1

## Biological Resources Technical Report

**BIOLOGICAL RESOURCES TECHNICAL REPORT  
ATHOS RENEWABLE ENERGY PROJECT  
RIVERSIDE COUNTY, CALIFORNIA**



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January 2019

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## List of Acronyms

agl	above ground level
amsl	above mean sea level
AC	Alternating Current
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
CNPS	California Native Plant Society
CNDDDB	California Natural Diversity Database
CRPR	California Rare Plant Rank
DFA	Development Focus Area
DRECP	Desert Renewable Energy Conservation Plan
DC	Direct Current
FEIS	Final Environmental Impact Statement
FESA	Federal Endangered Species Act
FWS	Fish and Wildlife Service
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
SEZ	Solar Energy Zone
TCAs	Tortoise Conservation Areas
USFWS	US Fish and Wildlife Service

# **1 INTRODUCTION**

## **1.1 Background**

In 2017, Intersect Power, LLC proposed the Athos Renewable Energy Project within the Desert Center community of unincorporated Riverside County, California. The proposed Project would consist of solar facilities located on seven non-contiguous groups of private parcels and approximately 11 miles of generation interconnection (gen-tie) transmission line crossing a mixture of privately owned and Bureau of Land Management (BLM) managed lands, connecting to the existing Southern California Edison Red Bluff substation. The Athos Renewable Energy Project is expected to generate 500 megawatts (MW) of renewable energy using photovoltaic (PV) panels. The solar facility and gen-tie are collectively referred to as the Athos Renewable Energy Project (the Project) throughout this report.

## **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 2017 and spring of 2018 for the Athos Renewable Energy Project.

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 located in unincorporated Riverside County, California. It consists of approximately 3456.7 acres, including 3262.8 acres of privately-owned land and 193.9 acres of BLM-managed land (acreages were obtained from shapefile data that may result in small discrepancies between different documents for the Project). The site is situated within Chuckwalla Valley near the community of Desert Center, about halfway between the cities of Indio and Blythe (see Figure 1).

The Project site is on three 7.5-Minute U.S. Geological Survey topographic quadrangles: East of Victory Pass, Corn Springs, and Sidewinder Well. The federal lands included within the Project site are located within in 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 Chuckwalla Area of Critical Environmental Concern

(ACEC) is located just south of I-10 and Joshua Tree National Park is located approximately two miles north of the northernmost portion of the Project site.

The federal lands included within the Project site are primarily 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.

The portions of the Project site proposed for PV and storage components consist of seven non-contiguous groups of privately-owned parcels. For the purposes of this report, the seven groups of parcels are identified as parcel groups A-G. The gen-tie routes are identified as six segments (gen-tie 1, 1A, 2A, 2B, 3, and 4) and are located on a combination of privately owned and BLM managed lands (see Figure 2). Additional access areas are also on a combination of private and public lands. A summary of all project components is found in Table 1.

#### Private Land Components

All seven non-contiguous parcel groups for proposed PV and storage are located on privately owned parcels. The northernmost parcel group A, is just northwest of California Highway 177 (CA-177) while the remaining parcel groups (C-G) are located southeast of CA-177 and north of Interstate 10 (I-10). These lands include a combination of disused former agricultural lands (parcel groups A-E, G, 2827 acres total) and native undisturbed habitat (parcel groups D and F, 394.6 acres total).

The proposed gen-tie routes connect each of these groups of parcels and connect group F to Southern California Edison's existing Red Bluff substation. The gen-tie routes that cross privately owned land include gen-tie 1, gen-tie 1A, gen-tie 1B, gen-tie 2C, and gen-tie 3 (see Figures 2 and 3). The habitat on these routes include some previously disturbed habitat.

The proposed solar facilities (A-G) and gen-tie routes (gen-tie 1A, gen-tie 1B, gen-tie 2C, and gen-tie 3) on private components are located outside boundaries of ACECs, BLM wilderness areas, or USFWS designated critical habitat units for desert tortoise.

#### Public Land Components

The proposed gen-tie routes located on BLM managed lands include gen-tie 1A, gen-tie 1C, gen-tie 2A, and gen-tie 2B through gen-tie 4. Vegetation along the gen-tie routes that cross public land is mostly in its natural undisturbed state (see Figures 2 and 3).

The entirety of gen-tie route 4 is located within USFWS designated critical habitat for desert tortoise, and the southernmost portion of that route (portion south of I-10) is also within the Chuckwalla ACEC.

**Table 1.** Summary of Project Components

Solar Facility	Component	Private	Public
	A	X	-
	B	X	-
	C	X	-
	D	X	-
	E	X	-
	F	X	-
	G	X	-
Gen-tie	Component	Private	Public
	Gen-tie 1	X	X
	Gen-tie 1A	X	X
	Gen-tie 2A	-	X
	Gen-tie 2B	X	-
	Gen-tie 3	X	X
Gen-tie 4	-	X	
Additional Access	Component	Private	Public
	Access Road	X	-
	ROW Access	X	X
	Spur Road 1	-	X
Spur Road 2	-	X	

## 1.4 Project Summary

The following summary of the project components, construction methods, schedule, and operation and maintenance activities is based on information provided by Intersect Power.

### Solar fields

The Project’s PV modules would be manufactured at an offsite location and transported to the Project site. Panels would be arranged in strings with a maximum height of 12 feet. Panel faces would be minimally reflective, dark in color, and highly absorptive.

Panels would be arranged on the site in solar arrays. Spacing between each row would be a minimum of 4 feet. Structures supporting the PV modules would consist of steel piles which

would be driven into the soil using pneumatic techniques, such as a hydraulic rock hammer attachment on the boom of a rubber-tired backhoe excavator. The piles typically would be spaced 10 feet apart. The total height of the panel system measured from ground surface would be up to 12 feet. Where excavations are required, the majority would be limited to less than 6 feet in depth, however, some excavations, such as those undertaken for the installation of collector poles and dead-end structures, may reach depths of 20 feet or more.

Each 2-MW PV panel increment would include an inverter-transformer station constructed on a concrete pad or steel skid, and centrally located within the PV arrays. Each inverter-transformer station would contain electrical components and a security camera at the top of an approximately 20-foot pole. An inverter shade structure may also be installed at each one. The shade structure would consist of wood or metal supports and a durable outdoor material shade structure (metal, vinyl, or similar). The shade structure would extend up to 10 feet above the top of the inverter pad.

Underground cables would be installed to convey electricity from the panels, via combiner boxes located throughout the PV arrays, to inverter-transformer stations. From there, the 34.5 kV level collection cables would either be buried underground or installed overhead on wood poles. If the collection system is installed overhead, some of the wood poles could be located at the outside edge of the property line, but a majority of these poles are expected to be located interior to the site. Approximately 300 to 500 wood poles located at 250-foot intervals could be installed across the entire site. The typical height of the poles would be approximately 30 to 50 feet.

Up to four substations would be located within the proposed solar sites. The area of each substation and associated equipment would be approximately 37,500 square feet (150 feet by 250 feet). Substation equipment would be built on concrete pad foundations, and the remaining area would be graveled to a maximum depth of approximately 6 inches. Each substation would be surrounded by an up-to 6-foot high chain link fence topped with one foot of barbed wire.

The Project may use one of the existing homes on the solar facility site as an O&M building, or it may use the septic system of an existing home and build a new O&M building. If a new O&M building is constructed, it would be approximately 3,000 square feet in size and approximately 15 feet at its tallest point.

A fiber optic or other cabling system would be installed for remote monitoring of operation and/or remote control of critical components. It typically would be installed in buried conduit, leading to one or more Supervisory Control and Data Acquisition System (SCADA) system cabinets located within the Project site. External telecommunications connections could be provided through wireless or hard-wired connections to locally available commercial service

providers. The Project's SCADA system would interconnect to this fiber optic network at the Red Bluff Substation, and no additional disturbance associated with telecommunications is anticipated.

The Project could include, at the Applicant's option, a battery or flywheel storage system capable of storing up to 500 MW of electricity. If installed, the storage system would consist of battery or flywheel banks housed in electrical enclosures and buried electrical conduit. The battery system would either be concentrated near the Project substations or dispersed throughout the solar facility sites. Up to 3,000 electrical enclosures measuring approximately 40 feet by 8 feet by 8.5 feet high would be installed on concrete foundations designed for secondary containment. Battery systems are operationally silent, and flywheel systems have a noise rating of 45 dBA.

The Project would include a permanent meteorological (met) data collection system, consisting of approximately 15 met stations, each with multiple weather sensors mounted on a main mast approximately 20 feet tall.

Solar field ingress/egress would be via locked gates located at multiple points. The boundaries of the Project sites would be secured by up-to 6-foot-high chain-link perimeter fences, topped with one foot of three-strand barbed wire, or as dictated by Riverside County specifications. If required, site fencing would also adhere to US Fish and Wildlife Service (USFWS) design guidelines (USFWS, 2009) to exclude desert tortoise from the Project site. The fence would typically be set approximately 100 feet from the edge of the solar panel array.

The Project's on-site roadway system would include perimeter roads, access roads, and internal roads. The perimeter roads and main access roads would be approximately 20 feet wide and constructed to be consistent with facility maintenance requirements and County standards. These roads would be surfaced with gravel, compacted dirt, or another commercially available surface. Internal roads would have permeable surfaces and be approximately 16 feet in width or as otherwise required by County standards. They would be treated to create a durable, dustless surface for use during construction and operation. This would not involve lime treatment but would likely involve surfacing with gravel, compacted native soil, or a dust palliative.

Motion sensitive, directional security lights would provide illumination around the substation areas, inverter clusters, gates, and along perimeter fencing. All lighting would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties. No Project structures would necessitate aviation lighting per Federal Aviation Administration Part 77 Obstruction Evaluation Consultation.

Infrared security cameras, motion detectors, or other similar technology would be installed to allow for security monitoring. Such cameras or other equipment would be placed along the perimeter of the facility and/or at the inverters. Security cameras located at the inverters would be posted on poles approximately 20 feet high.

### **Gen-tie Lines**

The project gen-tie lines would be located within a 100-foot-wide right-of-way (ROW), and consist of either monopoles, lattice steel structures, or wooden H-frame poles. For the overhead gen-tie line, structure foundations would be excavated to a depth of 35 feet or more and include concrete supports depending on final engineering (without these foundations, guy-lines would be needed to support the structures). Gen-tie structures would be on average 90 feet tall (as short as 50 feet and as tall as 120 feet to clear another line for a perpendicular crossing). The gen-tie structures would be less than 200 feet tall and would not necessitate aviation lighting per Federal Aviation Administration Part 77 Obstruction Evaluation Consultation. A total of up to 120 gen-tie structures would be built. The gen-tie would include a 3-phase 220 kV conductor, a ground wire, and a telecommunications fiber-optic cable.

### **Access**

Access to the majority of the Project sites would be via Highway 177; Corn Springs Road would be used to access the easternmost group of parcels. Seven new access road segments, totaling approximately ten miles in length, would be constructed for primary and secondary access to the seven groups of Project sites (Groups A-G; see Figure 3). In some cases, access would be via improved existing BLM open routes and agricultural roads, rather than requiring new route construction.

All new and improved access roads would be 24 feet wide with a two-foot-wide shoulder on each side, for a total width of approximately 30 feet, including allowances for side slopes and surface runoff control. Construction of the access road segments would include compacting subsurface soils and placing a four-inch-thick layer of asphalt concrete over a 6-inch-thick layer of compacted aggregate base.

### **Construction**

Construction is anticipated to occur over a 30-month period with multiple construction activities occurring simultaneously. Project construction may be phased. The on-site workforce is expected to reach its peak of approximately 530 individuals with an average construction-related workforce of 320 individuals. An estimated 40 roundtrips per day would be required to deliver materials and equipment to the project site (mainly tractor-trailer trucks and occasional oversize tractor-trailers for large equipment such as cranes). Prior to construction, all contractors, subcontractors, and project personnel would receive Worker Environmental

Awareness Program (WEAP) training to effectively understand and implement the biological commitments in the project description, implement the mitigation measures, comply with applicable environmental laws and regulations, avoid and minimize impacts, and understand the importance of these resources and the purpose and necessity of protecting them. The following species and their habitat would be specifically covered in the WEAP: desert tortoise, burrowing owl, other raptors and migratory birds, American badger, and desert kit fox. Applicable sensitive plant species would also be covered in the WEAP.

Construction would begin with pre-construction surveys, construction of the main access road, security fencing, biological resource exclusion fences where needed, clearing and construction of a laydown yard, site grading and preparation, construction of the O&M building, parking area, and pad mounts for transformers. Construction would continue with the installation of temporary power, construction of on-site roads, construction of the project substation, and assembly and installation of panel blocks and wiring.

Construction equipment would normally operate between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday for up to a maximum of 8 hours per piece of equipment, daily. Weekend construction work is not expected but may occur on occasion, depending on schedule considerations.

During pre-construction field surveys site boundaries, fence locations, and gen-tie ROW boundaries would be identified and clearly marked with stakes and flagging. All off-road vehicle travel across BLM-administered land would be monitored by qualified biologists, archaeologists, and tribal monitors, as appropriate. A desert tortoise exclusion fence, if required, would be installed per the USFWS guidelines (USFWS 2009). Fence installation would be monitored by qualified biologists, archaeologists, and tribal monitors, as appropriate. Following fence installation, desert tortoise clearance surveys would be conducted according to USFWS 2009 guidelines (USFWS 2009). Mammals and burrowing owls would be passively relocated using one-way doors or using other accepted exclusion methods. Desert tortoise individuals would be moved outside of fenced areas “out of harm’s way” or actively translocated to a pre-selected site pursuant to an approved desert tortoise Translocation Plan to be developed in consultation with USFWS and the California Department of Fish and Wildlife (CDFW).

Several staging areas would be established within the solar facility site boundaries and security fence for storing materials, construction equipment, and vehicles. On-site pre-assembly of trackers would take place in the staging areas. Grubbing, light grading, and construction of staging areas would be monitored by qualified biologists, archaeologists, and tribal monitors, as appropriate.

Since most of the site has nearly level to gently sloping topography, no mass grading would be required; however, much of the solar facility would be impacted by some form of ground disturbance, either from compaction, micro-grading, or disc-and-roll grading. Some of the parcels where facilities and arrays would be located would require light grubbing for leveling and trenching.

Access road beds would be grubbed, graded, and compacted; however minimal grading is anticipated. The cut and fill would be approximately balanced; minimal import/export would be necessary.

A Stormwater Pollution Prevention Plan (SWPPP) or SWPPP equivalent document would be prepared, approved, and implemented before and during construction. The SWPPP will include Project information and identify best management practices (BMP). The BMPs would include stormwater runoff quality control measures, concrete waste management, stormwater detention, watering for dust control, and construction of perimeter silt fences, as needed.

Underground cables to connect panel strings would be installed using ordinary trenching techniques, which typically includes using a rubber-tired backhoe excavator or trencher. Wire depths would be in accordance with local, State, and Federal requirements, and would likely be buried at a minimum of 18 inches below grade, by excavating a trench approximately 3 to 6 feet wide to accommodate the conduits or direct buried cables. The excavated soil would likely be used to fill the trench and lightly compressed. All cabling excavations would be to a maximum depth of 10 feet.

All electrical inverters and the transformer would be placed on concrete foundation structures or steel skids. The substation areas would be excavated for the transformer equipment and control building foundation and oil containment area. The substation sites would be graded and compacted to an approximately level grade. Concrete pads would be constructed as foundations for substation equipment, and the remaining area would be graveled. Concrete for foundations would be brought to the site from a batching plant in Blythe or would be batched on site as necessary.

Since most of the gen-tie ROW has nearly level to gently sloping topography, no grading would be required for the gen-tie structures; however, some light grubbing may be required to clear vegetation from an approximately 12,500 square-foot area (0.3 acre) where the structure would be erected and selectively in some adjacent work areas, as needed. Structure installation would consist of the following steps:

- Deliver new structure to each structure site;
- Auger new hole using line truck attachment to a depth of up to 35 feet and include concrete supports depending on final engineering;

- Pour concrete foundation;
- Install bottom section by line truck, crane, or helicopter; and
- Install top section(s) by line truck, crane, or helicopter, if required.

Once poles are erected the conductor will be strung from pull and tension sites at the end of the power line interconnection alignment moving from one pole to the next. The average distance is approximately 4,000 feet between pull and tension sites. The line may also be equipped with optical ground wire (OPGW), which would serve as a ground wire and a telecommunication link. Alternately, telecommunications fiber optic cable may be installed in a small trench within the access roads with no new surface disturbance anticipated.

Construction sites would be kept in an orderly condition throughout the construction period by using approved enclosed refuse containers. All refuse and trash would be removed from work sites daily and be disposed of in accordance with BLM requirements. No open burning of construction trash would occur. All vegetation that may interfere with equipment would be trimmed and/or removed using manual non-mechanical means described in the Vegetation Resources Management Plan or treated with an approved herbicide, as necessary.

Following the completion of construction, temporarily disturbed areas on the Project site would be revegetated for the operations phase pursuant to an approved Vegetation Management Plan. Based on the aridity of the project area and the overall low density of vegetation present, it is not likely that vegetation would encroach upon structures so that access or operation would become impaired. However, spread of noxious weeds and other nonnative invasive plant species onto the project sites could create a fire hazard if allowed to become established, and invasive weeds could also become problematic from an ecological perspective. Therefore, weed control activities would be implemented within the project limits according to the Project's Integrated Weed Management Plan.

Weed control activities would include both mechanical and herbicide control methods. Mechanical control activities include chaining, disking, grubbing, and mowing using tractors or other heavy equipment, as necessary. On BLM-administered land (gen-tie component only), herbicide control could involve the use of BLM-approved herbicides to control weeds if manual control methods are not successful. Any potential herbicide use on BLM lands will be subject to BLM review and approval.

### **Operation and Maintenance**

The solar modules would operate during daylight 7 days a week, 365 days a year. Operational activities at the Project site would include:

- Solar module washing;

- Vegetation, weed, and pest management (no pest management would be required on the gen-tie route; no anticoagulant rodenticides would be used anywhere on the project site);
- Security monitoring;
- Responding to automated electronic alerts based on monitored data, including actual versus expected tolerances for system output and other key performance metrics; and
- Communicating with customers, transmission system operators, and other entities involved in facility operations.

Up to 10 permanent staff could be on the site at any one time for O&M activities. Alternatively, approximately 2 permanent staff and 8 Project operators would be located off-site and would be on call to respond to alerts generated by the monitoring equipment at the Project site. Security personnel would be on call to respond to trespasses and other incidents as necessary.

Site maintenance would be largely conducted during daytime hours, typically in the early morning or evening when the plant would be producing the least amount of energy. Maintenance typically would include panel repairs; panel washing; maintenance of electrical equipment; road and fence repairs; and weed management. On-site vegetation would be managed to ensure access to all areas of the site and to screen facilities as needed. Solar modules would be washed as needed (up to four times each year) using light utility vehicles with tow-behind water trailers to maintain optimal electricity production. No chemical cleaners would be used for module washing.

No heavy equipment would be used during normal operation. Routine O&M vehicles would be primarily pickup trucks, flatbed trucks, and water trucks for solar panel washing. Forklifts or loaders may be used for occasional unscheduled maintenance. Large heavy-haul transport equipment may be brought to the solar facility infrequently for equipment repair or replacement.

Standard defensible space requirements would be maintained surrounding any welding or digging operations. Fire safety and suppression measures, such as smoke detectors and extinguishers, would be installed and available at the O&M facility, per the Riverside County Building and Safety Department's requirements. A Fire Management and Prevention Plan will be prepared and implemented in coordination with the Riverside County Fire Department, BLM Fire, or other emergency response organizations.

### **Decommissioning and Repowering**

As the facility's equipment has a useful life of 40 years, at the end of the power purchase agreement's contract term (typically 10 to 25 years), the power from the facility would be sold to another buyer and/or the Project may be repowered to increase efficiency. If the Athos

Renewable Energy Project continues to operate, the long-term operations would be the same as described above. At the end of the project’s useful life, the solar arrays and gen-tie line would be decommissioned and dismantled, according to a Closure, Decommissioning, and Reclamation Plan to be prepared closer to the end of the project’s life.

## 2 SITE CHARACTERISTICS

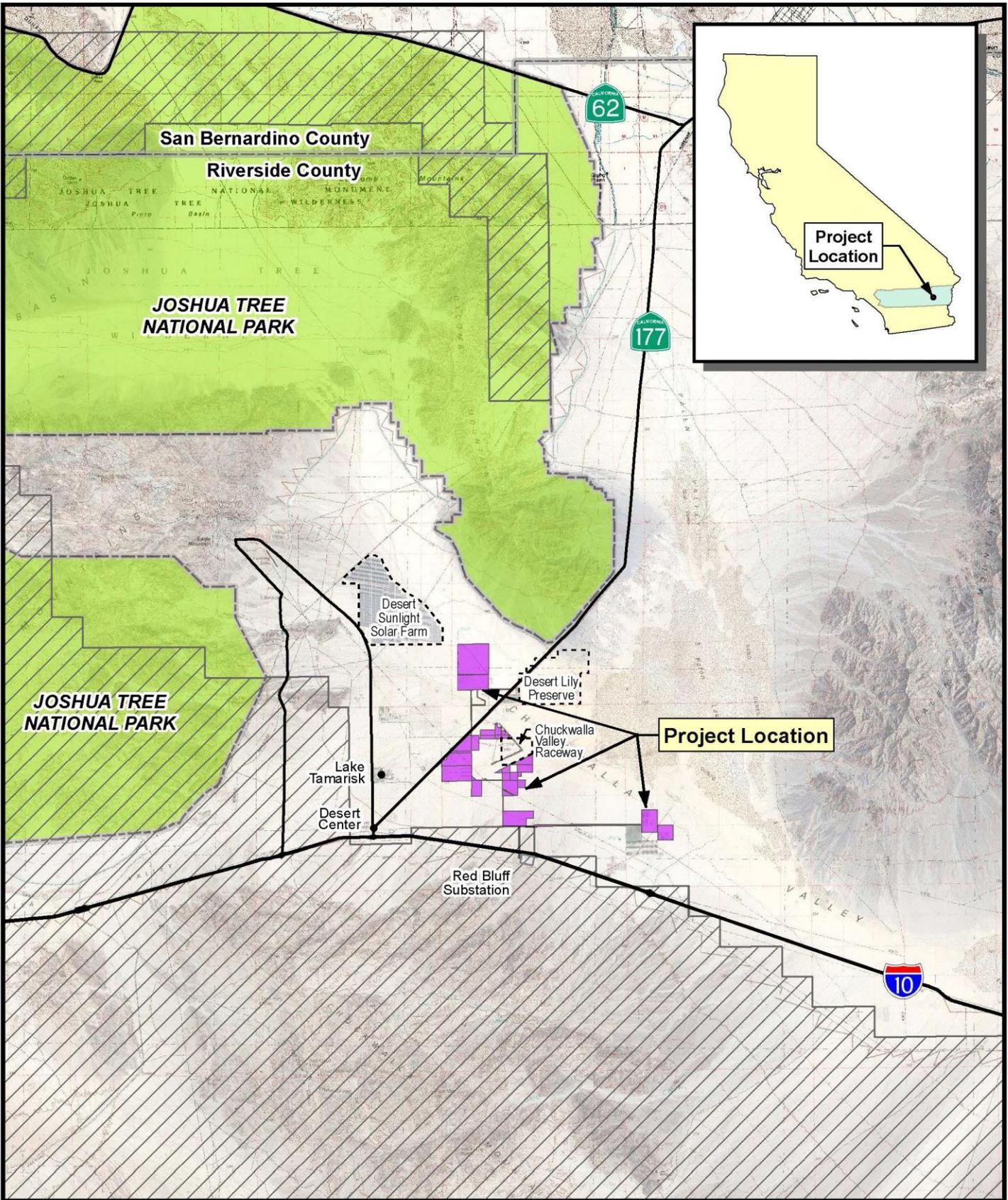
### 2.1 Regional Setting

The Project site is located 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 to the southeast at gradient of less than 1 percent. Ground surface elevations at the Project site itself range from approximately 491 feet amsl in the southeast to 588 feet amsl in the northwest.

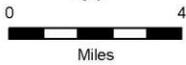
Anthropogenic features and land use near the Project site include agricultural, residential, renewable energy, energy transmission, historical military operations and recreational development. Adjacent land uses are summarized in Table 2.

**Table 2.** Adjacent Land Uses

Direction	LAND USES
<b>NORTH</b>	Desert Sunlight Solar Farm, Joshua Tree National Park, fallow agriculture
<b>SOUTH</b>	Chuckwalla ACEC, transmission lines, I-10, Southern California Edison’s Red Bluff substation
<b>EAST</b>	Chuckwalla Valley Raceway, Desert Lily Preserve, active/fallow agriculture, rural residences, existing transmission line, CA-177, historical military
<b>WEST</b>	CA-177, Lake Tamarisk Community, active/fallow agriculture, aquaculture farms, Chuckwalla ACEC



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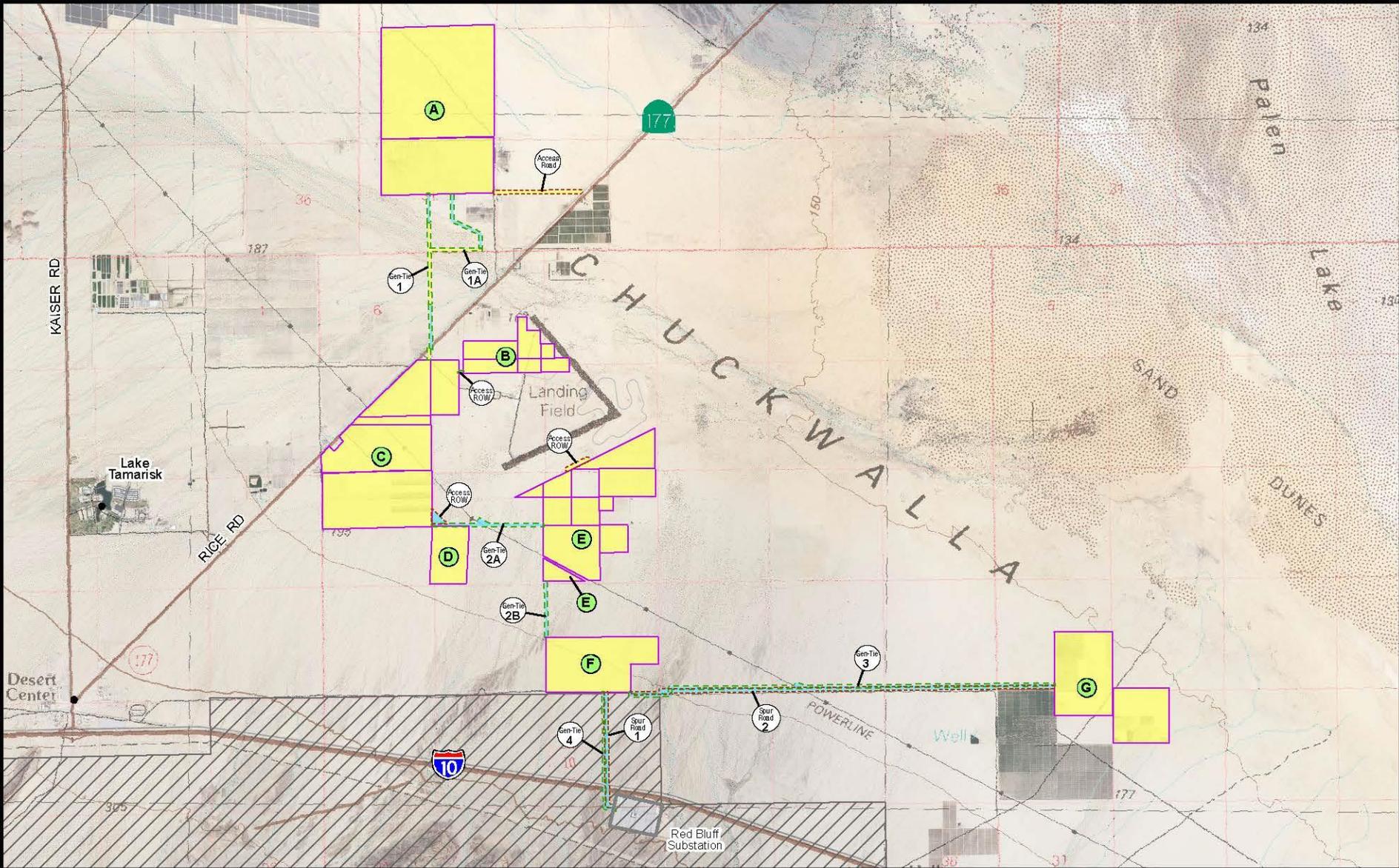


- Athos Solar Project
- Joshua Tree National Park
- Desert Tortoise Critical Habitat

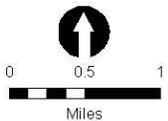
**FIGURE 1**

**Regional Location**

**Athos Solar**



Ironwood Consulting



- Solar Farm Parcel
- Gen-Tie Corridor
- Access Road/Easement
- BLM Administered Land
- Private Land
- Desert Tortoise Critical Habitat

FIGURE 2

Project Site Parcel Groups and Gen-Tie Segments

Athos Solar

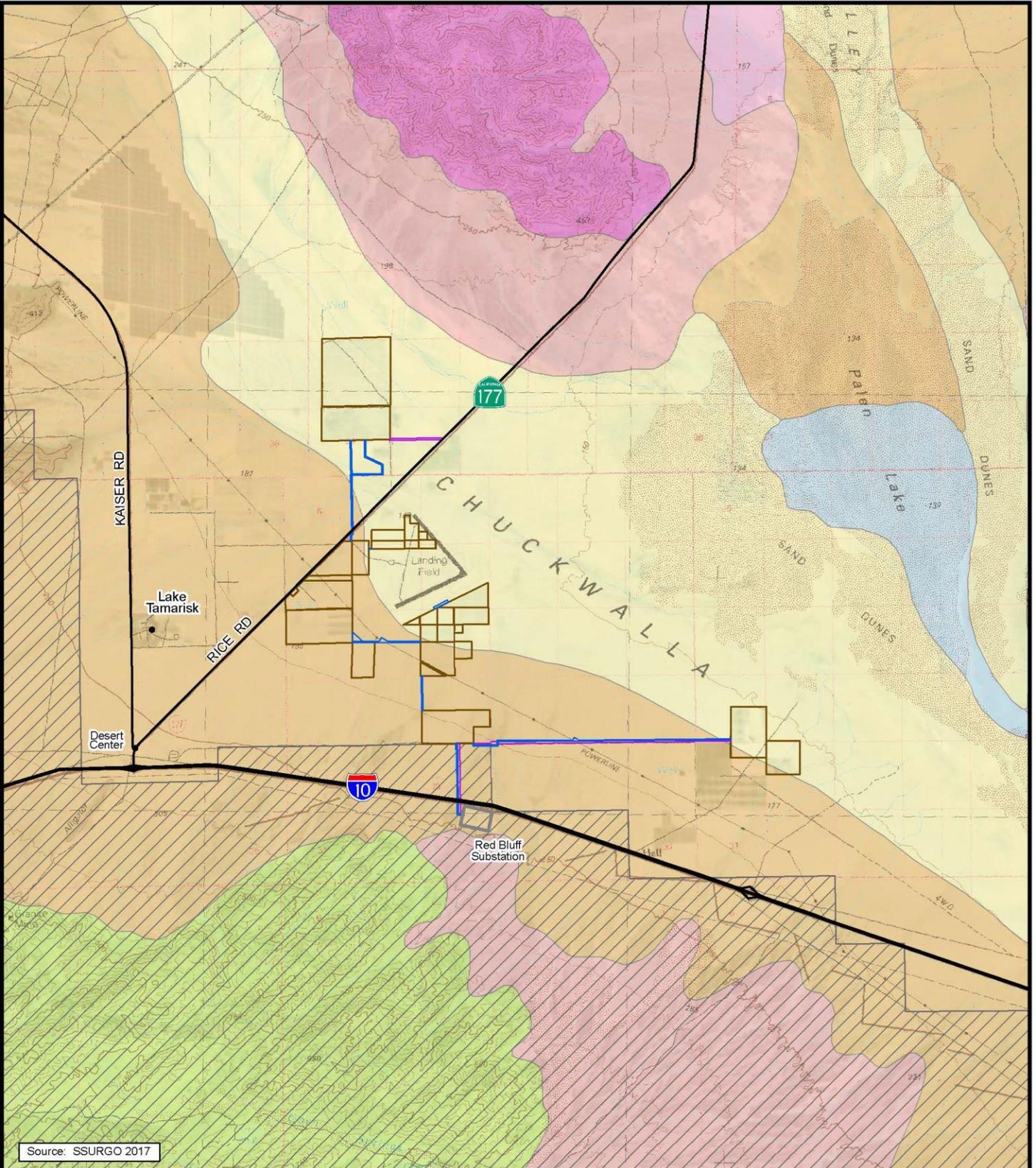
## 2.2 Hydrology

The Project 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 is in the Big Wash, Lower Pinto Wash, and Palen Lake HUC 10 Hydrologic Areas, which flow to closed basins, not connected with the Colorado River. Palen Dry Lake and Ford Dry Lake represent the lowest elevations within the basin.

Desert washes within this region contract and expand dramatically in size due to extreme variations in flows, which can range from high-discharge floods to 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.

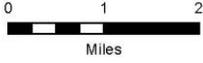
The Project is situated in the lower alluvial fan that is characterized by less stabilized soils consisting of finer sand and silt, compared to the upper alluvial fan that supports more stabilized, rocky soils with well-defined channels. The topography the Project site is relatively flat with gradients of less than two percent. Ground surface elevations of the Project site range from approximately 500 feet amsl in the southeast (parcel group G) to 800 feet amsl in the south near the Red Bluff Substation.

Alluvial processes across the majority of the Project site generally flow from southwest to northeast, with the exception of the portion of the Project situated west of CA-177 (parcel group A and gen-tie 1A), which flows from northwest to southeast. Located south of the Project (parcel group F, gen-tie 2B, and gen-tie 3), the I-10 crosses the alluvial fan that emanates from the Chuckwalla Mountains. 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, rendering portions of the alluvial fan less active than under historical conditions. Minor washes located in the hydrological shadow of I-10 were degraded (transporting 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 under current conditions.



Source: SSURGO 2017

**Ironwood Consulting**

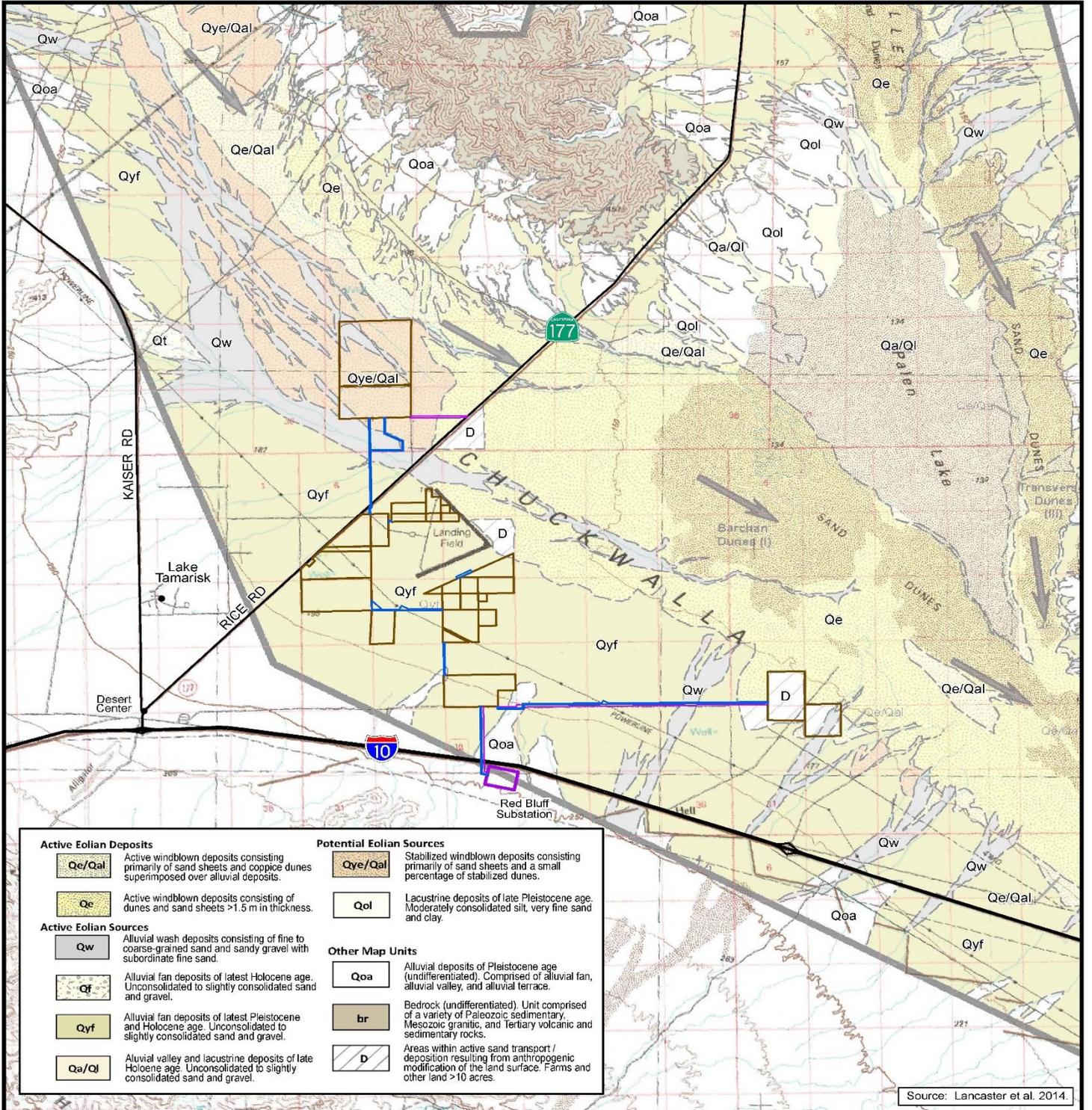


- |                                  |                                    |  |
|----------------------------------|------------------------------------|--|
| Solar Facility Boundary          | Playas (s1138)                     | St. Thomas-Rock outcrop (s1125)                  |
| Gen-Tie Corridor                 | Rillito-Gunsight (s1140)           | Tecopa-Rock outcrop-Lithic Torriorthents (s1126) |
| Access/Spur Road                 | Rositas-Carrizo (s1137)            | Vaiva-Quilotosa-Hyder-Cipriano-Cherioni (s1141)  |
| Desert Tortoise Critical Habitat | Rositas-Dune land-Carsitas (s1136) |  |

**FIGURE 3**

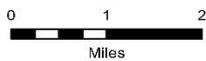
**Soils**

**Athos Solar**



Source: Lancaster et al. 2014.

**Ironwood Consulting**



- Solar Facility Boundary
- Gen-Tie Corridor
- Access/Spur Road

**FIGURE 4**

**Historic Sand Transport**

**Athos Solar**

### **2.3 Soils**

Soils mapped on the Project site consist of two general soil types per the United States General Soils Map [Soil Survey Staff 2018]: (1) the Rositas–Dune land–Carsitas map unit and (2) the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni map unit. The Rositas-Dune land-Carsitas map unit is found on the eastern 53 percent of the site and is characterized by soils with a very high sand percentage (greater than 95 percent) and is highly susceptible to wind erosion. The remaining 47 percent of the site was 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 (Figure 3).

### **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 area. Aeolian sands (dunes, sand fields, and similar habitats) are important habitats for certain plants and animals, including Mojave fringe-toed lizard (addressed in Section 4).

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). Lancaster et al. (2014) characterized the majority of the Project as Qyf, which is described as modern alluvial fan deposits consisting of 'unconsolidated to slightly consolidated sand and gravel that is considered an active aeolian source (Figure 4).

#### Private Components

Parcel groups C-F are all mapped as Qyf but several of these have been affected by anthropogenic changes, with the exception of parcel groups D and F, which still have native vegetation community cover.

Parcel group A, is categorized as a potential aeolian source, is mapped primarily as Qye/Qal and characterized as active windblown deposits consisting primarily of sand sheets and coppice dunes superimposed over alluvial deposits. A small portion of parcel group A was categorized as being Qw (active eolian source) and is characterized as alluvial wash deposits consisting of fine to coarse-grained sand and sandy gravel with subordinate fine sand. Active eolian sources surrounding parcel group A include areas northwest and southwest of it, but are primarily stabilized windblown deposits.

A northern portion of gen-tie segments 1 and 1A are also categorized as Qw, making that portion an active eolian source, but north and south of that portion are stabilized sand or slightly consolidated sand and gravel.

Parcel group G is considered to have active sand transport that has been affected by anthropogenic modifications, such as agriculture, with some alluvial deposits. Active eolian sources surrounding parcel group G, include areas north and south of the parcel group that contain fine sand and have active windblown deposits.

Public Components

A majority of the public components of the project site are mapped as Qyf, with the exception of small portions within gen-tie segments 1, 1A,2B, 3, and 4. These components have portions that are categorized as active eolian sand but have consolidated sand and gravel.

**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 2018) for the most proximate stations to the Project site: Blythe Airport and Eagle Mountain weather stations (approximately 37 miles and 8 miles from the Project site, respectively). Historical rainfall data from 2009 to 2018 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. Since 2014, annual winter and summer rainfall has measured less than 50% compared to the peaks in 2010 and 2012. Winter rains prior to the spring 2018 survey were extremely low.

**Table 3. Regional Rainfall Totals Since 2009**

<b>Year</b>	<b>October to March (inches) *</b>	<b>April to September (inches) *</b>
<b>2009</b>	2.4	0.2
<b>2010</b>	4.8	0.1
<b>2011</b>	2.5	1.2
<b>2012</b>	1.0	3.3 <sup>1</sup>
<b>2013</b>	1.5	2.6
<b>2014</b>	0.7	1.2
<b>2015</b>	2.1	1.3
<b>2016</b>	1.5	0.7
<b>2017</b>	3.4	1.1

<b>2018</b>	0.1	0.5
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\* Seasonal average of Blythe Airport and Eagle Mountain weather stations

## 2.6 Vegetation

### 2.6.1 Natural Communities

Vegetation communities in the Project area were mapped and classified by Chris Blandford, of Ironwood Consulting, 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 (version 10.4) 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 small-scale PDF vegetation map 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 disused or fallow agricultural land. 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) within the gen tie routes and proposed solar fields D and F. Some of the former agricultural lands have partially recovered from previous disturbance and are mapped as recovering creosote bush scrub or salt bush scrub. One vegetation community (desert dry wash woodland) is identified by BLM (NECO Plan 2002) and CDFW (2010) as sensitive due to the association with alluvial processes and would likely be considered California State jurisdictional waters. Natural vegetation communities occur on both

private and public components of the Project while the recovering communities and developed areas occur only on private components. Vegetation communities on the Project site are summarized in Tables 4 and 5 and depicted on Figure 5.

**Table 4.** Vegetation and Land Cover Acreages by Land Ownership

Vegetation or Land Cover	ACREAGES			
	Private Components		Public Components	Vegetation Habitat Type Subtotals
	Solar facility	Gen-tie ROW*	Gen-tie ROW *	
<b>Natural vegetation and habitat types</b>				
Sonoran creosote bush scrub	295.9	15.4	106.6	<b>417.9</b>
Desert pavement	7.5	0	16.4	<b>23.9</b>
Desert dry wash woodland	91.2	12.2	58.0	<b>161.4</b>
<i>subtotals</i>	<i>394.6</i>	<i>27.6</i>	<i>181.0</i>	<i>603.2</i>
<b>Recovering vegetation and habitat types</b>				
Recovering creosote bush scrub	289.7	12.0	1.2	<b>302.9</b>
Recovering salt bush scrub	183.3	-	-	<b>183.3</b>
<i>subtotals</i>	<i>473.0</i>	<i>12.0</i>	<i>1.2</i>	<i>486.2</i>
<b>Anthropogenic land use and cover types</b>				
Developed/disturbed	167.9	0.9	3.8	<b>172.6</b>
Active agriculture	151.2	-	-	<b>151.2</b>
Fallow agriculture	2,032.6	0.7	7.9	<b>2,041.2</b>
Open water (agricultural pond)	2.3	-	-	<b>2.3</b>
<i>subtotals</i>	<i>2,354.0</i>	<i>1.6</i>	<i>11.7</i>	<i>2,367.3</i>
<b>TOTAL</b>	<b>3,221.6</b>	<b>41.2</b>	<b>193.9</b>	<b>3456.7</b>
<b>SOLAR FACILITY TOTAL</b>				<b>3221.6</b>
<b>GEN-TIE TOTAL</b>				<b>235.1</b>
<b>PRIVATE TOTAL</b>				<b>3262.8</b>
<b>PUBLIC TOTAL</b>				<b>193.9</b>

\*Includes ROW access, access road, and spur roads

### 2.6.1.1 Sonoran Creosote Bush Scrub

Sonoran creosote bush scrub has a State Rarity rank of S5 (CDFW 2018d), 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). Sonoran creosote bush scrub covers much of the undisturbed portions of the Project site and intergrades with desert dry wash woodland along desert washes. Within the Project site, this community occurs on sandy soils with a shallow clay pan. Dominant plants within this community are creosote bush and white bursage. Other occasional components include indigo bush (*Psoralea argemone*), sweetbush (*Bebbia juncea*), and button brittlebush (*Encelia frutescens*).

There are also areas of recovering creosote bush scrub within the Project site where formerly fallow agricultural areas are recovering back to native vegetation. These areas have recolonized with ruderal species and sparse native vegetation with some evidence of former agricultural use.

Private components within Sonoran creosote bush vegetation include parcel groups D and gen-tie 2A. Those with recovering creosote bush scrub include parcel groups C and E. Public components within Sonoran creosote bush vegetation includes gen-tie segments 1, 1A, 2A, 2B, 3 and ROW access. There is no recovering creosote bush scrub on the public components.



**Photo 1.** Sonoran creosote bush scrub vegetation

### 2.6.1.2 Desert Dry Wash Woodland

Desert dry wash woodland is a sensitive vegetation community recognized with a rarity rank of S4 (CDFW 2018d). 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 (*Psoralea argophylla*). The understory is a modified creosote scrub with big galleta grass (*Hilaria rigida*), brittlebush (*Encelia farinosa*), desert lavender (*Condea [=Hyptis emoryi] emoryi*), and occasional Russian thistle (*Salsola tragus*).

On the private components, desert dry wash woodland occurs within parcel groups D, F, and gen-tie segments 1, 1A, and 3. On the public components, desert dry wash woodland occurs within gen-tie segments 1, 1A, 2A, 2B, and 3.



**Photo 2.** Desert Dry Wash Woodland vegetation

### 2.6.1.3 Desert Pavement

The term 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). It is sparsely vegetated with an intermittent layer of cryptogamic crust. The ground surface is sandy and gravelly mixed alluvium with various rocks and gravel. The shrub layer of creosote bush is extremely sparse. The herb layer, though sparse within this community on the Project site, is slightly larger than the shrub layer, and is characterized by rigid spine flower and desert sunflower. Desert pavement is often interwoven between areas of creosote bush scrub and desert dry wash woodland where it occurs on the Project. Other occasional plants in the herb layer include annual buckwheat (*Eriogonum* sp.) and brittle spineflower (*Chorizanthe brevicornu*).

On the private components, desert pavement occurs in parcel group F and gen-tie segments 3 and 4. On the public components, desert pavement occurs in gen-tie 2B, gen-tie 3, and gen-tie 4.



**Photo 3.** Desert Pavement

#### 2.6.1.4 Desert Saltbush Scrub (recovering)

Desert saltbush scrub has a state rarity rank of S4 (CDFW 2018d). It is synonymous to an Arizona honey sweet (*Tidestromia oblongifolia*) provisional alliance - saltbushes are less dominant than Arizona honey sweet within this vegetation community on the Project site. It is typically found on alluvial fans, dune aprons, and steep colluvium (CNPS 2009).

This vegetation community is located only on the private component of the Project site at parcel group G and is surrounded by active and fallow agriculture or developed areas. It is recovering from previous agricultural use and has been recolonized by ruderal species and sparse native vegetation.



**Photo 4.** Recovering Desert Saltbush Scrub

### 2.6.1.5 Agriculture

Agricultural land is not a natural vegetation community described by Holland (1986) or Sawyer et al. (2009). Active and fallow agricultural fields cover a majority of the solar field portions of the Project site (71%). The active agricultural area is an active date palm farm. The fallow agricultural areas consist of abandoned jojoba, citrus, or date palm farms.

On private land, agriculture occurs on parcel groups A, C, B, D, E, and G. On public land, fallow agriculture occurs on the ROW access areas only.



**Photo 5.** Active Agriculture – Date Palm Farm



**Photo 6.** Fallow Agriculture - Abandoned Citrus Groves

### 2.6.1.6 Developed/Disturbed

Developed and disturbed areas consist of abandoned homes, buildings, completely denuded sections of old agricultural fields, or unnamed dirt roads that are in regular use.

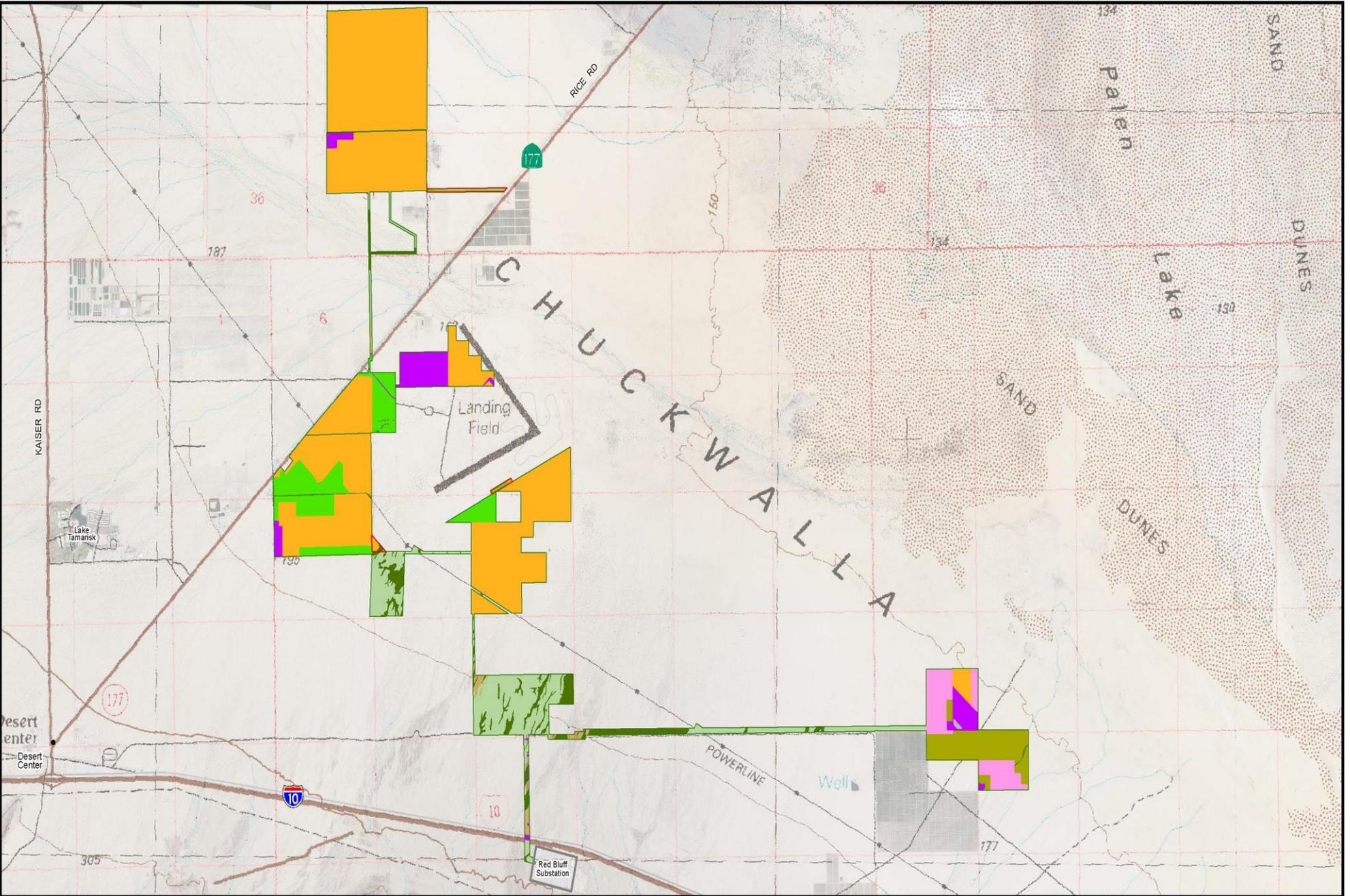
Within private components, developed/disturbed areas include parcel groups A, B, C, and G. There are no developed/disturbed areas in public components.



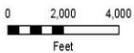
**Photo 7.** Developed/Disturbed Land Cover

**Table 5.** Summary of Vegetation Communities

Vegetation Community/Land Cover	Private Components		Public Components
	Solar Parcel	Gen-tie	Gen-tie
Sonoran creosote bush scrub	D, F	1, 1A	1, 1A, 2A, 2B, 3, 4, ROW access, spur roads 1 and 2
Desert dry wash woodland	D, F	1, 1A, 3	1, 1A, 2A, 2B, 3, 4, ROW access, spur roads 1 and 2
Desert pavement	F	3	2B, 3, 4, spur roads 1 and 2
Recovering creosote bush scrub	C, E	Access road	-
Recovering salt bush scrub	G	3	-
Fallow Agriculture	A, B, C, D, E, G	2C, ROW access	ROW access
Active Agriculture	G	-	-
Developed/disturbed	A, B, C, G	ROW access	-



Ironwood Consulting



Native Vegetation

- Creosote Bush Scrub
- Desert Dry Wash Woodland
- Desert Pavement
- Recovering Creosote Bush Scrub
- Recovering Salt Bush Scrub

Non-Native Vegetation

- Active Agriculture
- Developed/Disturbed
- Fallow Agriculture

- Athos Solar Project
- Access Road/Right of Way
- Red Bluff Substation

FIGURE 5

Vegetation Communities

### 2.6.2 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 US 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 2018). The following invasive weeds were identified on the Project site during Ironwood’s field surveys.

#### Sahara Mustard (*Brassica tournefortii*)

Sahara mustard has a highly invasive rating on Cal-IPC (Cal-IPC 2018). 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 2018). 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 2018). During the field surveys, Sahara mustard was found on the Project site and concentrated in the agricultural and developed/disturbed areas of the Project. One dried individual was detected on gen-tie 3. It was not detected on the native parcel groups.

#### Russian Thistle (*Salsola tragus*)

Russian thistle has a Limited-to-Moderate rating by the Cal-IPC, indicating a species that is invasive but has an ecological impact that is minor on a statewide level, or there was not enough information to justify a higher score. Its reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but it may be locally persistent and problematic. Russian thistle is listed on the CDFA Noxious Weed List, making it subject to state laws and regulations regarding its spread and pollution of an area (CDFA 2018). Russian thistle is an annual herb that is found in open and disturbed areas in the Mojave Desert and throughout western North America (MacKay 2003). Otherwise known as tumbleweed, it becomes large and round with age, the dried plant breaking off and rolling with the wind to aid in seed dispersal. Native to Eurasia, this plant was likely introduced around the turn of the century. It typically occurs on sandy soils on disturbed sites, cultivated and abandoned fields, and disturbed natural and semi-natural plant communities (CDFA 2018). Russian thistle was found in disturbed areas and agricultural parcels of the project site, but not on the native areas, or the gen-tie.

### Redstem filaree (*Erodium cicutarium*)

Redstem filaree has a limited invasive rating on Cal-IPC (Cal-IPC 2018) and is not listed on the CDFA Noxious Weed List (CDFA 2018). This species is an aggressive annual/biannual of the family Geraniaceae (geranium) family that is very widespread throughout California and is commonly found along roadsides, grasslands, fields, and semi-desert areas. It occurs across both public and private parcels of the project and often carpets large areas, out-competing native grasses and forbs.

### Tamarisk or Saltcedar (*Tamarix ramosissima*)

Tamarisk or saltcedar is a BLM weed species of concern. It is also rated as highly invasive by Cal-IPC and rated B by CDFA, meaning it is a pest of known economic or environmental detriment of limited distribution. Tamarisk or saltcedar was observed in the agriculturally developed areas of the Project site and along the gen-tie line. It was not found in ephemeral washes and drainages on the areas with native vegetation within the project area.

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

Mediterranean grass has a limited invasive potential (CAL-IPC 2018) 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 2018). 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 and agricultural portions of the Project site. BLM and other agencies recognize that because of its widespread distribution, Mediterranean grass is not feasible to eradicate.

### Highway Ice Plant (*Carpobrotus edulis*)

Highway ice plant is considered highly invasive by CAL-IPC with an A-1 listing. It is not listed on the CDFA noxious weed list. Highway ice plant is a mat-forming perennial succulent native to coastal areas of South Africa. It was brought to California in the early 1900s for soil stabilization, was widely promoted as an ornamental plant for home gardens and is still available at some nurseries. It tolerates a range of soil moisture and nutrient conditions and will spread easily to natural areas via mammalian frugivores (D'Antonio 1990). It can suppress the growth of both native seedlings and mature native shrubs. Only a few isolated individuals were observed in the easternmost parcel group G, near the date farm near artificial water

sources. Invasiveness of highway ice plant is low due to the few individuals observed; they can be removed mechanically.

### Mexican Fan Palm (*Washingtonia robusta*)

Mexican fan palm is considered moderately invasive by CAL-IPC with a rating of moderate-alert and not listed on the CDFA noxious weed list. It is a single-trunked palm tree commonly used as a landscape ornamental that has become invasive in riparian areas, orchards and landscaped areas. This palm can create monospecific stands in riparian areas, and dead fronds of the tree can create a fire hazard. Only a few individuals were observed on parcel group G near the date farm where irrigation water is present. It can be easily controlled by removing the individuals and seedlings. Even without control, it is unlikely to spread into surrounding dry desert lands.

### **2.6.3 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. A total of five cactus species were observed within both the private and public components of the Project. These species included:

- silver cholla (*Cylindropuntia echinocarpa*)
- pencil cholla (*C. ramosissima*)
- barrel cactus (*Ferocactus acanthodes*)
- common fishhook cactus (*Mammillaria tetrancistra*)
- beavertail cactus (*Opuntia basilaris*).

Additionally, ocotillo (*Fouquieria splendens* ssp. *splendens*) and five species of native trees were found within the private and public components of the Project site:

- desert ironwood (*Olneya tesota*)
- blue palo verde (*Parkinsonia florida*)
- honey mesquite (*Prosopis glandulosa*)
- smoke tree (*Psoralea argyrea*)
- catclaw acacia (*Senegalia greggii*)

### **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;
- Plants or animals which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA);
- BLM, USFWS, or U.S. Forest Service Sensitive Species;
- Plants listed in the CNPS Inventory of Rare and Endangered Plants of California (CNPS 2018);
- Wildlife species identified by CDFW as Species of Special Concern (CNDDDB 2018);
- Plants or animals included in the CDFW lists of Special Plants or Special Animals (CNDDDB 2018);
- Protected under other statutes or regulations (e.g., Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, etc.)

All surveys were conducted per DRECP DFA Biological Conservation Management Action (CMA) requirements for each species within the timing recommended. 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 October 21 to 26, 2017 (Parcels containing native vegetation, some of which have since been removed from the Project footprint)
- Spring Surveys May 9 to 27, 2018 (disturbed parcels and the gen-tie)
- Fall Surveys October 30-31, 2018 (new gen-tie 1 alignment, new gen-tie 1A, access road, and spur roads 1 and 2)

Wildlife surveys in 2017 and 2018 employed belt transects approximately 10 meters (32.8 feet) apart in order to provide 100 percent (full) coverage within 395.5 acres of native and 478.1 acres of recovering native vegetation within the proposed solar facility. Along the gen-tie line, spur roads, and access roads, 10-meter belt transects were employed 30 meters on each side of the centerline, resulting in a 60-meter-wide survey corridor. Within the groups of solar facility parcels that contained non-native vegetation (current and fallow agriculture, as well as

recovering former agriculture), surveys employed belt transects approximately 20 meters (65.6 feet) apart. A preliminary Project design included parcels and gen-tie routes that are no longer components of the proposed Project, including areas east of parcel group E and west of parcel group F. Initial field surveys covered these areas, and relevant results are included in this BRTR.

Survey crews consisted of experienced wildlife biologists. 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 status. Common species were tallied at the end of each transect and recorded throughout each day by each crew. All locational information for special status species observations and sign detected were recorded using a Global Positioning System (GPS) unit and each occurrence was assigned a unique identifier. In addition to recording sign with the GPS unit, standardized paper datasheets were also completed.

### **3.2.1 Desert Tortoise**

Wildlife surveys on the gen-tie routes and on private land parcels with native vegetation conformed to full coverage desert tortoise protocol surveys (USFWS 2010a). Surveys on the disturbed or recovering lands (i.e., current and former agriculture) also conformed to the protocol, except that transects were spaced at 20-meter (65.6 feet) width due to the poor habitat quality.

All tortoise sign [e.g., live tortoises (all age classes), shell/bone/scutes, scats, burrows/pallets, tracks, egg shell fragments, and courtship rings] observed was recorded. The condition of burrows was categorized per the following class designations (USFWS 2009):

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; and
5. deteriorated condition (including collapsed burrows) - possibly desert tortoise.

### **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 maps.

### **3.2.3 Couch's Spadefoot Toad**

A reconnaissance level survey for Couch's spadefoot toad was conducted in conjunction with 2018 fall plant reconnaissance surveys searching for areas that may provide suitable habitat for reproduction. Wash areas and drainages within the both the parcel groups and gen-tie were walked with meandering transects. 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.

### **3.2.4 Avian Species**

#### *3.2.4.1 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, which is 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).

These surveys 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. All burrows detected during wildlife surveys were assessed for wildlife occupancy, to ensure detection of any special status species, including burrowing owl, that may have occupied a burrow. The 10-20 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.

#### *3.2.4.2 Golden Eagle*

No golden eagles were incidentally observed during wildlife surveys conducted for the Project. 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.

#### *3.2.4.3 Elf Owl and Gila Woodpecker*

Wildlife surveys conducted in spring 2018 included presence/absence surveys for elf owl and Gila woodpecker surveys due to potential suitable habitat that may occur within the Project vicinity. Visual and auditory surveys conducted for these two species were focused on the

easternmost parcel near the date palm farm where perches, potential nesting trees, and plentiful water from irrigation are present (parcel group G).

Twelve locations were selected for elf owl callback surveys (Figure 7). Approximately 10 minutes were spent at each station at dawn and dusk between May 22-23, 2018. Biologists used smart phones and played elf owl calls from the Sibley Guide bird mobile application (Sibley 2018). Approximately two minutes of calls were played followed by one minute of listening for responses. This procedure was repeated 3-4 times per station and responses were recorded.

### **3.2.4 Special Status Bat Species**

Targeted surveys for bats were not conducted and incidental observations of bats or bat roosts were not detected during wildlife surveys. Acoustic bat surveys previously conducted for nearby proposed project, Palen Solar Energy Project, provides supplementary information about bat populations within the project vicinity, further discussed in the section 4.1.8.

### **3.2.5 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. Activity for each burrow or complex was determined by the freshness of the sign found. If fresh tracks, scratches, 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.

## **3.3 Special Status Plants**

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

- April 16-May 27, 2018 – All disturbed parcels
- May 5-9, 2018 - All parcels containing native vegetation, entirety of the gen-tie route, and access roads
- Reconnaissance-level surveys
  - September 9 and October 30 - spot checks for potential plant germination after reported rain within Project vicinity
  - November 19-21, 2018 – pedestrian survey in washes and drainages within parcel groups and gen-tie segments

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).

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. Plant taxa were considered to be special-status species if they were classified as one or more of the following:

- Listed, proposed for listing, or candidates for listing as threatened or endangered under the federal Endangered Species Act (ESA);
- Listed as threatened or endangered, or candidates for listing under the California Endangered Species Act (CESA);
- Designated by BLM as Sensitive Plants: “all plant species that are currently on List 1B of the CNPS Inventory of Rare and Endangered Plants of California, are BLM sensitive species, along with others that have been designated by the California State Director” (BLM 2009; note that the CNPS Lists are now known as California Rare Plant Ranks, or CRPR);
- Listed as rare under the California Native Plant Protection Act;
- Meet the definition of rare or endangered under CEQA §15380 (b) and (d) (in some cases, these may include CRPR 2, 3, or 4 plant occurrences, which may be regionally significant if the occurrence is located at the periphery of the species' range, or exhibits unusual morphology, or occurs in an unusual habitat/substrate);
- Considered special-status species in local or regional plans, policies, or regulations, such as the NECO Plan/EIS.

Focused plant surveys performed in spring 2018 included visual coverage across the entire Project site. Surveys employed belt transects approximately 10 meters apart in areas with native vegetation cover, access roads, and the gen-tie routes in order to provide 100 percent coverage in those areas. In areas of former or active agriculture, belt transects were spaced at approximately 20 meters apart. Based on topography and open vegetation structure, the transect spacing was adequate to detect any potential sensitive species, if present, and inventory existing plants.

Only highly-experience botanists conducted plant surveys in areas of native vegetation on the project site (along gen-tie routes, and access roads). Plant surveys conducted in the former or active agricultural portions of the Project were coordinated by an experienced botanist; teams consisted of biologists experienced with plant identification. All surveyors were trained on diagnostic features and habitat notes of potential sensitive species that may occur (Appendix B). Surveys on the former or active agricultural parcel groups B, C, E, and G were conducted in conjunction with wildlife surveys. A cumulative list of all plant species observed during the surveys is provided in Appendix D.

The value of the 2018 spring plant survey may be limited due to the low winter rainfall during the 2017-2018 season (see Table 3). Regional winter rainfall from the two nearest weather stations showed rainfall averaging at 0.1 inches.

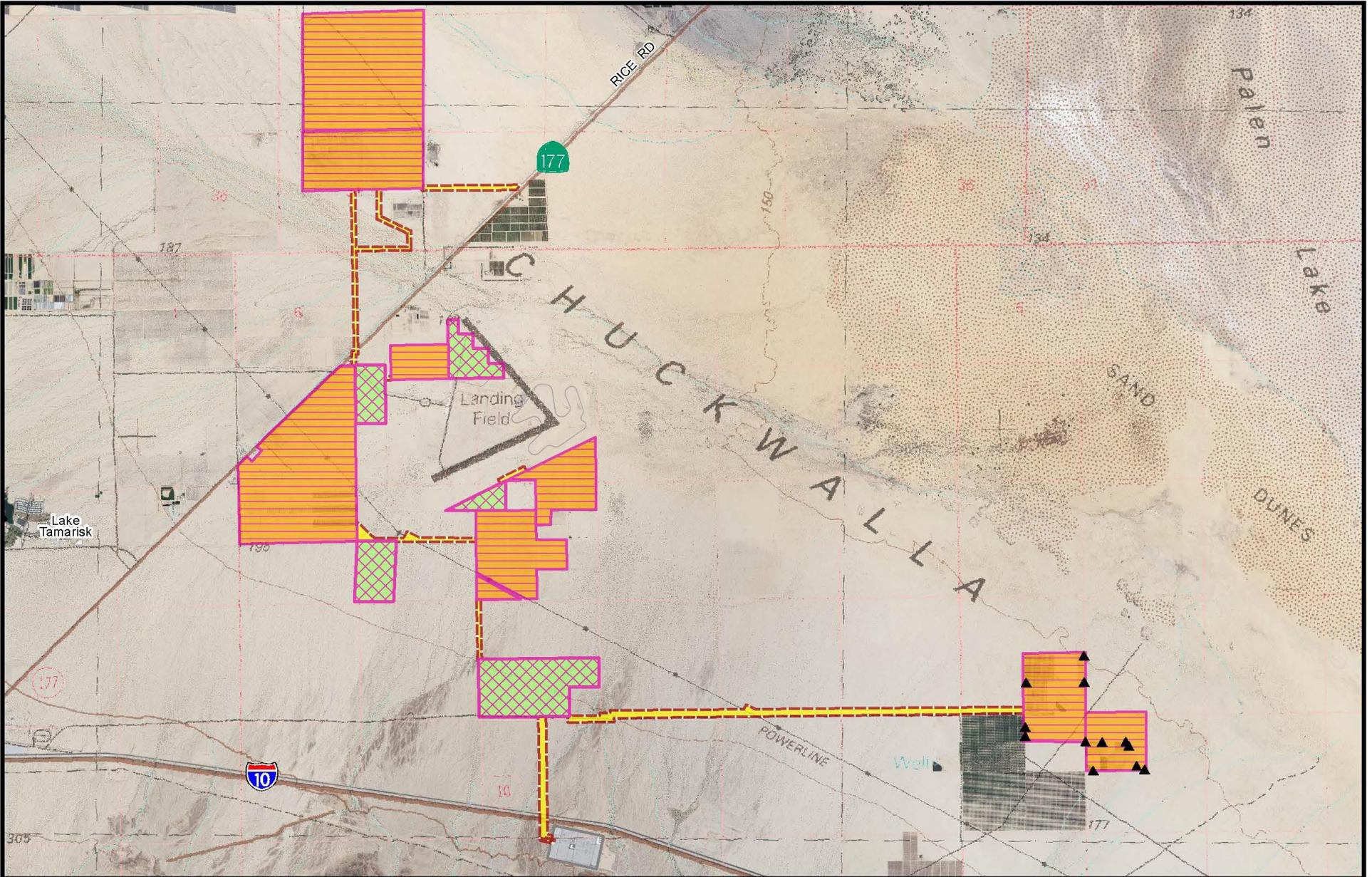
Late season rainfall for fall 2018 plant surveys was also limited. Spot checks occurred after reported rain events within the project vicinity for potential germination and fall blooms, but rain was insufficient to warrant a full focused fall plant survey. In late fall, a reconnaissance-level fall plant survey was conducted within washes, drainages, and areas where water accumulation may occur throughout the private and public components of the site by an experienced botanist to inventory plants occurring in those areas.

In addition to focused spring and fall plant surveys, a GIS desktop search, in high resolution, was conducted to delineate creosote rings that occur within the public components of the Project. This was field verified during fall 2018 reconnaissance plant surveys.

**Table 6. Survey Personnel and Dates**

Personnel	Survey Type	Area Surveyed	Survey Dates
R. Woodard	Habitat assessment	gen-tie	10/21/2017
R. Woodard	Habitat assessment	parcel groups	10/22/2017
R. Woodard, C. Mitchell	Wildlife survey	F	10/23/2017-10/24/2017
R. Woodard, C. Mitchell	Wildlife survey	D	10/25/2017
R. Woodard, C. Mitchell	Wildlife survey	gen-tie	10/26/2017-10/30/2017
K. Hughes, L. Chow	Plant survey	A	4/16/2018-4/20/2018
M. Baker, M. Cloud-Hughes, K. Hughes, C. Rousten	Plant survey	gen-tie	5/7/2018
M. Baker, M. Cloud-Hughes, K. Hughes, C. Rousten	Plant survey	F	5/8/2018-5/9/2018
M. Baker, M. Cloud-Hughes, K. Hughes, C. Rousten	Plant Survey	D	5/9/2018
B. Sandstrom	Wildlife/Plant Survey	C	5/9/2018
B. Sandstrom	Wildlife/Plant Survey	D	5/13/18 & 5/14/18
B. Sandstrom	Wildlife Survey	gen-tie	5/15/2018
R. Woodard, B. Sandstrom, J. Tony	Wildlife/Plant Survey	B	5/16/2018
R. Woodard, J. Tony	Wildlife/Plant Survey	E	5/17, 5/18, 5/19
R. Woodard, J. Tony	Wildlife/Plant Survey	E	5/17/2018
R. Woodard, B. Sandstrom, J. Tony	Wildlife Survey	gen-tie	5/20/2018
B. Sandstrom, J. Tony, R. Woodard, M. Rivera	Wildlife/Plant Survey	C	5/21, 5/24, 5/25
B. Sandstrom, J. Tony, R. Woodard, M. Rivera	Wildlife/Plant Survey	G	5/22/2018

<b>Personnel</b>	<b>Survey Type</b>	<b>Area Surveyed</b>	<b>Survey Dates</b>
B. Sandstrom, J. Tony, R. Woodard, M. Rivera	Wildlife/Plant Survey	G	5/23/2018
B. Sandstrom	Wildlife Survey	Access road, gen-tie	5/23/2018
B. Sandstrom, J. Tony, R. Woodard, M. Rivera, C. Fabry	Wildlife Survey	A	5/26/2018
B. Sandstrom, J. Tony, R. Woodard, M. Rivera, C. Fabry	Wildlife Survey	A	5/26/2018-5/27/2018
K. Hughes	Fall Bloom Spot Check	Throughout Project site	9/3/2018
R. Woodard, M. Lopez	Wildlife Survey, Fall Bloom Spot Check	gen-tie alignments 1, 1A, access road and spur roads	10/30/2018-10/31/2018
K. Hughes	Reconnaissance Plant Survey/Couch's Spadefoot Habitat	Drainages and washes throughout Project Site	11/19/2018-11/28/2018



Ironwood Consulting



0 3,000 6,000  
Feet

- ▲ Elf Owl Study Points
- Red Bluff Substation

- Plant and Wildlife Surveys, 10-meter (m) Transects
- Plant Surveys 30-m Transects, Wildlife Surveys 20-m Transects
- Gen-Tie Survey, 10-m Transects

FIGURE 6

Study Area

Athos Solar

## 4 RESULTS

### 4.1 Special Status Wildlife

Sixty-six 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 A). 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 C.

#### 4.1.1 Desert Tortoise: *ST*, *FT*

##### Background

Desert tortoises (*Gopherus agassizii*) live north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, and southwestern Utah, and in the Sonoran (Colorado) Desert in 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 desert tortoises. The highest desert tortoise densities within this recovery unit (Murphy et al. 2007) occur in Chemehuevi and Ward valleys (approximately 60 miles north of the project site), on the Chuckwalla Bench within the Chuckwalla Desert DWMA (closest border is directly south of the Project), and in Joshua Tree National Park (closest border is approximately 2 miles north of the Project).

Desert tortoise habitat on the Project site has low predicted occupancy values (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. Predicted desert tortoise occupancy values of 0.3 or above are appropriate for identifying suitable habitat in this low desert region (BLM 2012). Project field survey results are described below. Desert tortoise habitat connectivity is discussed in Section 4.2, Wildlife Movement.

## Private Components

Without considering anthropogenic disturbance, parcel groups A and B and gen-tie 1 have predicted occupancy value of less than 0.3 (Nussear et al. 2009). The remainder of the parcel groups and gen-tie routes range between 0.4 and 0.6. Only parcel groups, D and F, are undisturbed native habitat reflective of the predicted occupancy values (Figure 8).

Surveys detected no live desert tortoises or active tortoise sign within the private components. Within parcel group C, three burrows were detected that were of poor quality and not definitively tortoise. In parcel group F, three tortoise burrows of deteriorated condition were detected.

The agricultural properties (date palm farms) adjacent to the Project's eastern boundary (parcel group G), and the parcel groups near CA-177 (C and B) include a modern irrigation system and ponds. These ponds have likely subsidized wildlife that prey on desert tortoises, including coyotes, feral dogs, and ravens and may have negatively affected the local population of desert tortoises.

Desert tortoise sign observed during wildlife surveys on private components were consistent with the predicted occupancy of the species within the Project vicinity. Desert tortoise occupancy within the Project area is not expected to be high.

## Public Components

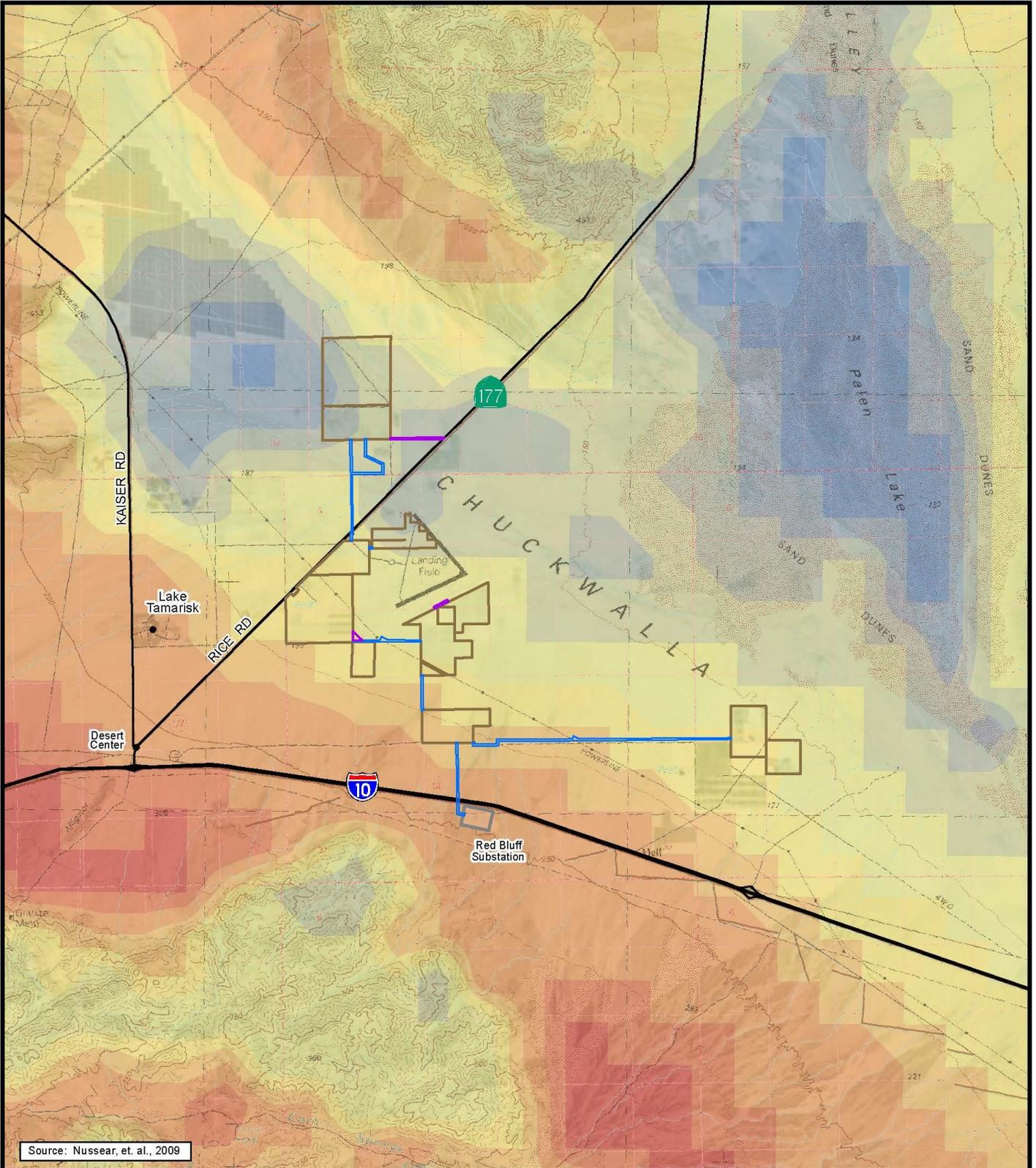
Gen-tie routes such as 3 and 4, have undisturbed native vegetation cover, which is reflective of the predicted occupancy values in the Nussear model. The remainder of the gen-tie routes range between 0.4-0.6, with the exception of gen-tie 1A, which ranges 0.0-0.1.

Surveys detected no live desert tortoises. Active desert tortoise sign was detected during the fall 2017 survey west of gen-tie 2B with tracks, scat, and a burrow in good condition. Spring 2018 surveys did not result in detections of any active desert tortoise sign.

Desert tortoise sign observed during wildlife surveys were consistent with the predicted occupancy of the species within the Project vicinity. Desert tortoise occupancy within the Project area is not expected to be high. Survey results for desert tortoise are summarized in Table 7 and Figure 9.

**Table 7. Desert Tortoise Observations**

Project Component	Sign Type	Classification	Location	Habitat	Date Observed
Private	burrow	class 4	C	recovering Sonoran creosote bush scrub	5/9/2018
	burrow	class 4	C	recovering Sonoran creosote bush scrub	5/9/2018
	burrow	class 4	C	recovering Sonoran creosote bush scrub	5/9/2018
	burrow	class 3	F	Sonoran creosote bush scrub	10/23/2017
	burrow	class 3	F	Sonoran creosote bush scrub	10/24/2017
	burrow	class 3	F	desert dry wash woodland	10/23/2017
Public	tracks, scat	class 1	west of gen-tie 2B	Sonoran creosote bush scrub	10/22/2017
	burrow	class 2	west of gen-tie 2B	Sonoran creosote bush scrub	10/22/2017
	burrow	class 3	west of gen-tie 2B	Sonoran creosote bush scrub	10/22/2017
	burrow	class 4	gen-tie 3	desert dry wash woodland	5/11/2018



Source: Nussear, et. al., 2009

**Ironwood  
Consulting**



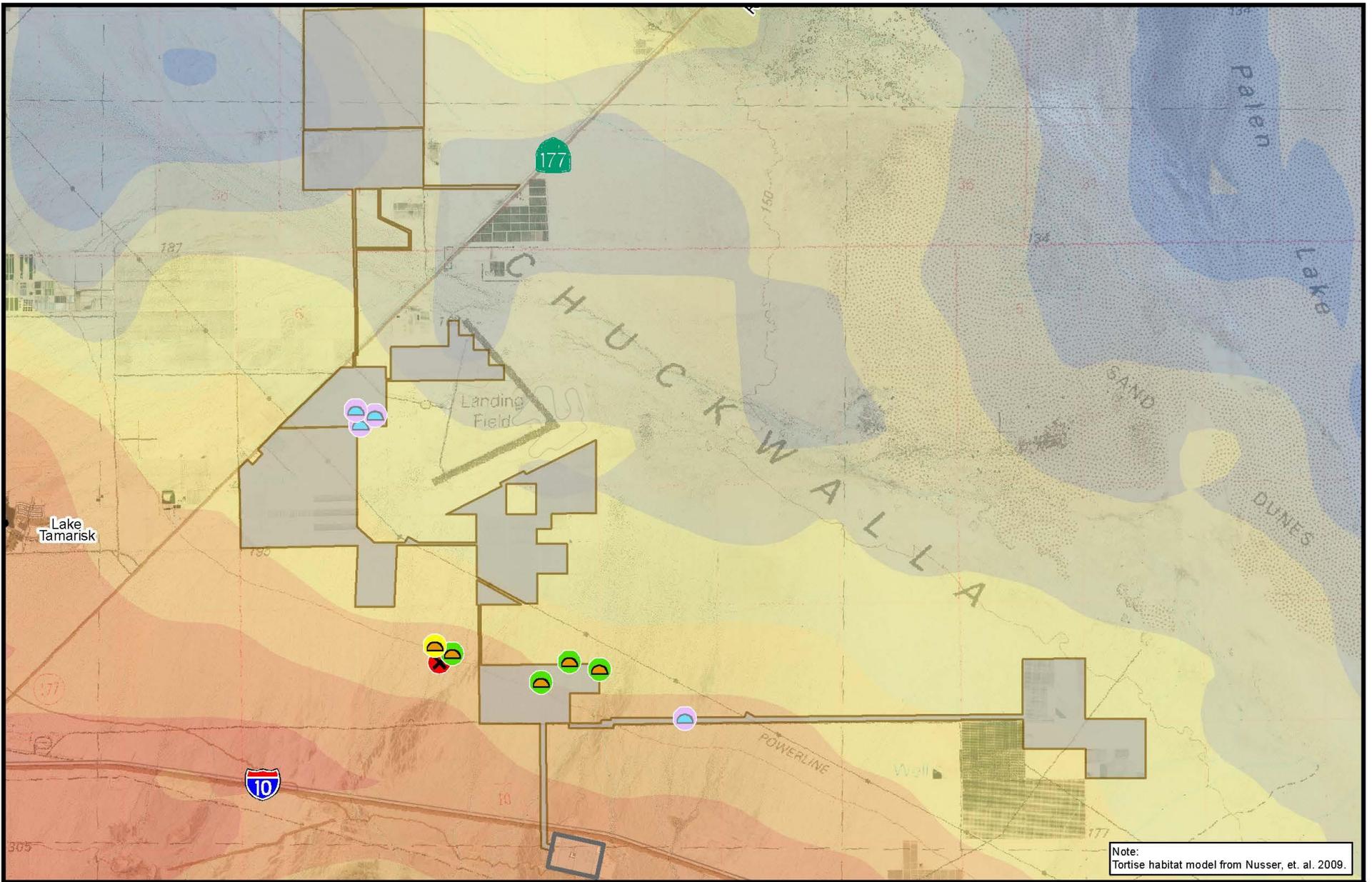
-  Solar Facility Boundary
-  Gen-Tie Line
-  Access Road/Easement
-  Red Bluff Substation

Desert Tortoise Predicted 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**  
**Predicted Desert  
Tortoise Occupancy**

**Athos Solar**



Note:  
Tortoise habitat model from Nusser, et. al. 2009.

**Ironwood Consulting**

Athos Solar Project  
 Red Bluff Substation  
 Desert Tortoise Burrow, Fall Survey  
 Desert Tortoise Burrow, Spring Survey  
 Tortoise Tracks and Scat

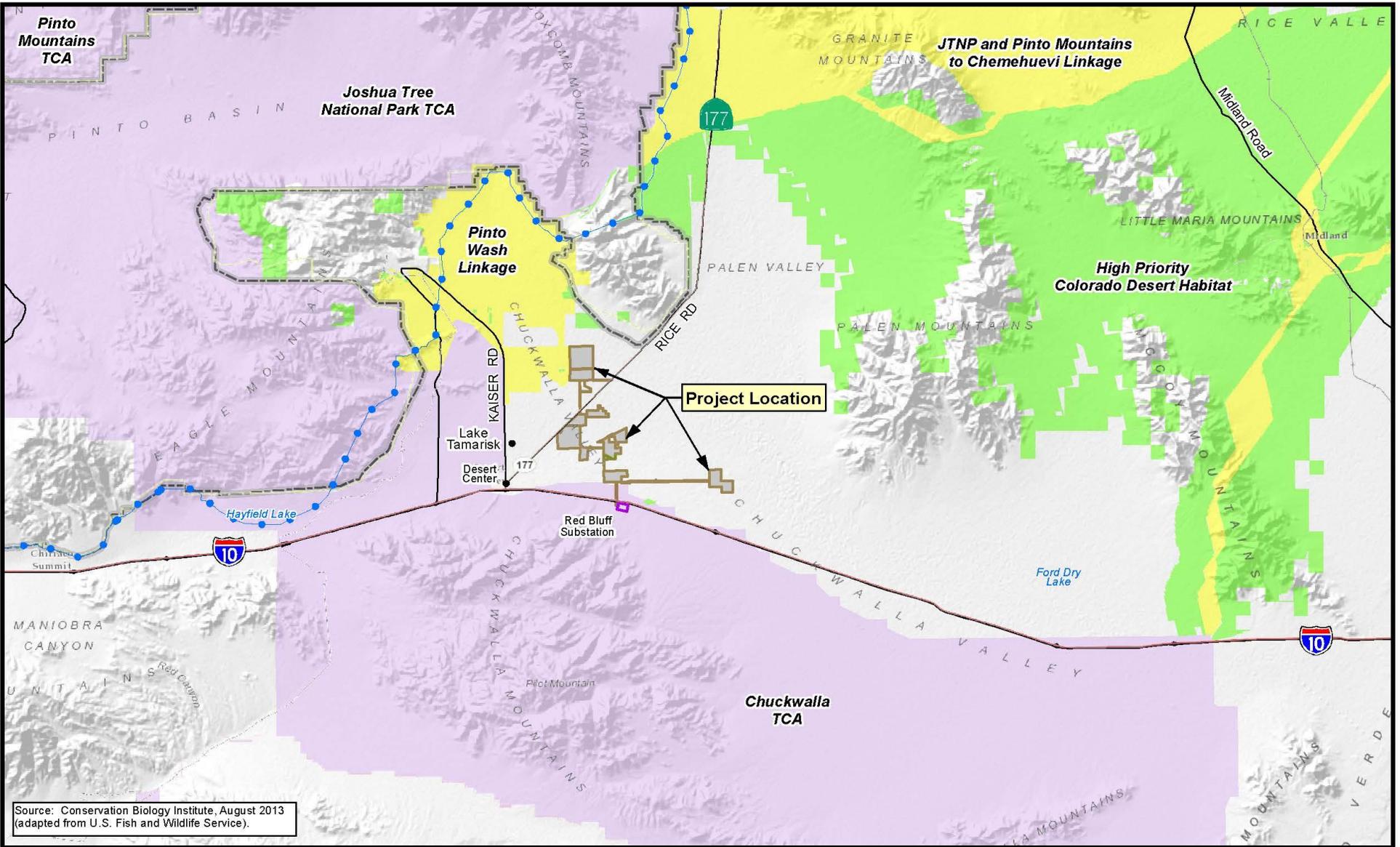
**Tortoise Sign Condition**

- Class 1** - Currently active; with desert tortoise or recent desert tortois sign
- Class 2** - Good condition, definitely desert tortoise, no evidence of recent use
- Class 3** - Deteriorated condition which includes collapsed burrows, definitely desert tortoise
- Class 4** - Good condition; possibly desert tortoise

**Tortoise Habitat Quality**

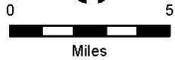
	0		0.4 - 0.5
	0 - 0.1		0.5 - 0.6
	0.1 - 0.2		0.6 - 0.7
	0.2 - 0.3		0.7 - 0.8
	0.3 - 0.4		0.8 - 0.9

**FIGURE 8**  
**Desert Tortoise Observations**  
**Athos Solar**



Source: Conservation Biology Institute, August 2013  
 (adapted from U.S. Fish and Wildlife Service).

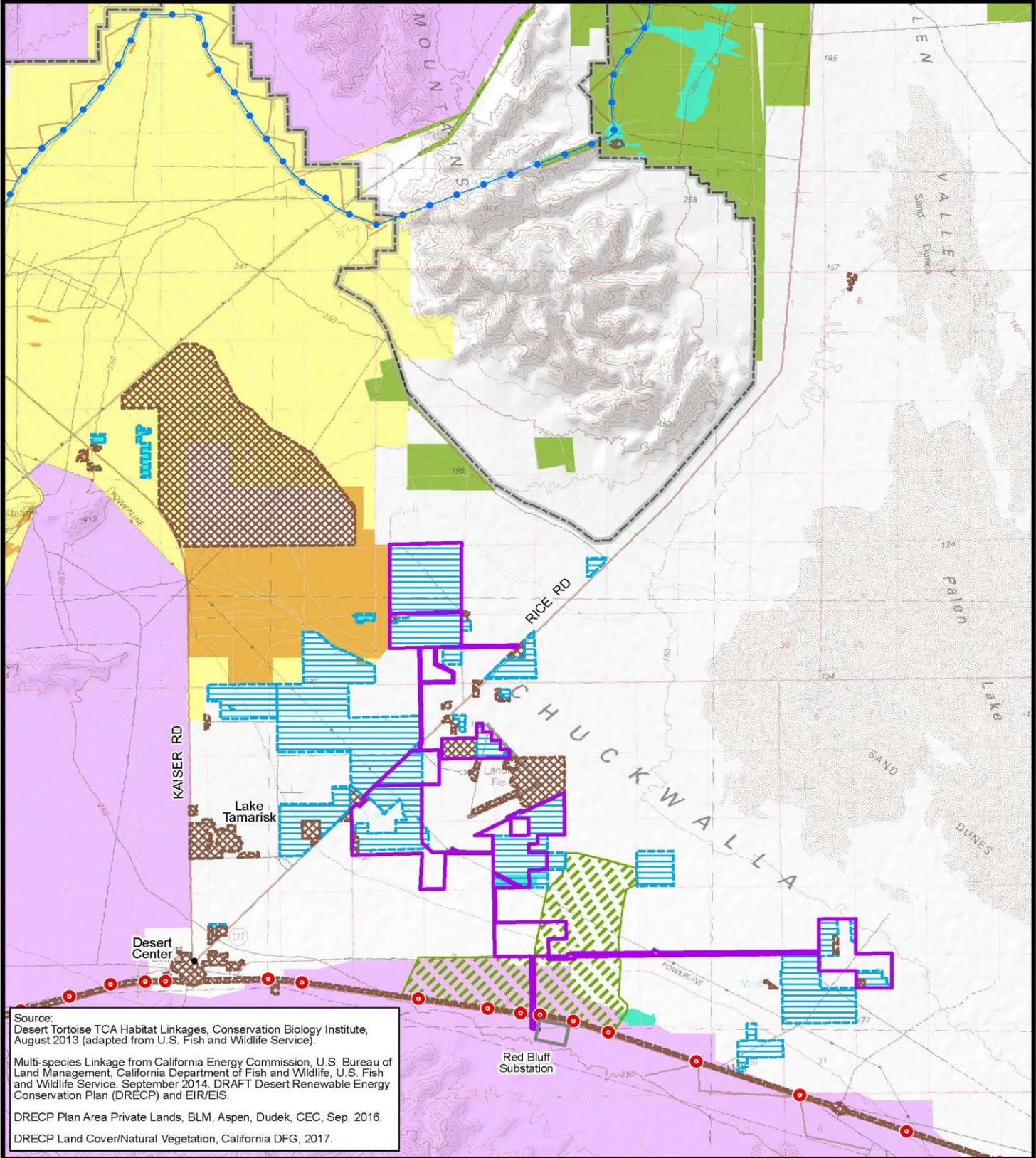
**Ironwood  
 Consulting**



- Aqueduct
- Athos Solar Project
- Red Bluff Substation
- High Priority Habitat
- Linkage
- Tortoise Conservation Area

**FIGURE 9**  
**Desert Tortoise**  
**Conservation Areas (TCAs)**  
**and Linkages**

**Athos Solar**



Source: Desert Tortoise TCA Habitat Linkages, Conservation Biology Institute, August 2013 (adapted from U.S. Fish and Wildlife Service).

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.

DRECP Plan Area Private Lands, BLM, Aspen, Dudek, CEC, Sep. 2016.

DRECP Land Cover/Natural Vegetation, California DFG, 2017.

**Ironwood Consulting**

0 2 Miles

- I-10 Culvert/Underpass
- Aqueduct
- Athos Solar Project
- Red Bluff Substation
- Land Cover**
- Agriculture
- Developed/Disturbed
- High Priority Habitat,
- High Priority Habitat, Lost or Severely Disturbed Habitat
- Linkage
- Linkage, Lost or Severely Disturbed Habitat
- Tortoise Conservation Area
- Multi-Species Linkage Area

**FIGURE 10**  
**Desert Tortoise**  
**Local Connectivity**  
**Athos Solar**

**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 Mojave and Colorado Rivers (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.

As this species requires loose, wind-blown sand, its distribution within the survey areas is consistent with the presence of suitable soil conditions. All detections for Mojave fringe-toed lizard were concentrated on the easternmost parcel group G of the Project site, with eight observations where the sand transport system and the DRECP modelling for Mojave fringe-toed lizard overlapped. It is noted that the DRECP habitat model (Figure 12) also includes or surrounds parcel groups A, B, and E in the northwestern part of the Project site, but a combination of former agricultural land use on-site as well as upwind land use conversion off-site has altered sand availability and aeolian sand transport, so these parcel groups no longer provide suitable habitat for Mohave fringe-toed lizard. Results for Mojave fringe-toed lizard observations are summarized in Table 8 and Figure 12.

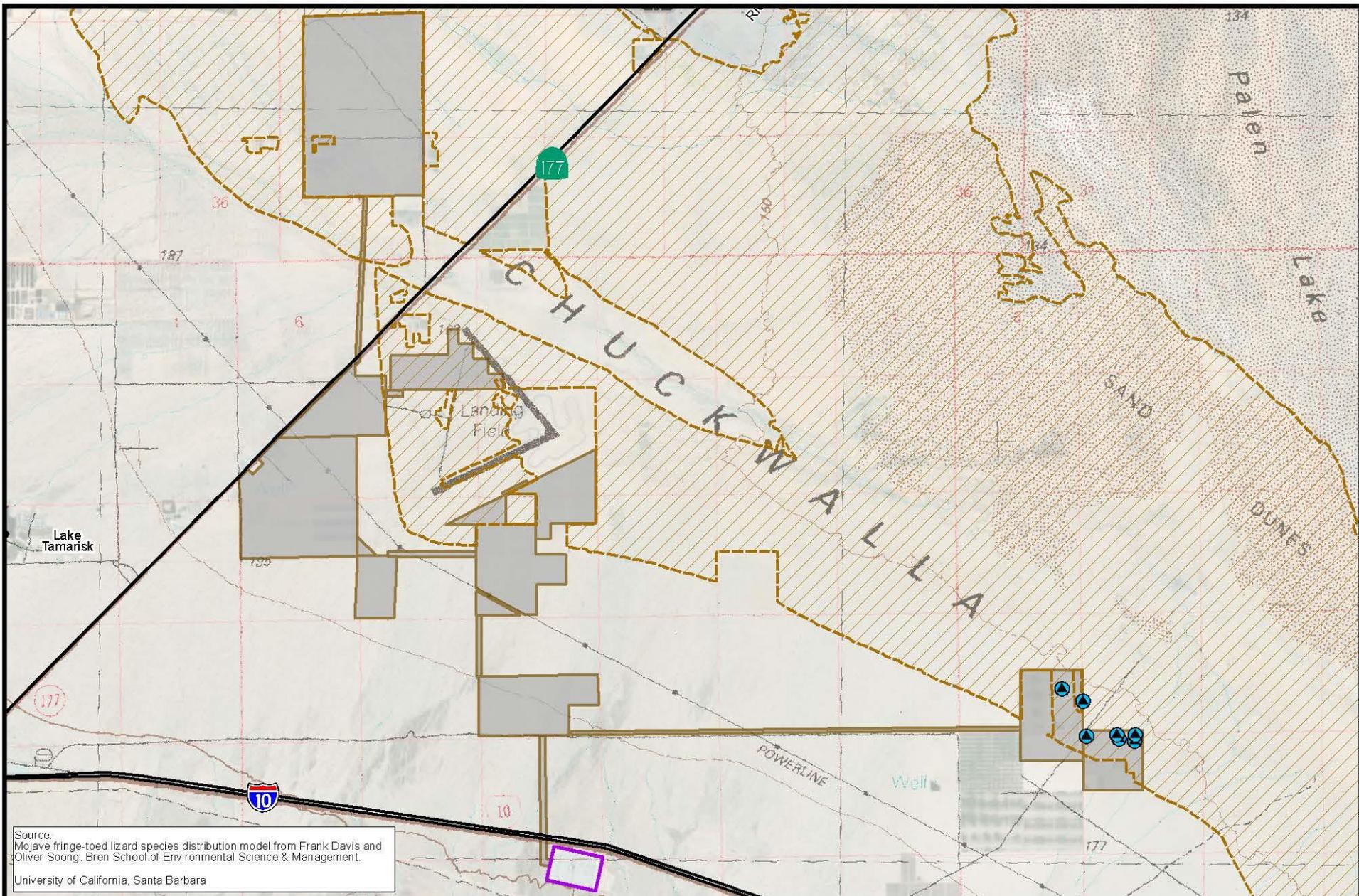
**Table 8.** Mojave Fringe-toed Lizard Observations

Project Component	# individuals	Location	Vegetation Community	Date Observed
Private	3	G	recovering salt bush scrub	5/22/2018
	1	G	recovering salt bush scrub	5/22/2018
	1	G	recovering salt bush scrub	5/22/2018
	5	G	recovering salt bush scrub	5/22/2018
	4	G	recovering salt bush scrub	5/22/2018
	1	G	recovering salt bush scrub	5/23/2018
	2	G	recovering salt bush scrub	5/23/2018
Public	-	-	-	-

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

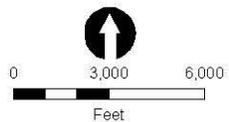
Couch's spadefoot toad (*Scaphiopus couchii*) is often found in shortgrass plains, mesquite savannah, creosote bush desert, thorn forest, and tropical deciduous forest (Mexico) and other areas of low rainfall (Stebbins 2003). It is considered an opportunistic species because it only appears when rainfall 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 from 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 parcel group G of the Project site due to presence of irrigation water which can accumulate to form suitable temporary pools near the active date tree farm. A preliminary reconnaissance survey indicated that there are three areas where water may potentially accumulate for at least two weeks after rainfall on parcel group G that may provide suitable reproductive habitat for the species. The existing pond in Parcel Group G was also noted as well as a ponded area south of parcel group A, within the project vicinity, adjacent to highway 177. Upon inspection, the existing pond and the ponded area did not indicate any tadpole or toad activity. Figure 11 depicts potential Couch's spadefoot habitat.



Source:  
 Mojave fringe-toed lizard species distribution model from Frank Davis and  
 Oliver Soong, Bren School of Environmental Science & Management,  
 University of California, Santa Barbara

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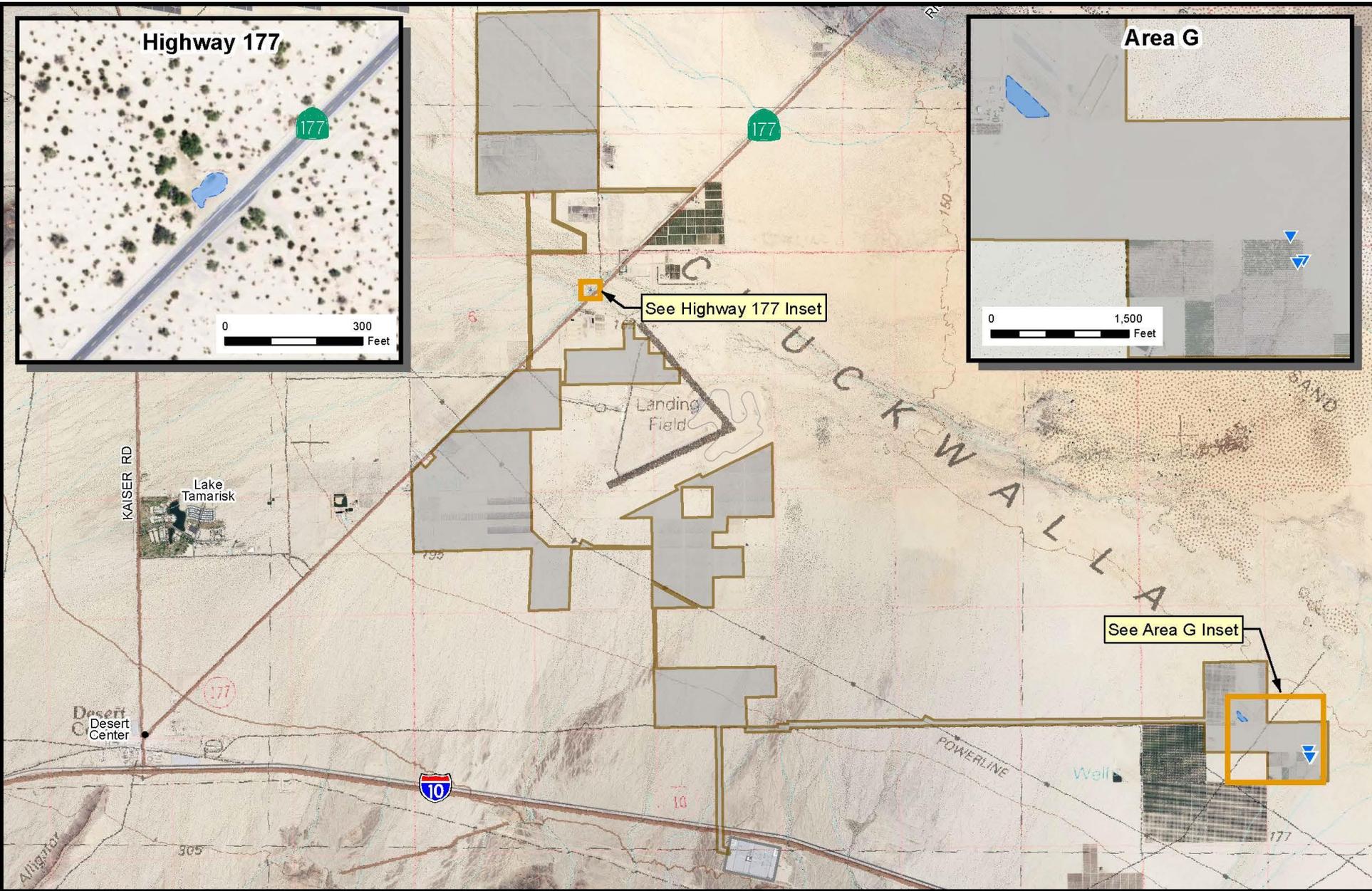
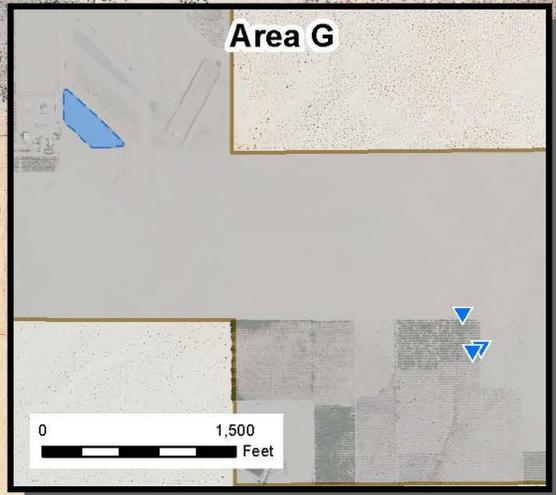
 Mojave Fringe-toed Lizard

-  Mojave Fringe-toed Lizard Species Distribution Model
-  Athos Solar Project
-  Red Bluff Substation

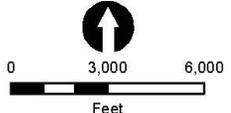
**FIGURE 11**

**Mojave Fringe-toed Lizard Observations**

**Athos Solar**



**Ironwood Consulting**



- Potential Water Accumulation Area
- Pond
- Athos Solar Project
- Red Bluff Substation

**FIGURE 12**

**Potential Couch's Spadefoot Toad Habitat**

**Athos Solar**

#### **4.1.4 American Badger: SSC**

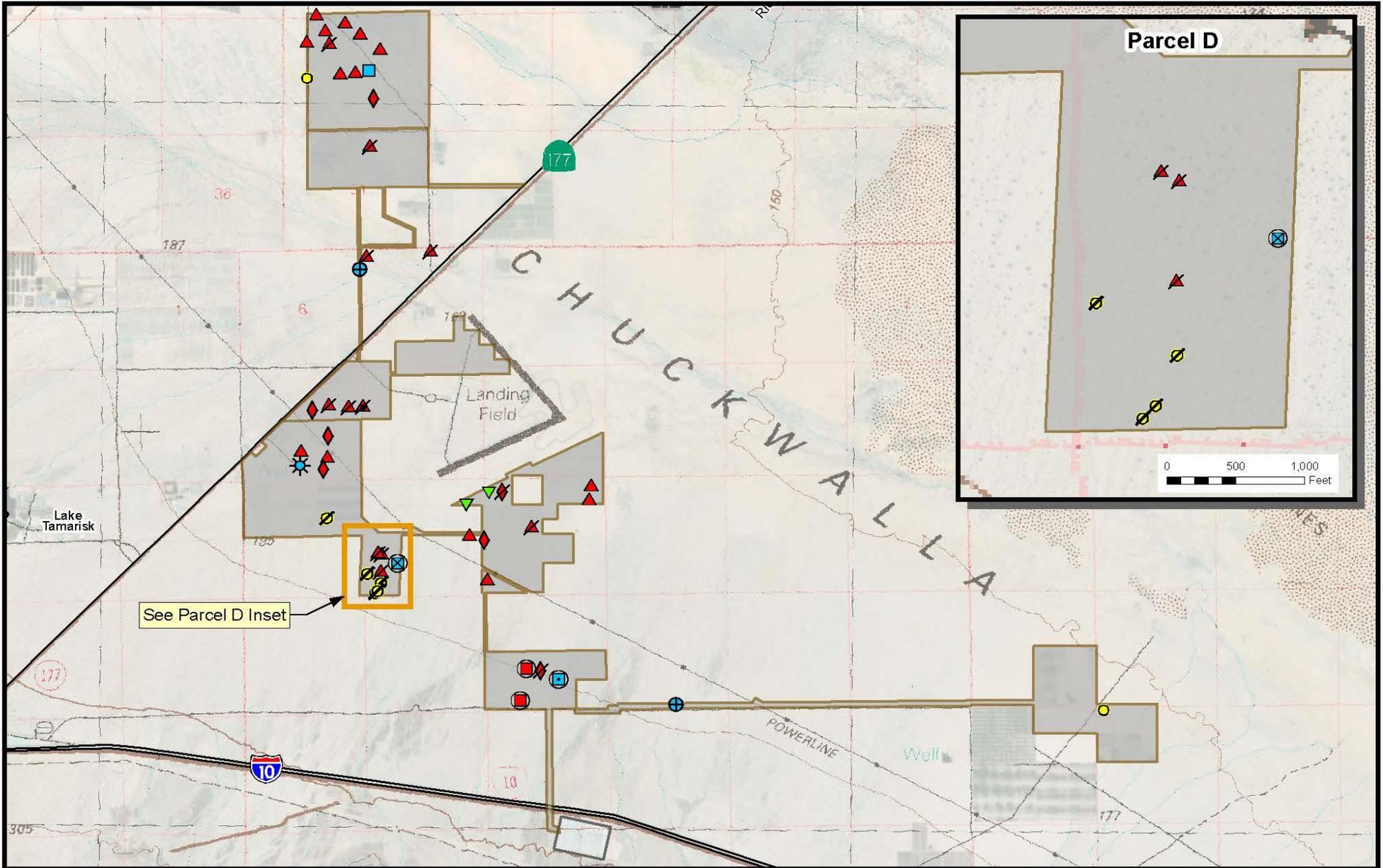
The American badger is associated with dry open forest, shrub, and grassland communities with an adequate burrowing rodent population and friable soils. Badgers generally are associated with treeless regions, prairies, parklands, and cold desert areas (Zeiner et al. 1990). Badgers inhabit burrows and often prey on small mammals that inhabit burrows, as evidenced by claw marks along the edges of burrows. Suitable habitat exists for American badgers on the Project. One active burrow and two digs with claw marks or tracks were observed in parcel groups A and C. One carcass was also observed, within parcel group D – evidence of a struggle was detected near the carcass, indicating its potential cause of death.

#### **4.1.5 Desert Kit Fox: CPF**

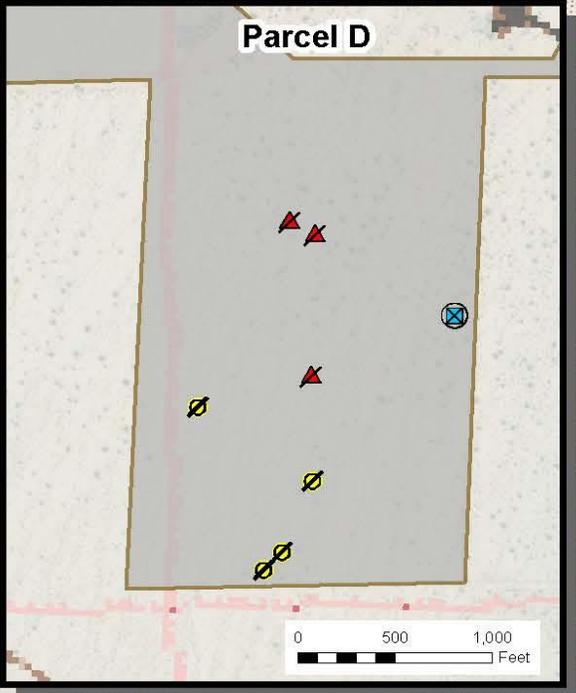
Desert kit fox (*Vulpes macrotis arsipus*) is protected by the California Code of Regulations (Title 14, CCR: §460) and Fish and Game Commission Section 4000 as a fur-bearing mammal. Title 14 of the California Code of Regulations, Section 460, stipulates that desert kit fox may not be taken at any time. Desert kit fox is a fossorial mammal that occurs in arid open areas, shrub grassland, and desert ecosystems within the Mojave Desert. 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).

Desert kit fox burrows, burrow complexes, and scat were observed in parcel groups A, B, C, D, E, and F of the Project site. A total of twenty-six burrows and seven complexes were detected. Of these detections, sixteen burrows and five complexes were considered active. These numbers may 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 are known to prey on kit fox pups. At parcel group G, the date palm farm may subsidize the local coyote population allowing it to flourish more than under natural conditions. The high numbers of coyotes could dissuade desert kit fox from using this area.

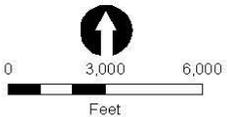
A summary of kit fox, coyote and badger observations can be found in Table 9 and Figure 13.



See Parcel D Inset



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Athos Solar Project  
Red Bluff Substation

Fall 2017

- American Badger, dig
- American Badger, tracks, fresh dig with claw marks
- Kit Fox, active burrow

Spring 2018

- American Badger, active burrow
- American Badger, carcass
- Canid, inactive burrow
- Coyote, active burrow
- Coyote, inactive burrow

- Kit Fox, active burrow
- Kit Fox, inactive burrow
- Kit Fox, inactive burrow, scat
- Kit Fox, active complex
- Kit Fox, inactive complex

Fall 2018

- American Badger, inactive dig

FIGURE 13

Kit Fox, Badger, and Coyote Observations

Athos Solar

**Table 9.** Summary of Kit Fox, Badger, and Coyote Observations

Project Components	Species	Location	SIGN TYPE				Vegetation Community	Date
			Hole Type	Scat	Tracks	Activity		
Private	Kit Fox	A	Burrow	-	X	active	fallow agriculture	5/26/2018
	Kit Fox	A	Burrow	-	X	active	fallow agriculture	5/26/2018
	Kit Fox	A	Burrow	X	X	active	fallow agriculture	5/26/2018
	Kit Fox	A	Burrow	-	X	active	fallow agriculture	5/26/2018
	Kit Fox	A	Burrow	-	X	active	fallow agriculture	5/27/2018
	Kit Fox	A	Burrow	X	X	active	fallow agriculture	5/27/2018
	Kit Fox	A	Burrow	-	X	active	fallow agriculture	5/27/2018
	Kit Fox	A	Burrow	X	X	active	fallow agriculture	5/27/2018
	Kit Fox	A	Burrow	-	X	active	fallow agriculture	5/27/2018
	Kit Fox	A	Burrow	-	-	inactive	fallow agriculture	5/26/2018
	Kit Fox	south of A	Burrow	-	-	inactive	fallow agriculture	5/23/2018
	Kit Fox	C	Burrow	-	-	active	fallow agriculture	5/19/2018
	Kit Fox	C	Burrow	-	-	active	fallow agriculture	5/24/2018
	Kit Fox	C	Burrow	X	X	active	fallow agriculture	5/25/2018
	Kit Fox	C	Burrow Complex	X	X	active	fallow agriculture	5/24/2018
	Kit Fox	C	Burrow Complex	X	X	active	fallow agriculture	5/24/2018
	Kit Fox	C	Burrow complex	X	X	active	fallow agriculture	5/25/2018
	Kit Fox	C	Burrow	X	-	inactive	fallow agriculture	5/25/2018
	Kit Fox	C	Burrow	-	-	inactive	fallow agriculture	5/25/2018
	Kit Fox	D	Burrow	X	-	inactive	creosote bush scrub	5/14/2018

Project Components	Species	Location	SIGN TYPE				Vegetation Community	Date
			Hole Type	Scat	Tracks	Activity		
	Kit Fox	D	Burrow	-	-	inactive	creosote bush scrub	5/14/2018
	Kit Fox	D	Burrow	-	-	inactive	creosote bush scrub	5/14/2018
	Kit Fox	E	Burrow	-	-	active	fallow agriculture	5/17/2018
	Kit Fox	E	Burrow	-	-	active	fallow agriculture	5/19/2018
	Kit Fox	E	Burrow Complex	-	-	active	fallow agriculture	5/17/2018
	Kit Fox	E	Burrow Complex	-	-	inactive	fallow agriculture	5/17/2018
	Kit Fox	E	Burrow	-	-	inactive	fallow agriculture	5/19/2018
	Kit Fox	F	Burrow	X	X	active	creosote bush scrub	10/25/2017
	Kit Fox	F	Burrow complex	X	X	active	creosote bush scrub	10/25/2017
	Kit Fox	F	Dig	X	X	inactive	creosote bush scrub	10/24/2017
	Badger	A	Burrow	-	X	active	fallow agriculture	5/27/2018
	Badger	C	Carcass	-	-	sign of fight	recovering creosote bush scrub	5/25/2018
	Badger	D	Dig	-	X, fresh, claw marks	active	creosote bush scrub	10/27/2017
	Badger	F	Burrow	-	-	inactive	creosote bush scrub	10/24/2017
	Badger	gen-tie 1	Dig	-	-	inactive	creosote bush scrub	10/30/2017
	Coyote	A	Burrow	-	X	active	fallow agriculture	5/26/2018
	Coyote	D	Burrow	-	-	inactive	creosote bush scrub	5/21/2018
	Coyote	D	Burrow	-	-	inactive	creosote bush scrub	5/13/2018
	Coyote	D	Burrow	-	-	inactive	creosote bush scrub	5/14/2018
	Coyote	D	Burrow	-	-	inactive	creosote bush scrub	5/14/2018

Project Components	Species	Location	SIGN TYPE				Vegetation Community	Date
			Hole Type	Scat	Tracks	Activity		
	Coyote	D	Burrow	-	-	inactive	creosote bush scrub	5/14/2018
	Coyote	G	Burrow	-	X	active	recovering salt bush scrub	5/22/2018
	Canid	E	Burrow	-	-	inactive	recovering creosote bush scrub	5/17/2018
	Canid	E	Burrow	-	-	inactive	recovering creosote bush scrub	5/17/2018
Public	Badger	gen-tie 3	Dig	-	-	inactive	desert dry wash woodland	10/31/2018
	Kit Fox	gen-tie 1	Burrow	X	-	Inactive	creosote bush scrub	5/9/2018
	Kit Fox	gen-tie 1	Burrow	-	-	inactive	creosote bush scrub	5/15/2018
	Kit Fox	gen-tie 1	Burrow	-	-	inactive	creosote bush scrub	5/15/2018
	Kit Fox	gen-tie 2A	Burrow	-	-	active	creosote bush scrub	5/15/2018

#### **4.1.6 Desert Bighorn Sheep *BLMS***

The desert bighorn sheep (*Ovis canadensis nelsoni*) 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 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, 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 Nelson's 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.

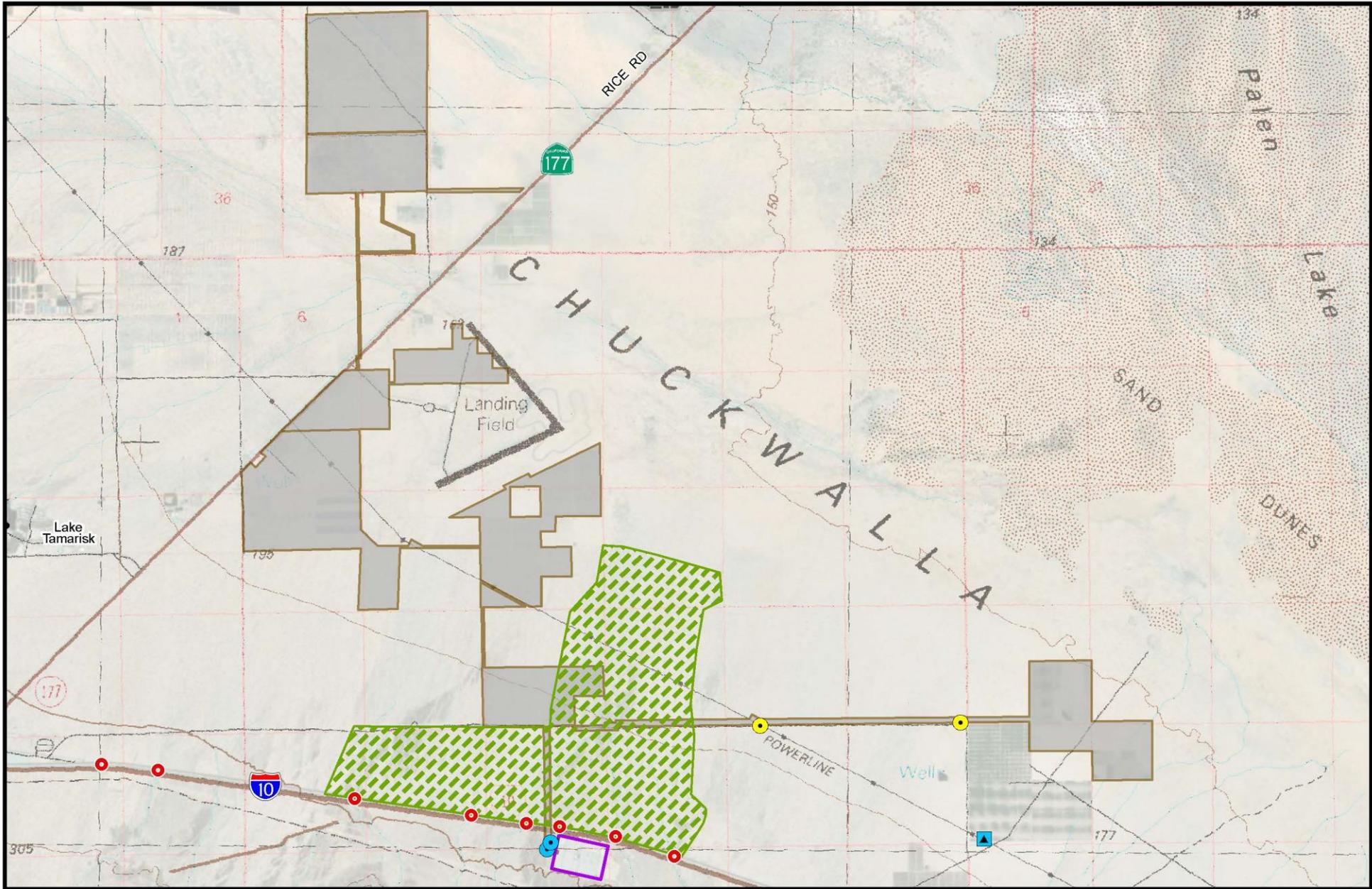
#### **4.1.7 Burro Deer: *CPGS***

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).

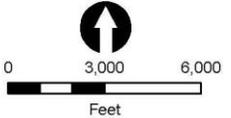
Burro deer scat and tracks were observed at the southern end of gen-tie 4, scat on gen-tie 3, and a group of four live individuals were observed southwest of parcel group G (see Table 10 and Figure 14). The observations of burro deer are all within close proximity to the active date farm where irrigation water is regularly available.

**Table 10.** Summary of Burro Deer Observations

Project Component	Location	SIGN TYPE			Vegetation Community	Date Observed
		scat	tracks	live individual		
Private	date farm adjacent to G	-	-	X (4)	active agriculture	10/26/2017
Public	gen-tie 3	X	-	-	desert dry wash woodland	10/31/2018
	gen-tie 3	X	-	-	creosote bush scrub	10/31/2018
	gen-tie 4	X	X	-	desert dry wash woodland	10/26/2017
	gen-tie 4	X	X	-	desert dry wash woodland	10/26/2017



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- I-10 Culvert/Underpass
  - Multi-Species Linkage Area
  - Athos Solar Project
  - Red Bluff Substation
- |  |  |
|--|--|
| <p><b>Fall 2017</b></p> <ul style="list-style-type: none"> <li><span style="color: blue;">▲</span> Burro Deer, live individual</li> <li><span style="color: blue;">●</span> Burro Deer, scat and tracks</li> </ul> | <p><b>Fall 2018</b></p> <ul style="list-style-type: none"> <li><span style="color: yellow;">●</span> Burro Deer, scat</li> </ul> |
|--|--|

FIGURE 14

Burro Deer Observations

Athos Solar

#### 4.1.8 Special Status Bats

Bat roosts occur in the vicinity of the Project site in the McCoy Mountains, Eagles Nest Mine within the Little Maria Mountains, and Paymaster Mine within the Pinto Mountains (Larry LaPre, BLM, pers. comm.; CEC 2010). No active bat roosts were documented on the Project site during any of the surveys to date. 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. However, roosting opportunities for bat species, such as the common canyon bat and California myotis, are available in tree cavities, soil crevices and rock outcroppings within dry desert wash woodland habitat and the active date farm. Additionally, suitable foraging habitat for common and special status bats is found on the Project site, particularly within the desert dry wash woodland (parcel groups D and F) and near the date tree farm (parcel group G) where water is 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, abandoned buildings, and the date tree farm on the Project site. 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 may provide roosting areas for Townsend's big eared bat at the abandoned structures in the developed and agricultural areas (parcel groups A, B, C, and G) and within desert dry wash woodland (parcel groups D and F and gen-tie 1, 1A, 2A, 2B, 3, and 4), although it may be at a lower probability. The Project site may also provide foraging habitat in the areas of desert dry wash woodland (parcel groups D, F and gen-tie 1, 1A, 2A, 2B, 3, and 4) and artificial water sources by the date tree farms (parcel group G).

##### 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 such as those in parcel groups D and F and gen-tie 1, 1A,

2A, 2B, 3, and 4. 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 bat within the dry wash woodland (parcel groups D and F and gen-tie 1, 1A, 1C, 2A, 2B, 3, and 4), date tree farms (parcel group G). Roosting habitat includes those areas as well as abandoned structures in the developed areas of the Project site (parcel groups A, B, C and G). Acoustic bat surveys for Palen Solar Power Project 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 on the Project site within parcel groups C, E, D, and F, as well as gen-tie 1, 1A, 1C, 2A, 2B, 3, and 4 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 exists within the Project site at parcel groups D and F as well as gen-tie 1, 1A, 2A, 2B, 3, and 4; date tree farms mimic palm oases due to the artificial water sources. Suitable habitat for foraging also occurs on the Project site in the same areas for the western yellow bat. 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 is known to wander in autumn, out of its normal range (Zeiner 1990). Potential roosting and foraging habitat exist for the big free-tailed bats within the abandoned structures (parcel group A, B, C, G), dry wash woodland (parcel groups D and F as well as gen-tie 1, 1A, 2A, 2B, 3, and 4, and date tree farm (parcel group G) on the Project site. 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 and roosting habitat typically includes rock crevices associated with granite boulders, cliffs, or rocky canyons at a height suitable for approach and takeoff (CNDDDB 2018). Pocketed free-tailed bats are known to 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 on parcel groups D, F, and G, as well as gen-tie 1, 1A, 2A, 2B, 3, and 4, 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.

#### **4.1.8 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 depend on other species to dig suitable burrows for use. If those species do not return to an area to dig new burrows or repair collapsed burrows, then burrowing owls would not be able to use those collapsed burrows.

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). 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 populations, 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.

Burrowing owls and their sign were observed at several locations within the Project site. A total of seventeen burrows were observed with burrowing owl sign consisting of white wash, feathers, or pellets. Four live individuals were observed at burrows during the spring 2018 surveys and one live individual was observed at a burrow during the fall 2017 surveys. All live individuals were observed in the southern portion of the Project site with all 2018 observations concentrated on the eastern portion of the Project site on parcel group G (see Figure 15 for locations). Burrowing owls may have been more prevalent in the eastern portion of the site due to the increased prey availability from artificial water sources. No burrowing owl sign was found on the public components of the gen-tie. Table 11 summarizes all the burrowing owl observations from wildlife surveys and Figure 16 summarizes all sensitive avian observations.

**Table 11.** Summary of Burrowing Owl Observations

Project Component	Location	SIGN TYPES					Vegetation Community	Date Observed
		burrow	whitewash	pellets	feather	live individual		
Private	A	X	X	X	-	-	fallow agriculture	5/26/2018
	A	X	X	X	-	-	fallow agriculture	5/27/2018
	A	X	X	-	-	-	fallow agriculture	5/27/2018
	A	X	X	-	-	-	fallow agriculture	5/27/2018
	B	X	X	-	-	-	fallow agriculture	5/16/2018
	B	X	X	X	-	-	fallow agriculture	5/16/2018
	C	X	X	-	-	-	fallow agriculture	5/25/2018
	D	X	X	X	-	-	desert dry wash woodland	10/27/2017
	E	X	X	X	-	-	fallow agriculture	5/19/2018
	F	X	X	X	-	X	creosote bush scrub	10/24/2017
	G	X	X	X	-	-	fallow agriculture	5/22/2018
	G	X	X	X	X	X	fallow agriculture	5/23/2018
	G	X	X	X	-	X	fallow agriculture	5/23/2018
	G	X	X	X	X	X	fallow agriculture	5/23/2018
	G	X	X	X	-	X	fallow agriculture	5/23/2018
	G	X	X	X	-	-	fallow agriculture	5/23/2018
G	X	X	X	-	-	recovering salt bush scrub	5/23/2018	
Public	-	-	-	-	-	-	-	

#### **4.1.9 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 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 (USFWS 2016) and suggest a level of sustainable take is approximately 2,000 individuals annually. Additional unmitigated mortality will steepen the rate of decline that the golden eagle population is presently undergoing (USFWS 2016).

##### Regional Surveys

Golden eagle surveys have been conducted on a multitude of projects within 10 miles of the Project vicinity. Methods and results for regional golden eagle surveys between the years of 2010-2015 are summarized in Table 12 below.

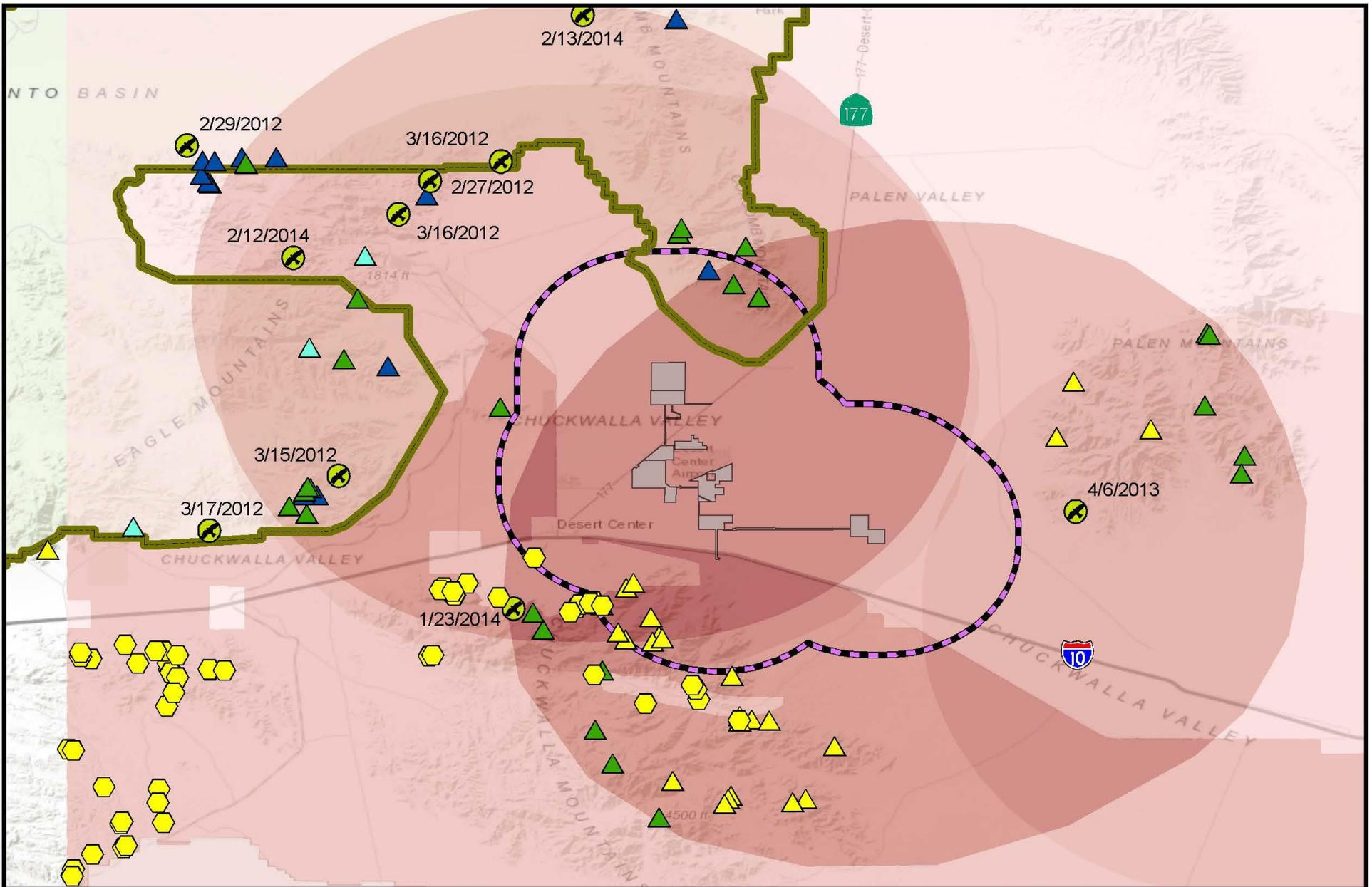
No live golden eagles were observed within 4 miles of the Project during any of these surveys or during the 2017-2018 wildlife surveys for the Project site. The highest concentration of surveys repeated between 2010-2015 occurred within Project area as shown in Figure 15.

**Table 12.** Summary of Regional Golden Eagle Surveys

Year	Other	Regional Nest Survey	Joshua Tree NP	BLM Raptor-Raven Nest Survey	Desert Sunlight Solar Project	Desert Harvest Solar Project	Genesis Solar Project	Palen Solar Project
2010		Aerial Survey (Wildlife Research Institute)*			*		*	*
		1 active nest in Coxcomb Mtns, 1 active territory in Eagle Mtns						
2011	Aerial Eagle (not nesting) transect survey (West)	Aerial and Ground (BioResource Consultant)	Aerial Survey (Wildlife Research Institute)*			Ground Survey (Bloom Biological Inc.)		

Year	Other	Regional Nest Survey	Joshua Tree NP	BLM Raptor-Raven Nest Survey	Desert Sunlight Solar Project	Desert Harvest Solar Project	Genesis Solar Project	Palen Solar Project
	No eagles in this area	No active eagles in this area	2011 season - 4 territories active (Eagle Mountains - West Central, Eagle Mountains - West Northwest, Hexie Mountains - Central, Little San Bernardino - East), the 2 Eagle Mountain territories were the only productive territories and produced a total of at least 3 young.			No active nests. 1 GOEA sighting		
2012	Aerial Eagle (not nesting) transect survey (West) / Tracking Eagles (Duerr et al)				Ground Survey (Ironwood)			
	No eagles in this area/None tracked in this area				No active nests; 7 GOEA sightings - 6 in Eagle Mtns, 1 in Coxcomb			
2013	Tracking eagles (Duerr et al)			Ground Survey (Corvus Ecological)	Ground Survey (Corvus Ecological)			Air and Ground Survey and Camera traps (Bloom Biological Inc.)

Year	Other	Regional Nest Survey	Joshua Tree NP	BLM Raptor-Raven Nest Survey	Desert Sunlight Solar Project	Desert Harvest Solar Project	Genesis Solar Project	Palen Solar Project
	None tracked in this area			No GOEA nests or sightings	No active nests, 4 GOEA sightings			1 sub-adult at bait station during all 5 weeks; 3rd year flying along cliffs
2014				Ground Survey (Boarman)				Air and Ground Survey (West)
				No GOEA nests or sightings				No eagles observed
2015				Ground Survey (Corvus Ecological)				Ground Survey (West)
				No GOEA nests or sightings				No eagles observed



**Ironwood Consulting**



**Potential Eagle Nests  
Season Last Surveyed**

- 2009-2010
- 2011-2012
- 2013-2014
- 2014-2015

- Cliff Nests Monitored During BLM Raven Surveys
- GOEA Sighting (Date of Sighting)

- Athos Solar Project
- Joshua Tree NP

**Athos Solar Project 4-Mile Buffer**

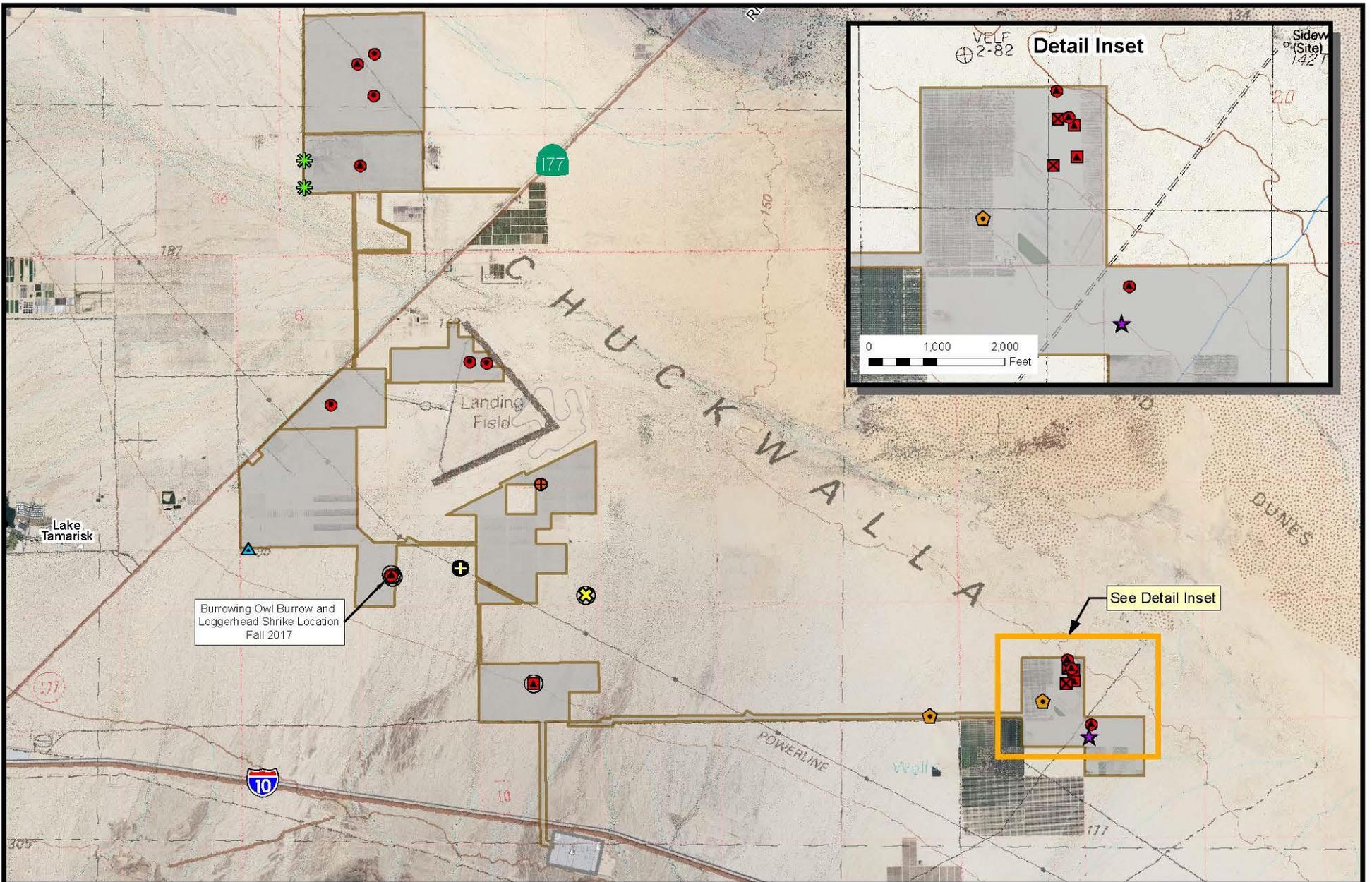
**Number of Surveys Conducted**

- 12
- 8
- 5
- 1

**FIGURE 15  
Regional Golden Eagle  
Survey Results  
2010-2015**

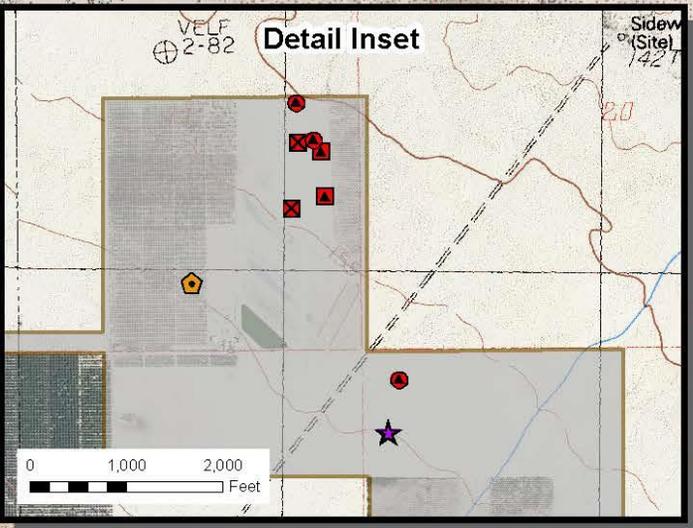
**Athos Solar**

Adapted from CORVUS, 2018.

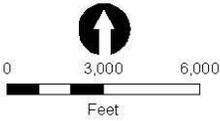


Burrowing Owl Burrow and Loggerhead Shrike Location Fall 2017

See Detail Inset



**Ironwood Consulting**



**Athos Solar Project**  
Red Bluff Substation

**Fall 2017**

- Burrowing Owl Burrow with whitewash, pellets
- Burrowing Owl Burrow with whitewash, pellets, live individual
- Loggerhead Shrike

**Spring 2018**

- Burrowing Owl Burrow with whitewash, pellets, feather, live individual
- Burrowing Owl Burrow with whitewash, pellets, live individual
- Burrowing Owl Burrow with whitewash, pellets, feather
- Burrowing Owl Burrow with whitewash, pellets

- Burrowing Owl Burrow with whitewash
- Great Horned Owl active nest
- Prairie Falcon, in flight
- Raven, stick nest
- Red Tail Hawk, nest with nestling
- Swainson's Hawk

**FIGURE 16**  
**Sensitive and Noteworthy Avian Observations**  
**Athos Solar**

**Table 13.** Sensitive and Noteworthy Avian Observations

Project Component	Location	Species	Sign Type	Vegetation Community	Date Observed
Private	A	raven stick nest	stick nest	fallow agriculture	5/26/2018
	A	raven stick nest	stick nest	fallow agriculture	5/26/2018
	C	great horned owl	active nest	fallow agriculture	5/21/2018
	D	loggerhead shrike	live, perching	desert dry wash woodland	10/27/2017
	east of E	loggerhead shrike	live, perching	creosote bush scrub	10/27/2017
	west of E	redtail hawk	active nest	creosote bush scrub	5/14/2018
	G	prairie falcon	live, in flight	recovering salt bush scrub	5/22/2018
	G	Swainson's hawk	live, in flight	active agriculture	5/23/2018
Public	gen-tie 3	Swainson's hawk	live, in flight	creosote bush scrub	5/20/2018

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

Loggerhead shrikes (*Lanius ludovicianus*) are small predatory birds that are uncommon 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 continue with raising 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. One individual was observed on a parcel with native vegetation on the proposed solar facility site (parcel group D) and another was observed west of parcel group E.

#### **4.1.11 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 habitat for Le Conte's thrasher is located in the Project site, primarily within desert dry wash woodland (parcel groups D and F, as well as gen-tie segments 1A, 1C, 2A, 2B, 3, and 4) and the Sonoran creosote bush scrub (parcel groups C, D, E, and F, as well as gen-tie segments 1A, 1C, 2A, 2B, 3, and 4).

#### **4.1.12 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 2018). The Project site contains suitable habitat throughout the Project. It was observed frequently on the Project site, including the gen-tie routes, during the wildlife surveys.

#### **4.1.13 Prairie Falcon: WL, BCC**

The prairie falcon (*Falco mexicanus*) is currently on the CDFW watch list, and 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).

A prairie falcon was observed in flight at the eastern portion of the Project site (Figure 15). The entire Project site contains suitable foraging habitat for this species, particularly near active agriculture where artificial water draws in more potential prey. The Project site does not contain suitable nesting habitat, although mountains located over 3 miles away may provide nesting habitat.

#### **4.1.14 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). 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 trees large enough for cavity nests) but they would be expected to more readily use palm trees in parcel group G than palo verde or ironwood trees. The probability of this species nesting on the Project site is low to moderate because the site supports only sparse riparian woodland habitat, but the existing date palms on the former agricultural land may be attractive as nesting sites. Where Gila woodpeckers occur, they generally are loud and conspicuous, and readily located by field biologists. No Gila woodpeckers were observed within the Project site during surveys, but a nesting pair feeding young was incidentally observed in a palm tree at the Corn Springs Campground seven miles from the Project, during the spring 2018 survey period.

#### **4.1.15 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 in the components with native vegetation such as parcel groups C, D, E, and F as well as gen-tie segments 1A, 1C, 2A, 2B, 3, and 4. One individual was observed during the fall 2017 survey within parcel group F.

#### **4.1.16 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 arrives to breed on the lower Colorado River in early April and nests mainly from mid-May through July (Rosenberg et al. 1991). It generally occupies 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 contains suitable foraging habitat (during migration) in the dry wash woodland (parcel groups D, and F as well as gen-tie 1, 1A, 2A, 2B, 3, and 4) but no suitable nesting habitat is present onsite.

#### **4.1.17 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 active and fallow agricultural areas that contain palm groves are not dense enough for short-eared owl due to the sparse growth of the palm leaves. The Project site does not provide suitable nesting habitat, although short-eared owls may be found on the site incidentally during migration or foraging in irrigated areas such as parcel group G or gen-tie 3 near the active date farm.

#### **4.1.18 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). There are no breeding records from California. This species frequents open grasslands, sagebrush flats, and desert scrub. Prey items include lagomorphs, small mammals, reptiles and amphibians (Zeiner 1990). The project site provides potential wintering, migration, and foraging habitat throughout the native vegetation areas in parcel groups D, and F as well as gen-tie segments 1, 1A, 2A, 2B, 3, and 4. The site is outside the Ferruginous hawk's breeding range and is not expected in the area during nesting season.

#### **4.1.19 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, well 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 habitat but is well outside the nesting range. An

immature Swainson's hawk was incidentally observed flying over the project site on two occasions during the spring 2018 surveys (parcel group G and gen-tie 3) and was likely a migrant since the nearest nesting area for Swainson's hawk is in Antelope Valley. It may be found throughout the project site during migration.

#### **4.1.20 American Peregrine Falcon: FP, BCC**

The American peregrine falcon (*Falco peregrinus anatum*) is distributed worldwide. Peregrine falcons were formerly listed under CESA and ESA, but have been delisted under both Acts. In California, range is primarily central to northern California, with wintering habitat located 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. 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 the site lacks suitable nesting habitat.

#### **4.1.21 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.

#### **4.1.22 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). Its 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.

#### **4.1.23 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. They are 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, and no suitable nesting habitat on the Project site. One individual was observed flying over the Project site during fall 2017 surveys.

#### **4.1.24 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 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 likely on desert dry wash woodland areas (parcel groups D and F as well as gen-tie segments 1, 1A, 2A, 2B, 3, and 4), but suitable nesting habitat is not present.

#### **4.1.25 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 (parcel groups D and F as well as gen-tie segments 1, 1A, 2A, 2B, 3, and 4). No crissal thrashers were observed onsite during surveys.

#### **4.1.26 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; the nearest nesting occurrence is near Corn Springs (Garret and Dunn 1981). 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 (Director, San Bernardino County Museum; SBCM 2012a). The palm groves (parcel group G) and desert wash woodland habitat (parcel groups D and F as well as gen-tie segments 1, 1A, 2A, 2B, 3, and 4) on the site may provide suitable (albeit probably marginal) habitat for nesting elf owls.

#### **4.1.27 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.

##### 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). It is believed that most Ridgway's rails do not migrate (USFWS 2014). The extent of dispersal or migration between the populations is not well known (USFWS 2009d); however, outlier records across the desert show that some level of movement occurs (CNDDDB 2018). 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 (CNDDDB 2018).

##### 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 (CNDDDB 2018). Recent studies indicate that southwestern willow flycatchers do not migrate over the area of the desert where the Athos 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 the site appears to be 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 (CNDDDB 2018). 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 Athos 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 pusillus*) 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 (USFWS 2016). The closest known breeding habitat to the Athos site is to the northwest in the Big Morongo Canyon (USFWS 2016). 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 Athos project site, although least Bell's vireo could occur on the site briefly, during migration season.

## **4.2 Wildlife Movement**

For many wildlife species, 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. Habitat fragmentation results when habitat converted to other uses separates or isolates the remaining habitat areas. The result of fragmentation is (1) less habitat availability, and (2) 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 (e.g., 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.

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 CDCA Plan, as amended by the DRECP, designates specific areas within the mapped habitat linkage for multiple species habitat connectivity (see Figures 9, 10, and 14). Parcel Group F is partially located within the habitat linkage area identified in the DRECP.

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 has documented burro deer using an I-10 undercrossing several miles east of the Athos site.

### 4.3 Special Status Plant Species

Forty-one 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 B). 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

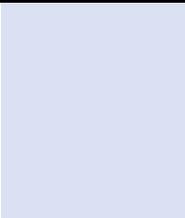
Special status species detected within the Project site or have moderate potential to occur based on the presence of suitable habitat are discussed further in this section. Figure 17 and Table 14 summarize special status plant observations during plant surveys.

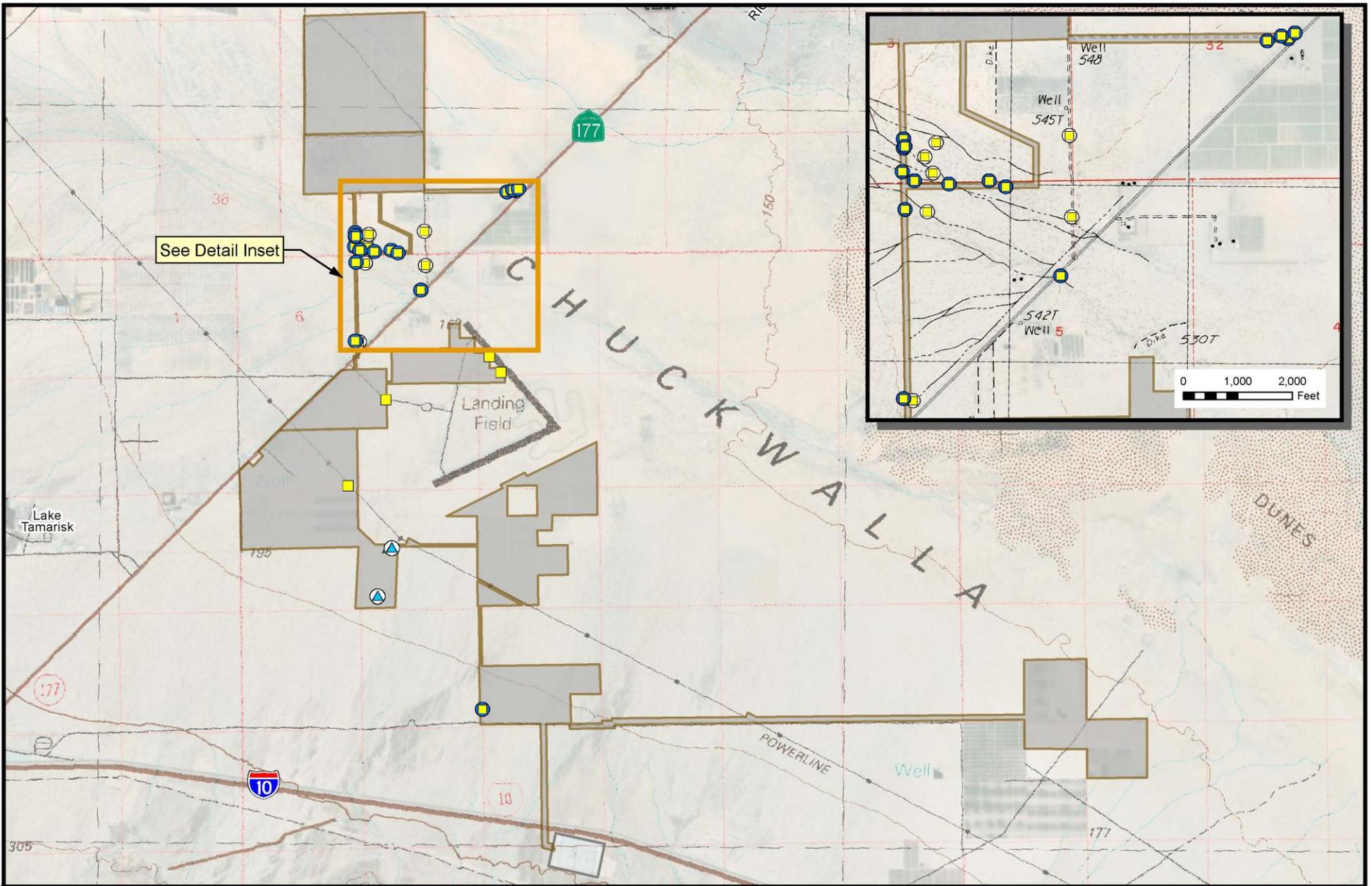
**Table 14.** Summary of Special Status Plant Observations

Project Components	Species	Sign Type	Location	Vegetation Community	Date
Private	Crucifixion Thorn	live shrubs (4)	D	creosote bush scrub	10/29/2017
	Desert Unicorn Plant	live plant in fruit (2)	south of A	creosote bush scrub	10/21/2017
	Desert Unicorn Plant	live plant in fruit (2)	south of A	creosote bush scrub	10/21/2017
	Desert Unicorn Plant	dry Plant w/ fruit	B	fallow agriculture	5/16/2018
	Desert Unicorn Plant	dry plants with fruit (2)	B	fallow agriculture	5/16/2018
	Desert Unicorn Plant	dry plants with fruit (2)	E	fallow agriculture	5/19/2018
	Desert Unicorn Plant	dry plant with fruit	C	fallow agriculture	5/21/2018

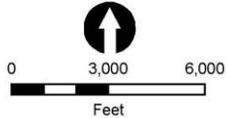
Project Components	Species	Sign Type	Location	Vegetation Community	Date
	Desert Unicorn Plant	dry plant with fruit	C	fallow agriculture	5/25/2018
	Desert Unicorn Plant	live plant	F	creosote bush scrub	11/21/2018
	Desert Unicorn Plant	live plant	gen-tie 1	desert dry wash woodland	10/31/2018
	Desert Unicorn Plant	live plant	gen-tie 1	desert dry wash woodland	10/31/2018
	Desert Unicorn Plant	live plant	gen-tie 1	desert dry wash woodland	10/31/2018
	Desert Unicorn Plant	live plant	gen-tie 1	desert dry wash woodland	10/31/2018
	Desert Unicorn Plant	live plant	gen-tie 1	desert dry wash woodland	11/19/2018
	Desert Unicorn Plant	live plant	gen-tie 1	creosote bush scrub	10/31/2018
	Desert Unicorn Plant	live plant	gen-tie 1A	desert dry wash woodland	10/31/2018
	Desert Unicorn Plant	live plant	gen-tie 1A	desert dry wash woodland	10/31/2018
	Desert Unicorn Plant	live plant	gen-tie 1A	desert dry wash woodland	10/31/2018
	Desert Unicorn Plant	live plant	gen-tie 1A	desert dry wash woodland	10/31/2018
Public	Crucifixion Thorn	live shrubs with seeds (2)	gen-tie 2A	creosote bush scrub	10/27/2017
	Desert Unicorn Plant	live plant in fruit	east of gen-tie 1	desert dry wash woodland	10/21/2017
	Desert Unicorn Plant	live plant	east of gen-tie 1	desert dry wash woodland	10/21/2017

Project Components	Species	Sign Type	Location	Vegetation Community	Date
	Desert Unicorn Plant	live plant	east of gentle 1	desert dry wash woodland	10/21/2017
	Desert Unicorn Plant	live plant (2)	east of gentle 1	desert dry wash woodland	10/21/2017
	Desert Unicorn Plant	live plant in fruit	east of gentle 1	creosote bush scrub	10/21/2017





Ironwood Consulting



- Athos Solar Project
- Red Bluff Substation

**Fall 2017**

- Castella emoryi*, Crucifixion Thorn
- Proboscidea altheaefolia*, Desert Unicorn Plant

**Spring 2018**

- Castella emoryi*, Crucifixion Thorn
- Proboscidea altheaefolia*, Desert Unicorn Plant

**Fall 2018**

- Proboscidea altheaefolia*, Desert Unicorn Plant

**FIGURE 17**

**Special Status Plant Species Observations**

**Athos Solar**

#### **4.3.1 Chaparral sand verbena: BLMS, CRPR 1B.1**

Chaparral sand verbena (*Abronia villosa* var. *aurita*) has 238 records within several counties in southern California, many of which are in Riverside County. Its distribution and identification are unclear in published reference works, including Spellenberg (2002), CNPS (2018) and CNDDDB (CDFW 2018). It was added to the CNPS Inventory based on recommendations by Andrew C. Sanders of the UC Riverside Herbarium. The primary conservation concern is for chaparral sand-verbena occurrences in western Riverside County and other locations outside the desert (see Roberts et al. 2004). These western plants appear to be distinct from the very common desert sand verbena, *Abronia villosa* var. *villosa*. Plants in the low desert often match the characteristics of the western Riverside County populations, but they are not regionally rare. There is one record that is very close to the Project site, on the Palen sand dunes in the vicinity of the Desert Lily Sanctuary, located in 2012. Suitable sandy habitat occurs on the eastern extent of the Project site for the species (parcel group G). It is not expected on the former agricultural lands on the Project site. No sand verbena species, including chaparral sand verbena were observed during spring plant surveys, possibly due to the extremely low winter rainfall.

#### **4.3.2 Harwood's Milkvetch: CRPR 2B.2**

Harwood's milkvetch (*Astragalus insularis* var. *harwoodii*) has historic and recent collections that include Ogilby Road in Imperial County and three locales west of Blythe, the Pinto Basin, and Chuckwalla Basin in Riverside County. Harwood's milkvetch has also been reported from Baja California, Sonora Mexico, and portions of Yuma County. Its primary habitat is windblown sand. There are several CNDDDB records for this species within the Project vicinity (CNDDDB 2018). Many new occurrences were documented in Chuckwalla Valley and the Palo Verde mesa during surveys for the Blythe Solar Power Project, the Genesis Solar Energy Project, McCoy Solar Energy Project, and Palen Solar Power Project study areas. The Consortium of California Herbaria (CCH) lists 107 occurrences within California (CCH 2018).

There is suitable habitat for Harwood's milkvetch in undisturbed or disturbed windblown sand habitats of the Project site, particularly in Parcel Group G and some of the gen-tie routes. It is not expected on the former agricultural lands. It was not observed during plant surveys, possibly due to the extremely low winter rainfall.

#### **4.3.3 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 northwest of the Project (CCH 2018). There is suitable habitat for Crucifixion thorn within wash areas of the Project site on Parcel Groups D and F. It was observed at two locations in Parcel Group F where a total of six live individuals were recorded (Figure 17). 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 elsewhere on the Project site, and no additional occurrences are expected.

#### **4.3.4 Abram's Spurge: CRPR 2B.2**

Abram's spurge (*Chamaesyce abramsiana* [=*Euphorbia abramsiana*]) occurs in saline scrub flats, playas, and along inlets and floodplains of playas. There are 137 records in California within Imperial, Riverside, San Bernardino and San Diego counties. The records within Chuckwalla Valley closest to the Project site were near Palen Dry Lake and Pinto Basin. Marginally suitable habitat may be present within the Project site in saltbush scrub at parcel group G. Abram's spurge was not observed within the project area since it is a fall blooming plant and dries too quickly for identification in the spring. It is unlikely to occur on the Project site.

#### **4.3.5 Ribbed Cryptantha: CRPR 4.3**

Ribbed cryptantha (*Cryptantha costata*) has 279 records from several locations throughout Riverside, Imperial, San Diego, and Imperial counties (CCH 2018). It occurs in windblown sand habitats. A large local population of ribbed cryptantha was observed just east of the proposed Palen Solar Power Project. Suitable habitat for ribbed cryptantha occurs at the Project site within Parcel Group G and possibly on some of the gen-tie routes. Ribbed cryptantha was not observed during plant surveys possibly due to extremely low winter rainfall.

#### **4.3.6 Glandular Ditaxis: CRPR 2B.2**

Glandular ditaxis (*Ditaxis claryana*) is an annual or short-lived perennial that blooms in the fall following the start or rainy season. There are 49 occurrences in the Consortium of California Herbaria (CCH 2018) and there is one record within Desert Center and another near Corn Springs, south of I-10 (CNDDDB 2018). Suitable habitat does occur within the Project site. Glandular ditaxis was not observed during spring plant surveys. If the species does occur within the Project site, then fall plant surveys may yield more accurate results for the species.

#### **4.3.7 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 from San Bernardino, Riverside, Imperial, San Diego, and Sonora, Mexico (CNPS 2018). There are 45 records of this species in California, primarily from Riverside County (CCH 2018). Suitable habitat appears to be present in Parcel Groups D and F and along some of the gen-tie lines. It was not found during field surveys, possibly because of the poor 2017-2018 rainfall.

#### **4.3.8 Harwood's Eriastrum: CRPR 1B.2, BLMS**

Harwood's eriastrum (*Eriastrum harwoodii*), also commonly known as Harwood's woollystar, has a CRPR of 1B.2, has a NatureServe rank of G2/S2 and is a BLM sensitive species. It is a spring annual, typically found in dunes associated with the margins around dry lakes such as Dale, Cadiz, and Soda lakes (CNPS 2018). Reports of this species are known from San Bernardino, Riverside, Imperial, San Diego, and Sonora, Mexico (CNPS 2018). There are 118 records of this species in California (CCH 2018). It has been observed within partially stabilized dunes at nearby project sites. Harwood's eriastrum was not observed on the Athos Project site during spring 2018 surveys, possibly due to the poor 2017-2018 rainfall. There is suitable habitat in the sandy areas of parcel group G and on gen-tie route 3.

#### **4.3.9 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. There is suitable habitat for this twining perennial in the sandy soils of the eastern extent of the Project and slightly more gravelly soils within the creosote bush scrub in the west. Utah milkvine was not observed during spring 2018 surveys, possibly due to the poor 2017-2018 rainfall.

#### **4.3.10 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 2018). 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; it was observed on the gen-tie and the solar farm parcels.

#### **4.3.11 Jackass Clover: CRPR 2B.2**

Jackass clover (*Wislizenia refracta* ssp. *refracta*) is commonly associated with sandy washes, roadsides, or alkaline flats. There are 28 occurrences in the Consortium of California Herbaria most of which are located in San Bernardino County near Twentynine Palms, with only one record in Riverside County east of Indio (CCH 2018). Jackass clover was also documented at several locations from the northern to southern end of Palen Lake in dune habitats during a detailed vegetation mapping and classification project conducted by CNPS Vegetation Program for BLM (Evens & Hartman 2007). Jackass clover is found in sandy washes, roadsides, or alkaline flats. Suitable habitat is present in small patches on the Project site within parcel groups D, F,

and G and some of the gen-tie routes. Jackass clover was not observed during spring 2018 plant surveys, possibly due to the poor 2017-2018 rainfall.

#### **4.3.12 Palmer's Jackass Clover: CRPR 2B.2**

Palmer's jackass clover (*Wislizenia refracta* ssp. *palmeri*) has 15 occurrences in the Consortium of California Herbaria with at least three records near Desert Center (CCH 2018). It typically occupies sandy washes, within Sonoran desert scrub vegetation. Suitable habitat is present in small patches of the Project site within Parcel Groups D, F, and G and some of the gen-tie routes. Palmer's jackass clover was not observed during spring 2018 plant surveys, possibly due to the poor 2017-2018 rainfall.

#### **4.3.13 Creosote Bush Rings**

No creosote bush rings were detected on public or private components of the Project through a desktop GIS analysis. These negative results for creosote bush rings were field verified in the fall of 2018.

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## APPENDIX A

### Potential for Special Status Wildlife Species to Occur Athos Renewable Energy Project

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
<b>AMPHIBIAN and REPTILES</b>				
<b>Couch's spadefoot toad</b>  <i>Scaphiopus couchii</i>	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 to moderate  not observed  potentially occur on G	low to moderate  not observed  potentially occur on gen-tie 3
<b>Agassiz's desert tortoise</b>  <i>Gopherus agassizii</i>	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	low to moderate  live individual not observed, burrows observed on C, F, and west of F;  potentially occur on D, F, gen-tie 3	low to moderate  live individual not observed, burrows observed on gen-tie 3  potentially occur on gen-tie 2A, 2B, 3, 4,
<b>Mojave fringe-toed lizard</b>  <i>Uma scoparia</i>	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	<b>Present</b>  observed on G	low to moderate  potentially occur on gen-tie 1, 1A or gen-tie 3

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
<b>MAMMALS</b>				
<b>Burro deer</b>  <i>Odocoileus hemionus eremicus</i>	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  live individual observed south of G  potentially occur on D, F, G, or gen-tie 3	high  live individual observed south of gen-tie 3, and scat/tracks observed on gen-tie 4  potentially occur on gen-tie 2A, 2B, 3, 4
<b>Desert bighorn sheep</b>  <i>Ovis canadensis nelsoni</i>	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  not observed	low - unsuitable habitat  not observed
<b>Yuma mountain lion</b>  <i>Puma concolor browni</i>	Primarily inhabit the low mountains and extensive wash systems in and around Chuckwalla Bench, Chuckwalla Mountains, Chocolate Mountains, Picacho	Federal: None	low to moderate  not observed	low to moderate  not observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
	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.	State: SSC	potentially occur on D, F, and gen-tie 3	potentially occur on gen-tie 3, 4
<b>American badger</b> <i>Taxidea taxus</i>	Suitable habitat for badgers is characterized by herbaceous, shrub, and open stages of most habitats with dry, friable soils.	Federal: None State: SSC	<b>Present</b> carcass observed in C, dig and burrow observed in A, D, F potentially occur throughout site	high not observed potentially occur throughout gen-tie
<b>Desert kit fox</b> <i>Vulpes macrotis arsipus</i>	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 and complexes observed in A, C, D, E, F potentially occur throughout Project site	high not observed potentially occur throughout Project site
<b>BATS</b>				
<b>Pallid bat</b> <i>Antrozous pallidus</i>	Inhabit low elevation (less than 6,000 feet) rocky, arid deserts and canyon lands. 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	Federal: None State: SSC	foraging moderate, roosting low, not observed potentially forage in D, F, G, gen-tie 1A, 3	foraging moderate, roosting low, not observed potentially forage in gen-tie 1A,1C, 2A, 2B, 3, 4

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
	exfoliating bark, and various human structures (WBWG, 2005)	BLM sensitive	potentially roost in A, B, C, D, F, G, gen-tie 1A, 3	potentially roost in gen-tie 1, 1A, 2A, 2B, 3, 4
<b>Townsend's big-eared bat</b>  <i>Corynorhinus townsendii</i>	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	foraging moderate, roosting low-moderate, not observed  potentially forage in D, F, gen-tie 1A, 3  potentially roost in A, B, C, D, F, G, gen-tie 1A, 3	foraging moderate, roosting low-moderate, not observed  potentially forage in gen-tie 1, 1A,, 2A, 2B, 3, 4  potentially roost in gen-tie 1, 1A, 2A, 2B, 3, 4
<b>Big brown bat</b>  <i>Eptesicus fuscus</i>	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	low not observed  distant from nearest records	low not observed  distant from nearest records
<b>Spotted bat</b>  <i>Euderma maculatum</i>	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	low not observed distant from nearest records	low not observed distant from nearest records
<b>Western mastiff bat</b>  <i>Eumops perotis</i>	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	foraging moderate, roosting low, not observed potentially forage in C, E, D, F, and gen-tie 1A, 3 lacks roosting	foraging moderate, roosting low, not observed potentially forage in gen-tie 1, 1A, 2A, 2B, 3, 4 lacks roosting

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
<b>Hoary bat</b>  <i>Lasiurus cinereus</i>	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	foraging moderate, roosting low not observed	foraging moderate, roosting low not observed
<b>Western yellow bat</b>  <i>Lasiurus xanthinus</i>	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, not observed  potentially forage or roost in D, F, gen-tie 1A, 3	foraging and roosting moderate, not observed  potentially forage or roost in gen-tie 1, 1A, 2A, 2B, 3, 4
<b>California leaf-nosed bat</b>  <i>Macrotus californicus</i>	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	foraging moderate, roosting low not observed  potentially forage in D, F, gen-tie 1A, 3	foraging moderate, roosting low not observed  potentially forage in gen-tie 1, 1A,2A, 2B, 3, 4, ROW access
<b>Arizona myotis</b>  <i>Myotis occultus</i>	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	low not observed  distant from nearest records	low not observed  distant from nearest records
<b>Cave myotis</b>  <i>Myotis velifer</i>	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	Federal: None  State: SSC	low not observed  distant from nearest records	low not observed  distant from nearest records

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
	caves are the main roosts although this species may also use mines, buildings, and bridges for roosts	BLM sensitive		
<b>Yuma myotis</b>  <i>Myotis yumanensis</i>	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	low not observed  distant from nearest records	low not observed  distant from nearest records
<b>Pocketed free-tailed bat</b>  <i>Nyctinomops femorosaccus</i>	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	low not observed  distant from nearest records	low not observed  distant from nearest records
<b>Big free-tailed bat</b>  <i>Nyctinomops macrotis</i>	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	foraging moderate, roosting low not observed  potentially forage D, F, G, gen-tie 1A, 3	foraging moderate, roosting low not observed  potentially forage in gen-tie 1, 1A, 2A, 2B, 3, 4, ROW access
<b>BIRDS</b>				
<b>Golden eagle</b>  (Nesting and wintering)  <i>Aquila chrysaetos</i>	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/Wintering - minimal  Foraging - Low	Nesting/Wintering - minimal  Foraging - Low

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
<b>Short-eared owl (Nesting)</b>  <i>Asio flammeus</i>	Year-round residents in N. California and other parts of CA during wintering. Require open country that supports small mammal 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	migration -moderate, nesting - low, not observed  potentially occur on G	migration-moderate, nesting - low, not observed  potentially occur near gen-tie 3
<b>Western burrowing owl</b>  <i>Athene cunicularia hypugaea</i>	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	high - nesting, foraging  observed live at G, sign at A, B, C, D, E, F, G  potentially occur throughout Project	high - nesting, foraging  not observed  potentially occur throughout Project
<b>Redhead (Nesting)</b>  <i>Aythya americana</i>	During breeding season may be found along e Colorado River and Salton Sea. Breeds locally in the Central Valley, coastal Southern California, eastern Kern County, and the Salton. Nests in fresh emergent wetland bordering open water.	Federal: None  State: SSC	low not observed  distant from nearest records	low not observed  distant from nearest records
<b>Ferruginous hawk (Wintering)</b>  <i>Buteo regalis</i>	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	wintering/migration moderate, nesting low, not observed  potentially forage in D, F, gen-tie 1A, 3	wintering/migration moderate, nesting low, not observed  potentially forage in gen-tie 1, 1A,2A, 2B, 3, and 4, ROW access

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
<p><b>Swainson's hawk</b></p> <p><i>Buteo swainsoni</i></p>	<p>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</p>	<p>Federal: BCC</p> <p>State: ST</p>	<p>migration moderate, nesting - low, observed at G</p> <p>potentially forage throughout Project</p>	<p>migration high, nesting – Low, observed at gen-tie 3</p> <p>potentially forage throughout Project</p>
<p><b>Costa's hummingbird (Nesting)</b></p> <p><i>Calypte costae</i></p>	<p>Primary habitats are desert wash, edges of desert riparian and valley foothill riparian</p>	<p>Federal: BCC</p> <p>State: None</p>	<p>foraging, nesting - moderate not observed</p> <p>potentially forage or nest in D, F, G gen-tie 1A, 3</p>	<p>foraging, nesting - moderate not observed</p> <p>potentially forage or nest in gen-tie 1, 1A, 2A, 2B, 3, 4, ROW access</p>
<p><b>Vaux's swift (Nesting)</b></p> <p><i>Chaetura vauxi</i></p>	<p>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.</p>	<p>Federal: None</p> <p>State: SSC</p>	<p>migration high, nesting - low, not observed</p> <p>potentially migrate throughout Project</p>	<p>migration high, nesting – low not observed</p> <p>potentially migrate throughout Project</p>
<p><b>Mountain plover (Wintering)</b></p> <p><i>Charadrius montanus</i></p>	<p>habitat includes short-grass prairie or their equivalents, and in southern California deserts are associated primarily with agricultural areas</p>	<p>Federal: BCC</p> <p>State: SSC</p> <p>BLM sensitive</p>	<p>wintering moderate, nesting low, not observed</p> <p>potentially forage in A, B, C, E, G</p>	<p>wintering moderate, nesting low, not observed</p> <p>potentially forage in gen-tie 1C</p>
<p><b>Black tern</b></p>	<p>restricted to freshwater habitats while breeding, can be fairly</p>	<p>Federal: None</p>	<p>wintering and nesting low</p>	<p>wintering and nesting low</p>

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
<i>Chlidonias niger</i>	common on bays, salt ponds, river mouths, and pelagic waters in spring and fall migration (Grinnell and Miller 1944, Cogswell, 1977)	State: SSC	not observed uncommon migrant	not observed uncommon migrant
<b>Northern harrier (Nesting)</b>  <i>Circus cyaneus</i>	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	wintering/migration high, nesting low observed flying over Project  potentially forage throughout Project	wintering/migration high, nesting low observed flying over Project  potentially forage throughout Project
<b>Western yellow-billed cuckoo</b>  <i>Coccyzus americanus occidentalis</i>	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	migration and nesting low  not observed  uncommon migrant	migration and nesting low  not observed  uncommon migrant
<b>Gilded flicker</b>  <i>Colaptes chrysoides</i>	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	low  not observed  distant from nearest records	low  not observed  distant from nearest records
<b>Black swift (Nesting)</b>  <i>Cypseloides niger</i>	Nests in moist crevice or cave on sea cliffs r above the surf, or on cliffs behind, or adjacent to, waterfalls in deep canyons. Forages widely over many habitats.	Federal: BCC  State: SSC	migration and nesting low  not observed  uncommon migrant	migration and nesting low  not observed  uncommon migrant

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
<b>Willow flycatcher (Nesting)</b>  <i>Empidonax traillii</i>  <b>Southwestern willow flycatcher</b>  <i>E. t. extimus</i>	<p>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.</p>	<p>Federal: None</p> <p>State: SE</p> <p>Federal: FE</p> <p>State: SE</p>	<p>nesting and wintering low</p> <p>uncommon migrant</p> <p>not observed</p> <p>nesting/winter - low</p> <p>uncommon migrant</p>	<p>nesting and wintering low</p> <p>uncommon migrant</p> <p>not observed</p> <p>nesting/wintering low</p> <p>uncommon migrant</p>
<b>California horned lark</b>  <i>Eremophila alpestris actia</i>	<p>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 tree line. In winter, flocks in desert lowlands and other areas augmented by winter visitors, many migrating from outside the state (Garrett and Dunn 1981).</p>	<p>Federal: None</p> <p>State: WL</p>	<p>high observed</p> <p>potentially occur throughout Project site</p>	<p>high observed</p> <p>potentially occur throughout Project site</p>
<b>Prairie falcon (Nesting)</b>  <i>Falco mexicanus</i>	<p>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</p>	<p>Federal: BCC</p> <p>State: WL</p>	<p>foraging high, nesting low</p> <p>observed</p> <p>potentially occur foraging throughout Project site</p>	<p>foraging high, nesting low</p> <p>observed</p> <p>potentially occur foraging throughout Project site</p>
<b>American peregrine falcon (Nesting)</b>  <i>Falco peregrinus anatum</i>	<p>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</p>	<p>Federal: BCC</p> <p>State: CFP</p>	<p>foraging moderate, nesting low not observed</p> <p>potentially forage throughout Project</p>	<p>foraging moderate, nesting low not observed</p> <p>potentially forage throughout Project</p>

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
<p><b>Sandhill crane (Wintering)</b></p> <p><i>Grus canadensis</i></p>	<p>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.</p>	<p>Federal: None</p> <p>State: SSC</p>	<p>migration moderate, nesting low observed flying over Project</p> <p>migration - throughout Project, but no suitable foraging</p>	<p>migration moderate, nesting low observed flying over Project</p> <p>migration -throughout Project, but no suitable foraging</p>
<p><b>Yellow-breasted chat (Nesting)</b></p> <p><i>Icteria virens</i></p>	<p>This species occupies shrubby riparian habitat with an open canopy, and will nest in non-native species, including tamarisk.</p>	<p>Federal: None</p> <p>State: SSC</p>	<p>migration moderate, nesting low not observed</p> <p>potentially occur foraging during migration in D, F, gen-tie 1, 1A, 3</p>	<p>migration moderate, nesting low not observed</p> <p>potentially occur foraging during migration on gen-tie 1, 1A, 2A, 2B, 3, 4, ROW access</p>
<p><b>Loggerhead shrike (Nesting)</b></p> <p><i>Lanius ludovicianus</i></p>	<p>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</p>	<p>Federal: BCC</p> <p>State: SSC</p>	<p>nesting - high, foraging high observed at E</p> <p>potentially occur throughout Project site</p>	<p>nesting- high, foraging - high not observed</p> <p>potentially occur throughout Project site</p>
<p><b>Gila woodpecker</b></p> <p><i>Melanerpes uropygialis</i></p>	<p>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</p>	<p>Federal: BCC</p> <p>State: SE</p> <p>BLM sensitive</p>	<p>foraging, nesting - low to moderate, not observed</p> <p>potentially occur foraging or nesting on D, F, G gen-tie 1A, 3</p>	<p>foraging, nesting - low to moderate, not observed</p> <p>potentially occur foraging or nesting on gen-tie 1,1A, 2A, 2B, 3, 4</p>
<p><b>Elf owl</b></p> <p><i>Micrathene whitneyi</i></p>	<p>A very rarely seen spring and summer resident of the Colorado River Valley. Nests in desert riparian habitat with cottonwood, sycamore, willow or mesquite;</p>	<p>Federal: BCC</p> <p>State: SE</p>	<p>foraging, nesting - low to moderate not observed</p> <p>potentially occur foraging or nesting on D, F, G gen-tie 1, 1A, 3</p>	<p>foraging, nesting - low to moderate, not observed</p> <p>potentially occur foraging or nesting on gen-tie 1, 1A, 2A, 2B, 3, 4, ROW access</p>

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
	absent from desert riparian habitat dominated by saltcedar	BLM sensitive		
<b>Long-billed curlew (Nesting)</b>  <i>Numenius americanus</i>	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	migration moderate, nesting low not observed  migration throughout Project site, no suitable foraging	migration moderate, nesting low not observed  migration throughout Project site, no suitable foraging
<b>Lucy's warbler (Nesting)</b>  <i>Oreothlypis luciae</i>	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	foraging, nesting moderate, not observed  potentially occur foraging or nesting on D, F, gen-tie 1, 1A, 3	foraging, nesting moderate, not observed  potentially occur foraging or nesting on gen-tie 1, 1A, 2A, 2B, 3, 4, ROW access
<b>American white pelican (Nesting colony)</b>  <i>Pelecanus erythrorhynchos</i>	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	migration moderate, nesting/wintering low not observed  migration throughout Project site, no suitable foraging	migration moderate, nesting/wintering low not observed  migration throughout Project site, no suitable foraging
<b>Black-tailed gnatcatcher</b>	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	Federal: None	foraging, nesting high observed	foraging, nesting high observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
<i>Polioptila melanura</i>	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.	State: WL	potentially occur on B, C, D, E, F, gen-tie 1, 1A, 3	potentially occur on gen-tie 1, 1A, , 2A, 2B, 3, 4, ROW access
<b>Vesper sparrow</b> <i>Pooecetes gramineus</i>	Fairly common locally in southern deserts in the winter and during migration. Occupies grasslands, croplands, and open brush lands.	Federal: None State: SSC	migration moderate, nesting low not observed migration throughout Project site, no suitable wintering or nesting habitat	migration moderate, nesting low not observed migration throughout Project site, no suitable wintering or nesting habitat
<b>Purple martin</b> <i>Progne subis</i>	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	migration moderate, nesting low not observed migration throughout Project site, no suitable wintering or nesting habitat	migration moderate, nesting low not observed migration throughout Project site, no suitable wintering or nesting habitat
<b>Vermilion flycatcher (Nesting)</b> <i>Pyrocephalus rubinus</i>	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	wintering, nesting low not observed migration throughout Project site	wintering, nesting low not observed migration throughout Project site

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
<p><b>Ridgway's (Yuma) clapper rail</b></p> <p><i>Rallus obsoletus yumanensis</i></p>	<p>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</p>	<p>Federal: FE</p> <p>State: ST, CFP</p>	<p>wintering, nesting low not observed</p> <p>rare, migrants only</p>	<p>wintering, nesting low not observed</p> <p>rare, migrants only</p>
<p><b>Bank swallow (Nesting)</b></p> <p><i>Riparia riparia</i></p>	<p>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.</p>	<p>Federal: None</p> <p>State: ST</p> <p>BLM sensitive</p>	<p>wintering, nesting low, migration moderate</p> <p>not observed</p> <p>migration throughout Project site</p>	<p>wintering, nesting low, migration moderate</p> <p>not observed</p> <p>migration throughout Project site</p>
<p><b>Sonora Yellow warbler (Nesting)</b></p> <p><i>Setophaga petechia sonorana</i></p>	<p>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</p>	<p>Federal: BCC</p> <p>State: SSC</p>	<p>nesting low, migration moderate</p> <p>migration throughout Project site</p>	<p>nesting low, migration moderate</p> <p>migration throughout Project site</p>

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
<p><b>Lawrence's goldfinch (Nesting)</b></p> <p><i>Spinus lawrencei</i></p>	<p>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.</p>	<p>Federal: BCC</p> <p>State: none</p>	<p>wintering, nesting low, migration moderate</p> <p>migration throughout Project site</p>	<p>wintering, nesting low, migration moderate</p> <p>migration throughout Project site</p>
<p><b>Bendire's thrasher</b></p> <p><i>Toxostoma bendirei</i></p>	<p>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.</p>	<p>Federal: BCC</p> <p>State: SSC</p> <p>BLM sensitive</p>	<p>foraging moderate, nesting low</p> <p>potentially occur on D, F, gen-tie 1, 1A, 3</p>	<p>foraging moderate, nesting low</p> <p>potentially occur on gen-tie 1, 1A, 2A, 2B, 3, 4, ROW access</p>
<p><b>Crissal thrasher</b></p> <p><i>Toxostoma crissale</i></p>	<p>This species prefers habitats characterized by dense, low scrubby vegetation, which, at lower elevations, includes desert and foothill scrub and riparian brush.</p>	<p>Federal: None</p> <p>State: SSC</p>	<p>wintering, nesting low, migration moderate</p> <p>potentially occur throughout Project site</p>	<p>wintering, nesting low, migration moderate</p> <p>potentially occur throughout Project site</p>
<p><b>Le Conte's thrasher</b></p> <p><i>Toxostoma lecontei</i></p>	<p>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.</p>	<p>Federal: None</p> <p>State: SSC</p>	<p>High</p> <p>potentially occur on C, D, E, F, G, and gen-tie 1, 1A, 3</p>	<p>High</p> <p>potentially occur on gen-tie 1, 1A, 2A, 2B, 3, 4, ROW access</p>

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
<p><b>Arizona Bell's vireo</b></p> <p><i>Vireo bellii arizonae</i></p>	<p>Subspecies <i>V. b. pusillus</i> (endemic to California and Baja California - state and federally listed) and <i>V. b arizonae</i> 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.</p>	<p>Federal: BCC</p> <p>State: SE BLM sensitive</p>	<p>wintering and nesting low, migration moderate</p> <p>migration throughout Project</p>	<p>wintering and nesting low, migration moderate</p> <p>migration throughout Project</p>
<p><b>Least Bell's vireo</b></p> <p><i>V. b. pusillus</i></p>		<p>Federal: FE</p> <p>State: SE</p>	<p>wintering and nesting low, migration moderate</p> <p>migration throughout Project</p>	<p>wintering and nesting low, migration moderate</p> <p>migration throughout Project</p>
<p><b>Yellow-headed blackbird (Nesting)</b></p> <p><i>Xanthocephalus xanthocephalus</i></p>		<p>Federal: None</p> <p>State: SSC</p>	<p>wintering and nesting low, migration moderate</p> <p>migration throughout Project</p>	<p>wintering and nesting low, migration moderate</p> <p>migration throughout Project</p>

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:

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

Bureau of Land Management  
          BLMS = BLM Sensitive

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

## APPENDIX B

### Potential for Special Status Plant Species to Occur Athos Renewable Energy Project

PLANT SPECIES	FORM; HABITAT; DISTRIBUTION (COUNTIES)	CONSERVATION STATUS	ELEVATION (meters)	BLOOMING PERIOD	POTENTIAL TO OCCUR ON PROJECT SITE	
					PRIVATE	PUBLIC
<b>Chaparral sand verbena</b> <i>Abronia villosa var. aurita</i>	Annual herb; sandy – chaparral, coastal scrub, desert dunes; Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura	Federal: none CRPR: 1B.1  BLM sensitive	75 - 1600	Jan-Sep	moderate not observed potentially occur on parcel group A or D	moderate not observed potentially occur on gen-tie 1A or 3
<b>Angel trumpets</b> <i>Acleisanthes longiflora</i>	Perennial 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	low - distant from known records  not observed
<b>Desert sand parsley</b> <i>Ammoselinum giganteum/ Spermolepis gigantea</i>	Annual herb; Sonoran Desert scrub, Riverside-known in CA only from Hayfields Dry Lake	Federal: none  CRPR: 2B.1	~152	Mar-Apr	low - distant from known records  not observed	low – distant from known records  not observed
<b>Small-flowered androstrophium</b> <i>Androstephium breviflorum</i>	perennial bulbiferous herb; desert dunes, Mojavean desert scrub (bajada); San Bernardino, Riverside, Inyo	Federal: none  CRPR: 2B.2	220 - 800	Mar-Apr	low - distant from known records  not observed	low – distant from known records  Not observed
<b>Harwood’s milkvetch</b> <i>Astragalus insularis var. harwoodii</i>	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	Moderate  not observed potentially occur on G	Moderate  not observed potentially occur on gen-tie 1A or 3

PLANT SPECIES	FORM; HABITAT; DISTRIBUTION (COUNTIES)	CONSERVATION STATUS	ELEVATION (meters)	BLOOMING PERIOD	POTENTIAL TO OCCUR ON PROJECT SITE	
					PRIVATE	PUBLIC
<b>Coachella Valley milkvetch</b> <i>Astragalus lentiginosus</i> var. <i>coachellae</i>	Annual/perennial herb; Desert dunes -Sonoran desert scrub (sandy); Riverside Coachella Valley Preserve System	Federal: FE  CRPR: 1B.2  BLM sensitive	40-655	Feb-May	low - distant from known records  not observed	low - distant from known records  not observed
<b>California ayenia</b> <i>Ayenia compacta</i>	Perennial herb; Mojavean desert scrub Sonoran desert scrub; Riverside, San Bernardino, San Diego	Federal: none  CRPR: 2B.3	150-1095	Mar-Apr	low - distant from known records  not observed	low - distant from known records  not observed
<b>Pink fairy duster</b> <i>Calliandra eriophylla</i>	perennial deciduous shrub Sonoran Desert scrub (sandy or rocky); Imperial, Riverside, San Diego	Federal: none  CRPR: 2B.3	120 - 1500	Jan-Mar	minimal  not observed	minimal  not observed
<b>Sand evening-primrose</b> <i>Chylisimia</i> <i>arenaria</i> [= <i>Camissonia arenaria</i> ]	annual / perennial herb; Sonoran Desert scrub (sandy or rocky); Imperial, Riverside, San Bernardino	Federal: none  CRPR: 2B.2	70-915	Nov-May	low - distant from known records  not observed	low- distant from known records  not observed
<b>Crucifixion thorn</b> <i>Castela emoryi</i>	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	<b>Present</b>  observed at D	moderate  not observed
<b>Abram's spurge</b> <i>Chamaesyce abramsiana</i>	Annual herb; sandy - Mojavean desert scrub, Sonoran Desert scrub, Imperial, San Bernardino, San Diego, Riverside	Federal: none  CRPR: 2B.2	5-1310	Aug-Nov	Moderate  Not observed potentially occur on C, D, E, F, or gen-tie 1A, 3	Moderate  Not observed potentially occur on gen-tie 1A, 1C, 2A, 2C, 3, 4

PLANT SPECIES	FORM; HABITAT; DISTRIBUTION (COUNTIES)	CONSERVATION STATUS	ELEVATION (meters)	BLOOMING PERIOD	POTENTIAL TO OCCUR ON PROJECT SITE	
					PRIVATE	PUBLIC
<b>Arizona spurge</b> <i>Chamaesyce arizonica</i>	Perennial herb; Sonoran Desert scrub (sandy); Imperial, Riverside, San Diego	Federal: none CRPR: 2B.3	50-300	Mar-Apr	low - distant from known records Not observed	low – distant from known records Not observed
<b>Flat-seeded spurge</b> <i>Chamaesyce platysperma</i>	Annual herb; Desert dunes - Sonoran Desert scrub (sandy); Imperial Riverside, San Bernardino, San Diego	Federal: none CRPR: 1B.2 BLM sensitive	65-100	Feb-Sep	low - distant from known records not observed	low - distant from known records not observed
<b>Las Animas colubrina</b> <i>Colubrina californica</i>	Perennial deciduous shrub; Mojavean desert scrub, Sonoran desert scrub Imperial; Riverside, San Diego	Federal: none CRPR: 2B.3	10-1000	Apr-Jun	minimal not observed	minimal not observed
<b>Spiny abrojo</b> <i>Condalia globosa</i> var. <i>pubescens</i>	Perennial deciduous shrub, Sonoran desert scrub, Imperial, Riverside, San Diego	Federal: none CRPR: 4.2	85-1000	Mar-Nov	minimal not observed	minimal not observed
<b>Foxtail cactus</b> <i>Coryphantha alversonii</i>	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	minimal not observed	minimal not observed
<b>Ribbed cryptantha</b> <i>Cryptantha costata</i>	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	moderate not observed potentially occur on A, C, D, E, F, G, or gen-tie 1A, 3	moderate not observed potentially occur on gen-tie 1A, 1C, 2A, 2B, 3, 4
<b>Winged cryptantha</b>	Annual herb; Mojavean desert scrub - Sonoran	Federal: none	100-1690	Mar-Apr	low - distant from known records	low - distant from known records

PLANT SPECIES	FORM; HABITAT; DISTRIBUTION (COUNTIES)	CONSERVATION STATUS	ELEVATION (meters)	BLOOMING PERIOD	POTENTIAL TO OCCUR ON PROJECT SITE	
					PRIVATE	PUBLIC
<i>Cryptantha holoptera</i>	desert scrub Imperial, Inyo, Riverside, San Bernardino, San Diego	CRPR: 4.3			Not observed	Not observed
<b>Wiggins' cholla</b> <i>Cylindropuntia wigginsii</i> [= <i>Opuntia wigginsii</i> ]	Perennial stem succulent. Sonoran desert scrub (sandy) Imperial, Riverside, San Bernardino, San Diego	Federal: none CRPR: 3.3	30-885	Mar	minimal not observed	minimal not observed
<b>Utah milkvine</b> <i>Cynanchum utahense</i> (syn=[ <i>Funastrum utahense</i> ])	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 potentially occur on A, C, D, E, F, G, or gen-tie 1A, 3	moderate no observed potentially occur on gen-tie 1A, 1C, 2A, 2B, 3, 4
<b>Glandular ditaxis</b> <i>Ditaxis claryana</i>	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 potentially occur on A, C, D, E, F, G, or gen-tie 1A, 3	moderate not observed potentially occur on gen-tie 1A, 1C, 2A, 2B, 3, 4
<b>California ditaxis</b> <i>Ditaxis serrata</i> var. <i>californica</i>	Perennial herb; Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego	Federal: none CRPR: 3.2	30-1000	Mar-Dec	moderate not observed potentially occur on A, C, D, E, F, G, or gen-tie 1A, 3	moderate not observed potentially occur on gen-tie 1A, 1C, 2A, 2B, 3, 4
<b>Cottontop cactus</b> <i>Echinocactus polycephalus</i> var. <i>polycephalus</i>	Perennial stem succulent. Rocky hills, silt valleys; Sonoran desert scrub; Imperial, Inyo, Riverside, San Bernardino, San Diego	Federal: none CRPR: CBR	<1400	Mar-Aug	minimal not observed	minimal not observed
<b>Harwood's Eriastrum</b> <i>Eriastrum harwoodii</i>		Federal: none CRPR: 1B.2	125-915	Mar-Jun	moderate not observed	moderate not observed

PLANT SPECIES	FORM; HABITAT; DISTRIBUTION (COUNTIES)	CONSERVATION STATUS	ELEVATION (meters)	BLOOMING PERIOD	POTENTIAL TO OCCUR ON PROJECT SITE	
					PRIVATE	PUBLIC
	annual herb; Desert dunes; Riverside, San Bernardino, San Diego	BLM sensitive			potentially occur on A, G, or gen-tie 1A, 3	potentially occur on gen-tie 1A, 3
<b>California satintail</b> <i>Imperata brevifolia</i>	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	minimal not observed	minimal not observed
<b>Pink velvet mallow</b> <i>Horsfordia alata</i>	Perennial shrub; Sonoran desert scrub (rocky); Imperial, Riverside	Federal: none CRPR: 4.3	100-500	Feb-Dec	minimal not observed	minimal not observed
<b>Bitter hymenoxys</b> <i>Hymenoxys odorata</i>	Annual herb sandy; Riparian scrub, Sonoran desert scrub; San Bernardino, Riverside, Imperial	Federal: none CRPR: 2B.1	45-150	Feb-Nov	low - distant from known records Not observed	low - distant from known records Not observed
<b>Spearleaf</b> <i>Matelea parvifolia</i>	Perennial herb; rocky - Mojavean desert scrub, Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego	Federal: none CRPR: 2B.3	440-1095	Mar-May	low - distant from known records not observed	low - distant from known records not observed
<b>Argus blazing star</b> <i>Mentzelia puberula</i>	Perennial herb; sandy or rocky -Mojavean desert scrub Sonoran desert scrub, Imperial, Riverside, San Bernardino	Federal: none CRPR: 2B.2	90-1280	Mar-May	low - unsuitable habitat not observed	low - unsuitable habitat not observed

PLANT SPECIES	FORM; HABITAT; DISTRIBUTION (COUNTIES)	CONSERVATION STATUS	ELEVATION (meters)	BLOOMING PERIOD	POTENTIAL TO OCCUR ON PROJECT SITE	
					PRIVATE	PUBLIC
<b>Slender cotton-heads</b> <i>Nemacaulis denudata</i> var. <i>gracilis</i>	Annual herb; coastal dunes, desert dunes, Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego	Federal: none  CRPR: 2B.2	-450	Mar-May	low - distant from known records  not observed	low - distant from known records  not observed
<b>Lobed cherry</b> <i>Physalis lobata</i>	Perennial herb; Mojavean desert scrub (decomposed granitic), Playas; San Bernardino	Federal: none  CRPR: 2B.3	500-800	May-Jan	Low- habitat  not observed	Low – habitat  not observed
<b>Desert portulaca</b> <i>Portulaca halimoides</i>	Annual herb; Joshua tree woodland (sandy, San Bernardino, Riverside)	Federal: none  CRPR: 4.2	1000-2000	Sep	low - unsuitable elevation  not observed	low - unsuitable elevation  not observed
<b>Desert unicorn plant</b> <i>Proboscidea althaeifolia</i>	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	<b>Present</b>  Observed at A, B, C and gen-tie 1A	<b>Present</b>  Observed at gen-tie 1A
<b>Orocopia sage</b> <i>Salvia greatae</i>	Perennial evergreen shrub; Mojavean desert scrub, Sonoran desert scrub; Imperial, Riverside, San Bernardino	Federal: none  CRPR: 1B.3  BLM sensitive	-865	Mar-Apr	minimal  not observed	minimal  not observed
<b>Desert spikemoss</b> <i>Selaginella eremophila</i>	Perennial rhizomatous herb; chaparral, Sonoran desert scrub (gravelly or rocky); Imperial, Riverside, San Diego	Federal: none  CRPR: 2B.2	200-1295	May-Jul	minimal  not observed	minimal  not observed

PLANT SPECIES	FORM; HABITAT; DISTRIBUTION (COUNTIES)	CONSERVATION STATUS	ELEVATION (meters)	BLOOMING PERIOD	POTENTIAL TO OCCUR ON PROJECT SITE	
					PRIVATE	PUBLIC
<b>Cove's cassia</b> <i>Senna covesii</i>	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	low – unsuitable elevation  not observed	low-unsuitable elevation  not observed
<b>Mesquite nest straw</b> <i>Stylocline sonorensis</i>	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	low - distant from known records  not observed
<b>Dwarf germander</b> <i>Teucrium cubense ssp. depressum</i>	Annual herb; desert dunes, playas margins; Sonoran desert scrub, Imperial, Riverside	Federal: none  CRPR: 2B.2	45-400	Mar-Nov	low - distant from known records  not observed	low - distant from known records  not observed
<b>Jackass clover</b> <i>Wislizenia refracta ssp. refracta</i>	Annual herb; desert dunes, Mojavean desert scrub, playas, Sonoran desert scrub, Riverside, San Bernardino	Federal: none  CRPR: 2B.2	600-800	Apr-Nov	moderate  not observed potentially occur on A, C, D, E, F, G, or gen-tie 1A, 3	moderate  not observed potentially occur on gen-tie 1A, 1C, 2A, 2B, 3, 4
<b>Palmer's jackass clover</b> <i>Wislizenia refracta ssp. Palmeri</i>	perennial deciduous shrub; Chenopod scrub, Desert dunes, Sonoran desert scrub, Sonoran thorn woodland, Riverside, San Diego	Federal: none  CRPR: 2B.2	0-300	Jan-Dec	moderate  not observed potentially occur on A, C, D, E, F, G, or gen-tie 1A, 3	moderate  not observed potentially occur on gen-tie 1A, 1C, 2A, 2B, 3, 4
<b>"Palen Lake atriplex"</b> <i>Atriplex sp. nov. J. Andre (Atriplex canescens ssp.)</i>	Perennial shrub; Saline habitats, playa margins of Palen Dry Lake; Riverside	Federal: none CRPR: none BLM sensitive	<160	May-Jun	minimal  not observed	minimal  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 = BLM Manual §6840 defines sensitive species as those species that are (1) under status review by the FWS/NMFS; or (2) whose numbers are declining so rapidly that Federal listing may become necessary, or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats. BLM, 2001

## APPENDIX C

### Athos Renewable Energy Project Wildlife Species Observed Fall 2017-Spring 2018

COMMON NAME	SCIENTIFIC NAME
<b>Mammals</b>	
antelope ground squirrel	<i>Ammospermophilus leucurus</i>
round tail ground squirrel	<i>Xerospermophilus tereticaudus</i>
black tailed jackrabbit	<i>Lepus californicus</i>
desert kit fox	<i>Vulpes macrotis</i>
coyote	<i>Canis latrans</i>
burro deer	<i>Odocoileus hemionus</i>
<b>Reptiles</b>	
sidewinder rattlesnake	<i>Crotalus cerastes</i>
desert iguana	<i>Dipsosaurus dorsalis</i>
side blotched lizard	<i>Uta stansburiana</i>
western whiptail lizard	<i>Aspidoscelis tigris</i>
zebra-tailed Lizard	<i>Calisaurus draconoides</i>
<b>Birds</b>	
American kestrel	<i>Falco sparverius</i>
Anna's hummingbird	<i>Calypte anna</i>
ash-throated flycatcher	<i>Myiarchus cinerascens</i>
barn owl	<i>Tyto alba</i>
black phoebe	<i>Sayornis nigricans</i>
black tailed gnatcatcher	<i>Polioptila melanura</i>
black throated sparrow	<i>Amphispiza bilineata</i>
black-headed grosbeak	<i>Pheucticus melanocephalus</i>
black-necked stilt	<i>Himantopus mexicanus</i>
black-tailed gnatcatcher	<i>Polioptila melanura</i>
blue grey gnatcatcher	<i>Polioptila caerulea</i>
brown headed cowbird	<i>Molothrus ater</i>
burrowing owl	<i>Athene cunicularia</i>
cactus wren	<i>Campylorhynchus brunneicapillus</i>
common poorwill	<i>Phalaenoptilus nuttallii</i>
common raven	<i>Corvus corax</i>
common yellowthroat	<i>(Geothlypis trichas)</i>
Cooper's hawk	<i>Accipiter cooperii</i>
Eurasian collared-dove	<i>Streptopelia decaocto</i>
European starling	<i>Sturnus vulgaris</i>
Gambel's quail	<i>Callipepla gambelii</i>

COMMON NAME	SCIENTIFIC NAME
greater roadrunner	<i>Geococcyx californianus</i>
greater yellowlegs	<i>Tringa melanoleuca</i>
great-tailed grackle	<i>Quiscalus mexicanus</i>
hooded oriole	<i>Icterus cucullatus</i>
horned lark	<i>Eremophila alpestris</i>
house finch	<i>Carpodacus menicanus</i>
killdeer	<i>Charadrius vociferus</i>
ladder-backed woodpecker	<i>Picoides scalaris</i>
lesser nighthawk	<i>Chordeiles acutipennis</i>
Lincoln's sparrow	<i>Melospiza lincolni</i>
loggerhead shrike	<i>Lanius ludovicianus</i>
MacGillivray's warbler	<i>Geothlypis tolmiei</i>
mourning dove	<i>Zenaida macroura</i>
northern flicker	<i>Colaptes auratus</i>
northern harrier	<i>Circus cyaneus</i>
pacific-slope flycatcher	<i>Empidonax difficilis</i>
prairie falcon	<i>Falco mexicanus</i>
red railed hawk	<i>Buteo jamaicensis</i>
red-necked phalarope	<i>Phalaropus lobatus</i>
red-winged blackbird	<i>Agelaius phoeniceus</i>
ruby crowned kinglet	<i>Regulus calendula</i>
ruddy duck	<i>Oxyura jamaicensis</i>
sandhill crane	<i>Antigone canadensis</i>
Say's phoebe	<i>Sayornis saya</i>
spotted sandpiper	<i>Actitis macularius</i>
Swainson's hawk	<i>Buteo swainsoni</i>
Townsend's warbler	<i>Setophaga townsendi</i>
turkey vulture	<i>Cathartes aura</i>
verdin	<i>Auriparus flaviceps</i>
warbling vireo	<i>Vireo gilvus</i>
western kingbird	<i>Tyrannus verticalis</i>
western meadowlark	<i>Sturnella neglecta</i>
western tanager	<i>Piranga ludoviciana</i>
western wood-pewee	<i>Contopus sordidulus</i>
white-faced ibis	<i>Plegadis chihi</i>
white-winged dove	<i>Zenaida asiatica</i>
willow flycatcher	<i>Empidonax traillii</i>
Wilson's phalarope	<i>Phalaropus tricolor</i>
Wilson's warbler	<i>Cardellina pusilla</i>
yellow-rumped (Audubon's)warbler	<i>Setophaga coronata</i>
yellow Warbler	<i>Setophaga petechia</i>

## APPENDIX D

### Athos Renewable Energy Project Plant List, Spring and Fall 2018

SCIENTIFIC NAME	COMMON NAME	GENUS	SOLAR FARM	GEN-TIE
<i>Abronia villosa</i>	sand verbena	Nyctaginaceae	X	
<i>Achyronychia cooperi</i>	onyx flower	Caryophyllaceae	X	X
<i>Allionia incarnata</i>	windmills	Nyctaginaceae	X	
<i>Ambrosia dumosa</i>	white bursage	Asteraceae	X	X
<i>Ambrosia salsola</i>	cheesebush	Asteraceae	X	X
<i>Amaranthus fimbriatus</i>	fringed amaranth	Amaranthaceae	X	
<i>Amsinckia tessellata</i>	devil's lettuce	Boraginaceae	X	
<i>Aristida</i> sp.	three-awn	Poaceae	X	
* <i>Antennaria</i> sp.	pussy toes	Asteraceae	X	
<i>Asclepias erosa</i>	desert milkweed	Apocynaceae	X	
<i>Asclepias subulata</i>	skeleton milkweed	Apocynaceae	X	
<i>Atriplex polycarpa</i>	allscale saltbush	Chenopodiaceae	X	X
<i>Baileya</i> sp.	desert marigold	Asteraceae	X	
<i>Bebbia juncea</i> var. <i>aspera</i>	rush sweetbush	Asteraceae	X	
<i>Boerhavia</i> sp.	slender spiderling	Nyctaginaceae	X	
<i>Bouteloua</i> sp.	six-weeks gramma	Poaceae	X	
<i>Brandegea bigelovii</i>	desert starvine	Cucurbitaceae	X	
* <i>Brassica tournefortii</i>	Sahara mustard	Brassicaceae	X	X
* <i>Carpobotus edulis</i>	highway ice plant	Aizoaceae	X	
<b><i>Castela emoryi</i></b>	<b>Crucifixion thorn</b>	Simaroubaceae	X	
<i>Caulanthus lasiophyllus</i>	California mustard	Brassicaceae	X	
<i>Chaenactis carphoclinia</i>	pebble pincushion	Asteraceae	X	
<i>Chaenactis fremontii</i>	Fremont's pincushion	Asteraceae	X	X
<i>Chaenactis</i> sp.	pincushion	Asteraceae	X	X
<i>Chorizanthe brevicornu</i>	brittle spineflower	Polygonaceae	X	X
<i>Chorizanthe rigida</i>	spiny herb	Polygonaceae	X	
<i>Chylismia brevipes</i> ssp. <i>Brevipes</i>	golden suncup	Onagraceae	X	X
<i>Chylismia claviformis</i>	browneyes	Onagraceae	X	
<i>Croton californicus</i>	California croton	Euphorbaceae	X	
<i>Cryptantha angustifolia</i>	narrow leaved cryptantha	Boraginaceae	X	X

SCIENTIFIC NAME	COMMON NAME	GENUS	SOLAR FARM	GEN-TIE
<i>Cryptantha maritima</i>	Guadalupe cryptantha	Boraginaceae	X	
<i>Cryptantha micrantha</i>	redroot cryptantha	Boraginaceae	X	
<i>Cryptantha</i> sp.	cryptantha	Boraginaceae	X	
<i>Cucurbita palmata</i>	coyote melon	Cucurbitaceae	X	
<i>Cylindropuntia echinocarpa</i>	silver cholla	Cactaceae	X	X
<i>Cylindropuntia ramosissima</i>	pencil cholla	Cactaceae	X	
<i>Dalea mollis</i>	hairy prairie clover	Fabaceae	X	
<i>Dalea mollissima</i>	silky dalea	Fabaceae	X	X
<i>Datura discolor</i>	jimson weed	Solanaceae	X	X
<i>Distichlis spicata</i>	salt grass	Poaceae	X	
<i>Ditaxis lanceolata</i>	narrowleaf ditaxis	Euphorbaceae	X	
<i>Ditaxis neomexicana</i>	New Mexico ditaxis	Euphorbaceae	X	
<i>Encelia farinosa</i>	brittlebush	Asteraceae	X	X
<i>Encelia frutescens</i>	button brittlebush	Asteraceae	X	
<i>Erigeron bonariensis</i> [= <i>Conyza bonariensis</i> ]	flax-leaved horseweed	Asteraceae	X	
<i>Eremalche rotundifolia</i>	desert fivespot	Malvaceae	X	
<i>Eremothera boothii</i> ssp. <i>condensata</i>	Booth's suncup	Onagraceae	X	
* <i>Erodium cicutarium</i>	red stem filaree	Geraniaceae	X	X
<i>Eriogonum reniforme</i>	kidney leaf buckwheat	Polygonaceae	X	
<i>Eriogonum trichopes</i>	little desert buckwheat	Polygonaceae	X	
<i>Eriogonum</i> sp.	annual buckwheat	Polygonaceae	X	
<i>Euphorbia polycarpa</i>	smallseed sandmat	Euphorbaceae	X	
<i>Fagonia laevis</i>	California fagonia	Zygophyllaceae	X	
<i>Ferocactus acanthodes</i>	barrel cactus	Cactaceae	X	
<i>Ferocactus cylindraceus</i> var. <i>cylindraceus</i>	barrel cactus	Cactaceae	X	
<i>Fouquieria splendens</i>	ocotillo	Fouquieriaceae	X	X
<i>Geraea canescens</i>	desert sunflower	Asteraceae	X	X
<i>Heliotropium curassavicum</i>	Chinese parsley	Boraginaceae	X	
<i>Hesperocallis undulata</i>	desert lily	Liliaceae	X	
<i>Hibiscus denudatus</i>	paleface	Malvaceae	X	
<i>Hilaria rigida</i>	big galleta grass	Poaceae	X	X
<i>Hyptis emoryi</i>	desert lavender	Lamiaceae	X	
<i>Justicia californica</i>	chuparosa	Acanthaceae	X	
<i>Kallstroemia californica</i>	California caltrop	Zygophyllaceae	X	

SCIENTIFIC NAME	COMMON NAME	GENUS	SOLAR FARM	GEN-TIE
<i>Krameria bicolor</i>	white rhatany	Krameriaceae	X	X
<i>Larrea tridentata</i>	creosote bush	Zygophyllaceae	X	X
<i>Lepidium lasiocarpum</i>	pepperweed	Brassicaceae	X	
<i>Lupinus sp.</i>	Lupine	Fabaceae	X	
<i>Lycium andersonii</i>	Anderson's desert thorn	Solanaceae	X	
<i>Malacothrix glabrata</i>	desert dandelion	Asteraceae	X	X
<i>Mammillaria tetrancistra</i>	fishhook cactus	Cactaceae	X	
<i>Marina parryi</i>	Parry's false prairie clover	Fabaceae	X	
<i>Mentzelia albicaulis</i>	white stemmed stickleaf	Loasaceae	X	
<i>Mentzelia involucrata</i>	whitebract blazingstar	Loasaceae	X	
<i>Nicotiana obtusifolia</i>	desert tobacco	Solanaceae	X	
<i>Oenothera caespitosa</i>	fragrant evening primrose	Onagraceae	X	X
<i>Oenothera deltooides</i> ssp. <i>deltooides</i>	birdcage desert primrose	Onagraceae	X	
<i>Olneya tesota</i>	desert ironwood	Fabaceae	X	X
<i>Opuntia basilaris</i>	prickly pear cactus	Cactaceae	X	
<i>Orobanche cooperi</i>	desert broomrape	Orobanchaceae	X	
<i>Palafoxia arida</i> var. <i>arida</i>	Spanish needles	Asteraceae	X	X
<i>Parkinsonia florida</i>	blue palo verde	Fabaceae	X	X
<i>Pectis papposa</i> var. <i>papposa</i>	chinch weed	Asteraceae	X	
<i>Perityle emoryi</i>	Emory's rockdaisy	Asteraceae	X	
<i>Petalonyx thurberi</i>	sandpaper plant	Loasaceae	X	
<i>Petunia axillaris</i>	large white petunia	Solanaceae	X	
<i>Phacelia crenulata</i>	purplestem phacelia	Boraginaceae	X	
<i>Phacelia sp.</i>	annual phacelia	Boraginaceae	X	
<i>Phacelia distans</i>	common phacelia	Boraginaceae	X	
<i>*Phoenix dactylifera</i>	date palm	Areaceae	X	
<i>Physalis crassifolia</i>	ground cherry	Solanaceae	X	
<i>Plantago ovata</i>	wooly plantain	Plantaginaceae	X	
<b><i>Proboscidea althaeifolia</i></b>	<b>Desert Unicorn plant</b>	Martyniaceae	<b>X</b>	<b>X</b>
<i>Peucephyllum schottii</i>	desert pine	Asteraceae	X	
<i>Prosopis glandulosa</i>	honey mesquite	Fabaceae	x	X
<i>Psathyrotes ramosissima</i>	turtleback	Asteraceae	X	
<i>Psorothamnus emoryi</i>	indigo bush	Fabaceae	X	X
<i>Psorothamnus schottii</i>	Schott's indigo bush	Fabaceae	X	

SCIENTIFIC NAME	COMMON NAME	GENUS	SOLAR FARM	GEN-TIE
<i>Psorothamnus spinosus</i>	smoke tree	Fabaceae	X	X
* <i>Saccharum</i> sp.	Sugar cane	Poaceae	X	
* <i>Salsola tragus</i>	Russian thistle	Chenopodiaceae	X	
* <i>Schismus arabicus</i>	Mediterranean grass	Poaceae	x	
<i>Senegalia greggii</i>	catclaw acacia	Fabaceae	X	
<i>Simmondsia chinensis</i>	Jojoba	Simmonsiaceae	X	
<i>Sphaeralcea ambigua</i>	desert globemallow	Malvaceae	X	
<i>Stillingia</i> sp.	Mojave toothleaf	Euphorbaceae	X	
* <i>Tamarix</i> sp.	tamarisk	Tamariaceae	X	
<i>Tidestromia suffruticosa</i> var. <i>oblongifolia</i>	Arizona honeysweet	Amaranthaceae	X	X
<i>Tiquilia plicata</i>	fanleaf crinklemat	Boraginaceae	X	
<i>Washingtonia filifera</i>	California fan palm	Arecaceae	X	X
* <i>Washingtonia robusta</i>	Mexican fan palm	Arecaceae	X	
* <i>Antennaria</i> sp.	pussytoes	Asteraceae	X	
* <i>Carpobotus edulis</i>	highway ice plant	Aizoaceae	X	

\*= non-native plant

**BOLD** = sensitive plant species

# Appendix C.2

## Jurisdictional Delineation

**JURISDICTIONAL WATERS REPORT  
ATHOS RENEWABLE ENERGY PROJECT  
RIVERSIDE COUNTY, CALIFORNIA**



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February, 2019

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## List of Acronyms

amsl	above mean sea level
BLM	Bureau of Land Management
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFGF	California Fish and Game Code
CWA	Clean Water Act
DRECP	Desert Renewable Energy Conservation Plan
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
GIS	Geographic Information Systems
GPS	Global Positioning System
LSAA	Lake and Streambed Alteration Agreement
MESA	Mapping Episodic Stream Activity
NAIP	National Agriculture Imagery Program
NVCS	National Vegetation Classification System
PV	Photovoltaic
RWQCB	Regional Water Resources Control Board
SWANCC	Solid Waste Agency of North Cook County
SWRCB	State Water Resources Control Board
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
WDR	Waste Discharge Requirement
WRCC	Western Regional Climate Center

# **1 INTRODUCTION**

## **1.1 Background**

Intersect Power, LLC has proposed the Athos Renewable Energy Project (Project) in unincorporated Riverside County, California. The solar facility would be located on seven non-contiguous groups of private land parcels with approximately eleven miles of generation interconnection (gen-tie) transmission lines crossing both private and Bureau of Land Management (BLM) managed lands connecting to the existing Southern California Edison Red Bluff substation. The Project is expected to generate 500 megawatts of renewable energy.

This Jurisdictional Waters Report presents the methods, results, and recommendations associated with the jurisdictional waters evaluation performed in 2018. The primary purpose of this report is to provide the location of and quantify jurisdictional waters within the Project site. Information found in this report would be evaluated during future site design, impact calculations, and permitting process.

## **1.2 Site Location**

The site is situated within the Chuckwalla Valley located near the community of Desert Center, halfway between the cities of Indio and Blythe (Figure 1). The Project site consists of approximately 3456.8 acres, 3262.9 acres on privately owned land and 193.9 acres on BLM-managed land (acreages were obtained from shapefile data that may result in small discrepancies between different documents for the Project).

The privately-owned land consists of seven non-contiguous groups of land parcels (A-G) that will accommodate the photovoltaic (PV) and storage components of the Project. The northernmost parcel group A is just northwest of California Highway 177 (CA-177) while the remaining parcels are located southeast of CA-177 but occur north of Interstate 10 (I-10) (Figure 2). The land uses associated with the privately-owned parcels include a combination of active and historical agricultural lands, and disturbed/developed lands (2,838.3 acres) and native undisturbed habitat (422.3 acres). The gen-tie will cross BLM managed lands to connect the solar facilities to the Red Bluff substation.

The site is in the Sonoran Desert ecoregion setting, Chuckwalla Valley ecoregion subarea, of the Desert Renewable Energy Conservation Plan (DRECP; BLM, 2016). The BLM-managed lands within the Project site are located within a Development Focus Area, as designated by the DRECP Final EIS/EIR and approved by a Record of Decision signed by the BLM on 14 September 2016. These Federal lands are also located within the Riverside East Solar Energy Zone per BLM's 2012 Western Solar Plan analyzed in the Final Programmatic Environmental Impact Statement for Solar

Energy Development in Six Southwestern States that was approved by a Record of Decision signed by the BLM on 12 October 2012.

### **1.3 Project Summary**

The following summary of the project components, construction methods, schedule, and operation and maintenance activities are based on information provided by Intersect Power.

#### **Solar fields**

The Project's PV modules would be manufactured at an offsite location and transported to the Project site. Panels would be arranged in strings with a maximum height of 12 feet. Panel faces would be minimally reflective, dark in color, and highly absorptive.

Panels would be arranged on the site in solar arrays. Spacing between each row would be a minimum of 4 feet. Structures supporting the PV modules would consist of steel piles which would be driven into the soil using pneumatic techniques, such as a hydraulic rock hammer attachment on the boom of a rubber-tired backhoe excavator. The piles typically would be spaced 10 feet apart. The total height of the panel system measured from ground surface would be up to 12 feet. Where excavations are required, the majority would be limited to less than 6 feet in depth, however, some excavations, such as those undertaken for the installation of collector poles and dead-end structures, may reach depths of 20 feet or more.

Each 2-MW PV panel increment would include an inverter-transformer station constructed on a concrete pad or steel skid, and centrally located within the PV arrays. Each inverter-transformer station would contain electrical components and a security camera at the top of an approximately 20-foot pole. An inverter shade structure may also be installed at each one. The shade structure would consist of wood or metal supports and a durable outdoor material shade structure (metal, vinyl, or similar). The shade structure would extend up to 10 feet above the top of the inverter pad.

Underground cables would be installed to convey electricity from the panels, via combiner boxes located throughout the PV arrays, to inverter-transformer stations. From there, the 34.5 kV level collection cables would either be buried underground or installed overhead on wood poles. If the collection system is installed overhead, some of the wood poles could be located at the outside edge of the property line, but a majority of these poles are expected to be located interior to the site. Approximately 300 to 500 wood poles located at 250-foot intervals could be installed across the entire site. The typical height of the poles would be approximately 30 to 50 feet.

Up to four substations would be located within the proposed solar sites. The area of each substation and associated equipment would be approximately 37,500 square feet (150 feet by

250 feet). Substation equipment would be built on concrete pad foundations, and the remaining area would be graveled to a maximum depth of approximately 6 inches. Each substation would be surrounded by an up-to 6-foot high chain link fence topped with one foot of barbed wire.

The Project may use one of the existing homes on the solar facility site as an O&M building, or it may use the septic system of an existing home and build a new O&M building. If a new O&M building is constructed, it would be approximately 3,000 square feet in size and approximately 15 feet at its tallest point.

A fiber optic or other cabling system would be installed for remote monitoring of operation and/or remote control of critical components. It typically would be installed in buried conduit, leading to one or more Supervisory Control and Data Acquisition System (SCADA) system cabinets located within the Project site. External telecommunications connections could be provided through wireless or hard-wired connections to locally available commercial service providers. The Project's SCADA system would interconnect to this fiber optic network at the Red Bluff Substation, and no additional disturbance associated with telecommunications is anticipated.

The Project could include, at the Applicant's option, a battery or flywheel storage system capable of storing up to 500 MW of electricity. If installed, the storage system would consist of battery or flywheel banks housed in electrical enclosures and buried electrical conduit. The battery system would either be concentrated near the Project substations or dispersed throughout the solar facility sites. Up to 3,000 electrical enclosures measuring approximately 40 feet by 8 feet by 8.5 feet high would be installed on concrete foundations designed for secondary containment. Battery systems are operationally silent, and flywheel systems have a noise rating of 45 dBA.

The Project would include a permanent meteorological (met) data collection system, consisting of approximately 15 met stations, each with multiple weather sensors mounted on a main mast approximately 20 feet tall.

Solar field ingress/egress would be via locked gates located at multiple points. The boundaries of the Project sites would be secured by up-to 6-foot-high chain-link perimeter fences, topped with one foot of three-strand barbed wire, or as dictated by Riverside County specifications. If required, site fencing would also adhere to US Fish and Wildlife Service (USFWS) design guidelines (USFWS, 2009) to exclude desert tortoise from the Project site. The fence would typically be set approximately 100 feet from the edge of the solar panel array.

The Project's on-site roadway system would include perimeter roads, access roads, and internal roads. The perimeter roads and main access roads would be approximately 20 feet wide and

constructed to be consistent with facility maintenance requirements and County standards. These roads would be surfaced with gravel, compacted dirt, or another commercially available surface. Internal roads would have permeable surfaces and be approximately 16 feet in width or as otherwise required by County standards. They would be treated to create a durable, dustless surface for use during construction and operation. This would not involve lime treatment but would likely involve surfacing with gravel, compacted native soil, or a dust palliative.

Motion sensitive, directional security lights would provide illumination around the substation areas, inverter clusters, gates, and along perimeter fencing. All lighting would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties. No Project structures would necessitate aviation lighting per Federal Aviation Administration Part 77 Obstruction Evaluation Consultation.

Infrared security cameras, motion detectors, or other similar technology would be installed to allow for security monitoring. Such cameras or other equipment would be placed along the perimeter of the facility and/or at the inverters. Security cameras located at the inverters would be posted on poles approximately 20 feet high.

### **Gen-tie Lines**

The project gen-tie lines would be located within a 100-foot-wide right-of-way (ROW), and consist of either monopoles, lattice steel structures, or wooden H-frame poles. For the overhead gen-tie line, structure foundations would be excavated to a depth of 35 feet or more and include concrete supports depending on final engineering (without these foundations, guy-lines would be needed to support the structures). Gen-tie structures would be on average 90 feet tall (as short as 50 feet and as tall as 120 feet to clear another line for a perpendicular crossing). The gen-tie structures would be less than 200 feet tall and would not necessitate aviation lighting per Federal Aviation Administration Part 77 Obstruction Evaluation Consultation. A total of up to 120 gen-tie structures would be built. The gen-tie would include a 3-phase 220 kV conductor, a ground wire, and a telecommunications fiber-optic cable.

### **Access**

Access to the majority of the Project sites would be via Highway 177; Corn Springs Road would be used to access the easternmost group of parcels. Seven new access road segments, totaling approximately ten miles in length, would be constructed for primary and secondary access to the seven groups of Project sites (Groups A-G; see Figure 3). In some cases, access would be via improved existing BLM open routes and agricultural roads, rather than requiring new route construction.

All new and improved access roads would be 24 feet wide with a two-foot-wide shoulder on each side, for a total width of approximately 30 feet, including allowances for side slopes and surface runoff control. Construction of the access road segments would include compacting subsurface soils and placing a four-inch-thick layer of asphalt concrete over a 6-inch-thick layer of compacted aggregate base.

## **Construction**

Construction is anticipated to occur over a 30-month period with multiple construction activities occurring simultaneously. Project construction may be phased. The on-site workforce is expected to reach its peak of approximately 530 individuals with an average construction-related workforce of 320 individuals. An estimated 40 roundtrips per day would be required to deliver materials and equipment to the project site (mainly tractor-trailer trucks and occasional oversize tractor-trailers for large equipment such as cranes). Prior to construction, all contractors, subcontractors, and project personnel would receive Worker Environmental Awareness Program (WEAP) training to effectively understand and implement the biological commitments in the project description, implement the mitigation measures, comply with applicable environmental laws and regulations, avoid and minimize impacts, and understand the importance of these resources and the purpose and necessity of protecting them. The following species and their habitat would be specifically covered in the WEAP: desert tortoise, burrowing owl, other raptors and migratory birds, American badger, and desert kit fox. Applicable sensitive plant species would also be covered in the WEAP.

Construction would begin with pre-construction surveys, construction of the main access road, security fencing, biological resource exclusion fences where needed, clearing and construction of a laydown yard, site grading and preparation, construction of the O&M building, parking area, and pad mounts for transformers. Construction would continue with the installation of temporary power, construction of on-site roads, construction of the project substation, and assembly and installation of panel blocks and wiring.

Construction equipment would normally operate between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday for up to a maximum of 8 hours per piece of equipment, daily. Weekend construction work is not expected but may occur on occasion, depending on schedule considerations.

During pre-construction field surveys site boundaries, fence locations, and gen-tie ROW boundaries would be identified and clearly marked with stakes and flagging. All off-road vehicle travel across BLM-administered land would be monitored by qualified biologists, archaeologists, and tribal monitors, as appropriate. A desert tortoise exclusion fence, if required, would be installed per the USFWS guidelines (USFWS 2009). Fence installation would be monitored by qualified biologists, archaeologists, and tribal monitors, as appropriate.

Following fence installation, desert tortoise clearance surveys would be conducted according to USFWS 2009 guidelines (USFWS 2009). Mammals and burrowing owls would be passively relocated using one-way doors or using other accepted exclusion methods. Desert tortoise individuals would be moved outside of fenced areas “out of harm’s way” or actively translocated to a pre-selected site pursuant to an approved desert tortoise Translocation Plan to be developed in consultation with USFWS and the California Department of Fish and Wildlife (CDFW).

Several staging areas would be established within the solar facility site boundaries and security fence for storing materials, construction equipment, and vehicles. On-site pre-assembly of trackers would take place in the staging areas. Grubbing, light grading, and construction of staging areas would be monitored by qualified biologists, archaeologists, and tribal monitors, as appropriate.

Since most of the site has nearly level to gently sloping topography, no mass grading would be required; however, much of the solar facility would be impacted by some form of ground disturbance, either from compaction, micro-grading, or disc-and-roll grading. Some of the parcels where facilities and arrays would be located would require light grubbing for leveling and trenching.

Access road beds would be grubbed, graded, and compacted; however minimal grading is anticipated. The cut and fill would be approximately balanced; minimal import/export would be necessary.

A Stormwater Pollution Prevention Plan (SWPPP) or SWPPP equivalent document would be prepared, approved, and implemented before and during construction. The SWPPP will include Project information and identify best management practices (BMP). The BMPs would include stormwater runoff quality control measures, concrete waste management, stormwater detention, watering for dust control, and construction of perimeter silt fences, as needed.

Underground cables to connect panel strings would be installed using ordinary trenching techniques, which typically includes using a rubber-tired backhoe excavator or trencher. Wire depths would be in accordance with local, State, and Federal requirements, and would likely be buried at a minimum of 18 inches below grade, by excavating a trench approximately 3 to 6 feet wide to accommodate the conduits or direct buried cables. The excavated soil would likely be used to fill the trench and lightly compressed. All cabling excavations would be to a maximum depth of 10 feet.

All electrical inverters and the transformer would be placed on concrete foundation structures or steel skids. The substation areas would be excavated for the transformer equipment and control building foundation and oil containment area. The substation sites would be graded and

compacted to an approximately level grade. Concrete pads would be constructed as foundations for substation equipment, and the remaining area would be graveled. Concrete for foundations would be brought to the site from a batching plant in Blythe or would be batched on site as necessary.

Since most of the gen-tie ROW has nearly level to gently sloping topography, no grading would be required for the gen-tie structures; however, some light grubbing may be required to clear vegetation from an approximately 12,500 square-foot area (0.3 acre) where the structure would be erected and selectively in some adjacent work areas, as needed. Structure installation would consist of the following steps:

- Deliver new structure to each structure site;
- Auger new hole using line truck attachment to a depth of up to 35 feet and include concrete supports depending on final engineering;
- Pour concrete foundation;
- Install bottom section by line truck, crane, or helicopter; and
- Install top section(s) by line truck, crane, or helicopter, if required.

Once poles are erected the conductor will be strung from pull and tension sites at the end of the power line interconnection alignment moving from one pole to the next. The average distance is approximately 4,000 feet between pull and tension sites. The line may also be equipped with optical ground wire (OPGW), which would serve as a ground wire and a telecommunication link. Alternately, telecommunications fiber optic cable may be installed in a small trench within the access roads with no new surface disturbance anticipated.

Construction sites would be kept in an orderly condition throughout the construction period by using approved enclosed refuse containers. All refuse and trash would be removed from work sites daily and be disposed of in accordance with BLM requirements. No open burning of construction trash would occur. All vegetation that may interfere with equipment would be trimmed and/or removed using manual non-mechanical means described in the Vegetation Resources Management Plan or treated with an approved herbicide, as necessary.

Following the completion of construction, temporarily disturbed areas on the Project site would be revegetated for the operations phase pursuant to an approved Vegetation Management Plan. Based on the aridity of the project area and the overall low density of vegetation present, it is not likely that vegetation would encroach upon structures so that access or operation would become impaired. However, spread of noxious weeds and other nonnative invasive plant species onto the project sites could create a fire hazard if allowed to become established, and invasive weeds could also become problematic from an ecological perspective. Therefore, weed control activities would be implemented within the project limits according to the Project's Integrated Weed Management Plan.

Weed control activities would include both mechanical and herbicide control methods. Mechanical control activities include chaining, disking, grubbing, and mowing using tractors or other heavy equipment, as necessary. On BLM-administered land (gen-tie component only), herbicide control could involve the use of BLM-approved herbicides to control weeds if manual control methods are not successful. Any potential herbicide use on BLM lands will be subject to BLM review and approval.

### **Operation and Maintenance**

The solar modules would operate during daylight 7 days a week, 365 days a year. Operational activities at the Project site would include:

- Solar module washing;
- Vegetation, weed, and pest management (no pest management would be required on the gen-tie route; no anticoagulant rodenticides would be used anywhere on the project site);
- Security monitoring;
- Responding to automated electronic alerts based on monitored data, including actual versus expected tolerances for system output and other key performance metrics; and
- Communicating with customers, transmission system operators, and other entities involved in facility operations.

Up to 10 permanent staff could be on the site at any one time for O&M activities. Alternatively, approximately 2 permanent staff and 8 Project operators would be located off-site and would be on call to respond to alerts generated by the monitoring equipment at the Project site. Security personnel would be on call to respond to trespasses and other incidents as necessary.

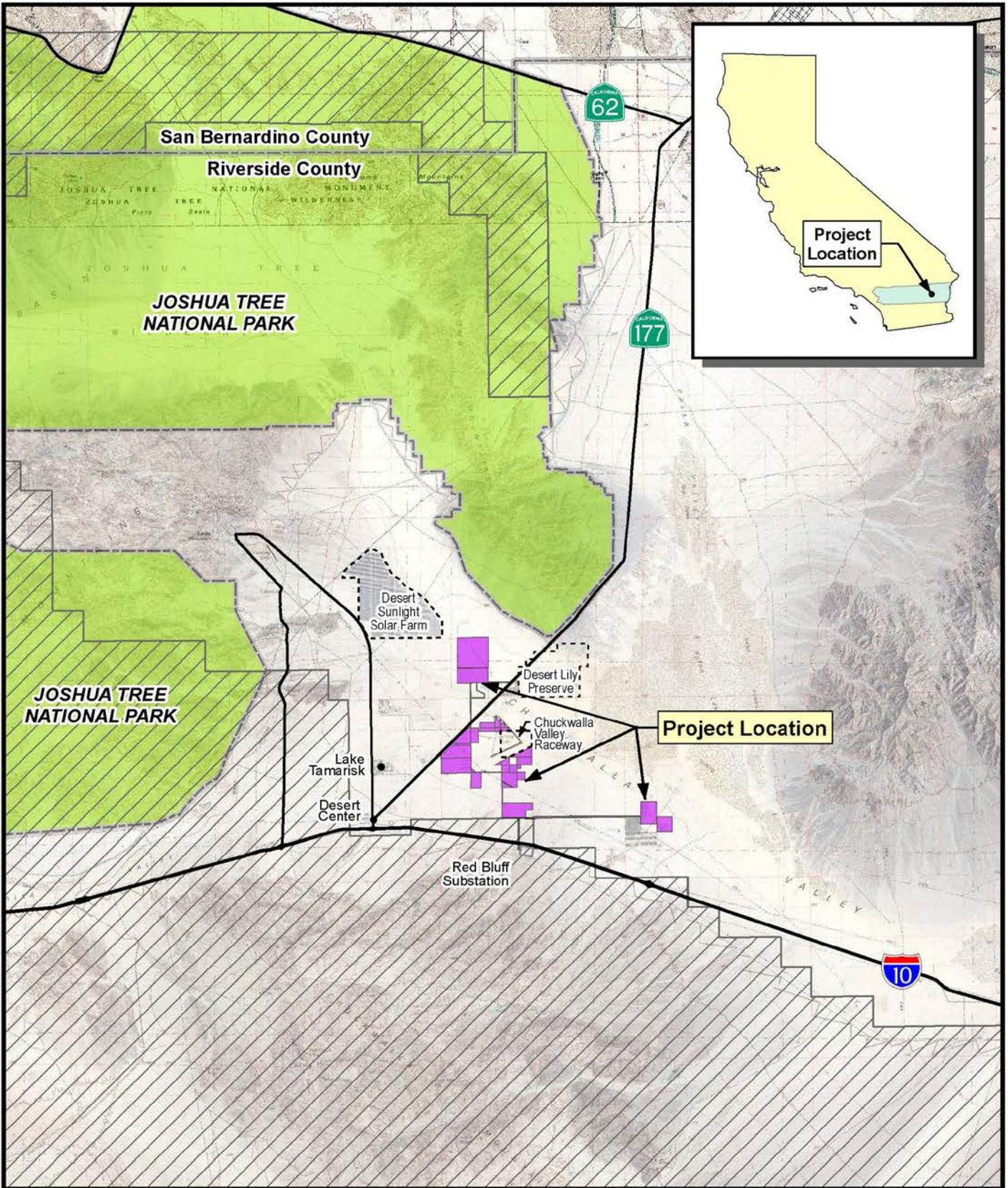
Site maintenance would be largely conducted during daytime hours, typically in the early morning or evening when the plant would be producing the least amount of energy. Maintenance typically would include panel repairs; panel washing; maintenance of electrical equipment; road and fence repairs; and weed management. On-site vegetation would be managed to ensure access to all areas of the site and to screen facilities as needed. Solar modules would be washed as needed (up to four times each year) using light utility vehicles with tow-behind water trailers to maintain optimal electricity production. No chemical cleaners would be used for module washing.

No heavy equipment would be used during normal operation. Routine O&M vehicles would be primarily pickup trucks, flatbed trucks, and water trucks for solar panel washing. Forklifts or loaders may be used for occasional unscheduled maintenance. Large heavy-haul transport equipment may be brought to the solar facility infrequently for equipment repair or replacement.

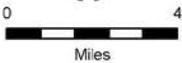
Standard defensible space requirements would be maintained surrounding any welding or digging operations. Fire safety and suppression measures, such as smoke detectors and extinguishers, would be installed and available at the O&M facility, per the Riverside County Building and Safety Department's requirements. A Fire Management and Prevention Plan will be prepared and implemented in coordination with the Riverside County Fire Department, BLM Fire, or other emergency response organizations.

### **Decommissioning and Repowering**

As the facility's equipment has a useful life of 40 years, at the end of the power purchase agreement's contract term (typically 10 to 25 years), the power from the facility would be sold to another buyer and/or the Project may be repowered to increase efficiency. If the Athos Renewable Energy Project continues to operate, the long-term operations would be the same as described above. At the end of the project's useful life, the solar arrays and gen-tie line would be decommissioned and dismantled, according to a Closure, Decommissioning, and Reclamation Plan to be prepared closer to the end of the project's life.



Ironwood Consulting



-  Athos Solar Project
-  Joshua Tree National Park
-  Desert Tortoise Critical Habitat

FIGURE 1

Regional Location

Athos Solar



## 2 REGULATORY SETTING

### 2.1 Clean Water Act (§ 404)

Under provisions of the Clean Water Act (CWA), the U.S. Army Corps of Engineers (USACE) administers the activities required by § 404. These include the individual permit decisions, jurisdictional determinations, developing policy and guidance, and enforcing provisions of § 404. Waters of the U.S. are defined in 33 CFR 328.3 and clarified via several Supreme Court and supplemental guidance documents.

#### 2.1.1 Supreme Court Decisions

On 9 January 2001, the Supreme Court of the United States issued a decision on *Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers, et al.* with respect to whether the USACE could assert jurisdiction over isolated waters. The Solid Waste Agency of North Cook County (SWANCC) ruling stated that the USACE does not have jurisdiction over “non-navigable, isolated, intrastate” waters.

In 2006, the Supreme Court addressed the jurisdictional scope of § 404 of the CWA, specifically the term “the waters of the U.S.,” in their consolidated decision in *Rapanos v. U.S.* and in *Carabell v. U.S.* (hereafter referred to as *Rapanos*). A *Jurisdictional Determination Form Instructional Guidebook* (USACE 2007) was prepared to provide guidance on interpretation and implementation of the *Rapanos* decision, which states:

*...the Rapanos decision provided two new analytical standards for determining whether water bodies that are not traditional navigable waters (TNWs), including wetlands adjacent to those non-TNWs, are subject to CWA jurisdiction: (1) if the water body is relatively permanent, or if the water body is a wetland that directly abuts (e.g., the wetland is not separated from the tributary by uplands, a berm, dike, or similar feature) a relatively permanent water body (RPW), or (2) if a water body, in combination with all wetlands adjacent to that water body, has a significant nexus with TNWs.*

As a result of *Rapanos*, the United States Environmental Protection Agency (EPA) and USACE in coordination with the Office of Management and Budget (OMB) and the President’s Council on Environmental Quality, developed the *Memorandum Regarding CWA Jurisdiction Following Rapanos v. United States*. This guidance requires the application of the two new standards described above, as well as a greater level of documentation, to support an agency Jurisdictional Determination for a particular water body. Furthermore, this guidance required the USACE and EPA to develop a revised Jurisdictional Determination form to be used by field staff for documenting assertion or declination of CWA jurisdiction.

## **2.2 Clean Water Act (§ 401) and California Porter-Cologne Water Quality Act.**

Dredge and fill activities in federally jurisdictional waters of the U.S. that trigger coverage under § 404 of the CWA must also receive water quality certification under § 401 of the CWA. The State Water Resources Control Board (SWRCB), through its Regional Water Resources Control Boards (RWQCBs), has jurisdiction over § 401 water quality certification in California. There are no federally jurisdictional waters of the U.S. on the proposed Athos project site, and § 401 water quality certification is not applicable for the project.

The Porter-Cologne Water Quality Control Act (Porter-Cologne), Division 7 of the California Water Code, establishes the responsibilities and authorities of the nine RWQCBs and the SWRCB. This act establishes that the waters of the State shall be protected for use and enjoyment by the people of the State; that the activities and factors which may affect the quality of the waters of the State shall be regulated to attain the highest water quality. Porter-Cologne also names the RWQCBs to formulate and adopt water quality control plans for all areas within the region. The Athos project site is located within the Colorado River (Region 7) RWQCB jurisdiction.

Under Porter-Cologne, the RWQCB may regulate discharge of waste. All parties proposing to discharge waste that could affect waters of the State must file a report of waste discharge with the appropriate RWQCB (§ 13260 of the California Water Code). The RWQCB would then respond to the report of waste discharge by issuing waste discharge requirements (WDRs), or by waiving WDRs for the proposed discharge. Both of the terms *Discharge of Waste* and *waters of the State* are broadly defined such that discharges of waste, including fill, any material resulting from human activity or any other discharge that may directly or indirectly affect waters of the State. While all waters of the U.S. that are within the borders of California are also waters of the State pursuant to Porter-Cologne, the converse is not true. Waters of the U.S. are federally jurisdictional and legally distinct from waters of the State. While § 404 permits and § 401 certifications are required when activity results in fill or discharge directly below ordinary high-water mark of waters of the U.S., any activity that results or may result in a discharge that directly or indirectly impacts waters of the State or the beneficial uses of those waters may be subject to WDRs.

Pursuant to California Water Code § 13191.3(a), the SWRCB and RWQCBs would comply with the listing requirements of § 303(d) of the CWA which requires states to identify waters that do not meet or are not expected to meet by the next listing cycle, applicable water quality standards.

## **2.3 California Fish and Game Code §§ 1600 to 1616**

Pursuant to § 1602 of the California Fish and Game Code (CFGC), California Department of Fish and Wildlife (CDFW) may require a Lake or Streambed Alteration Agreement (LSAA) prior to any

activity that would substantially divert or obstruct the natural flow, or substantially change the bed, channel, or bank of a river, stream or lake, or use material from a streambed. CDFW's issuance of a LSAA is subject to California Environmental Quality Act (CEQA) certification.

CDFW traditionally defines a stream (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." CDFW's definition of lake includes natural lakes or man-made reservoirs. CDFW jurisdiction also includes riparian or wetland vegetation associated with a watercourse.

In 2014, the *Mapping Episodic Stream Activity (MESA) Field Guide and Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants* ("MESA Guide"; Brady and Vyverberg 2013) were published by the California Energy Commission (CEC). The primary objective of the MESA guide was to clarify definitions used to determine CDFW-jurisdictional waters and replace guidance (e.g., *A Field Guide to Lake and Streambed Alteration Agreements* [CDFW 1994]) with current understanding of fluvial geomorphology and ecohydrology.

### **3 ENVIRONMENTAL SETTING**

#### **3.1 Regional Setting**

The Project site resides in the central portion of Chuckwalla Valley in the Colorado Desert. The elevation of Chuckwalla Valley ranges from under 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.

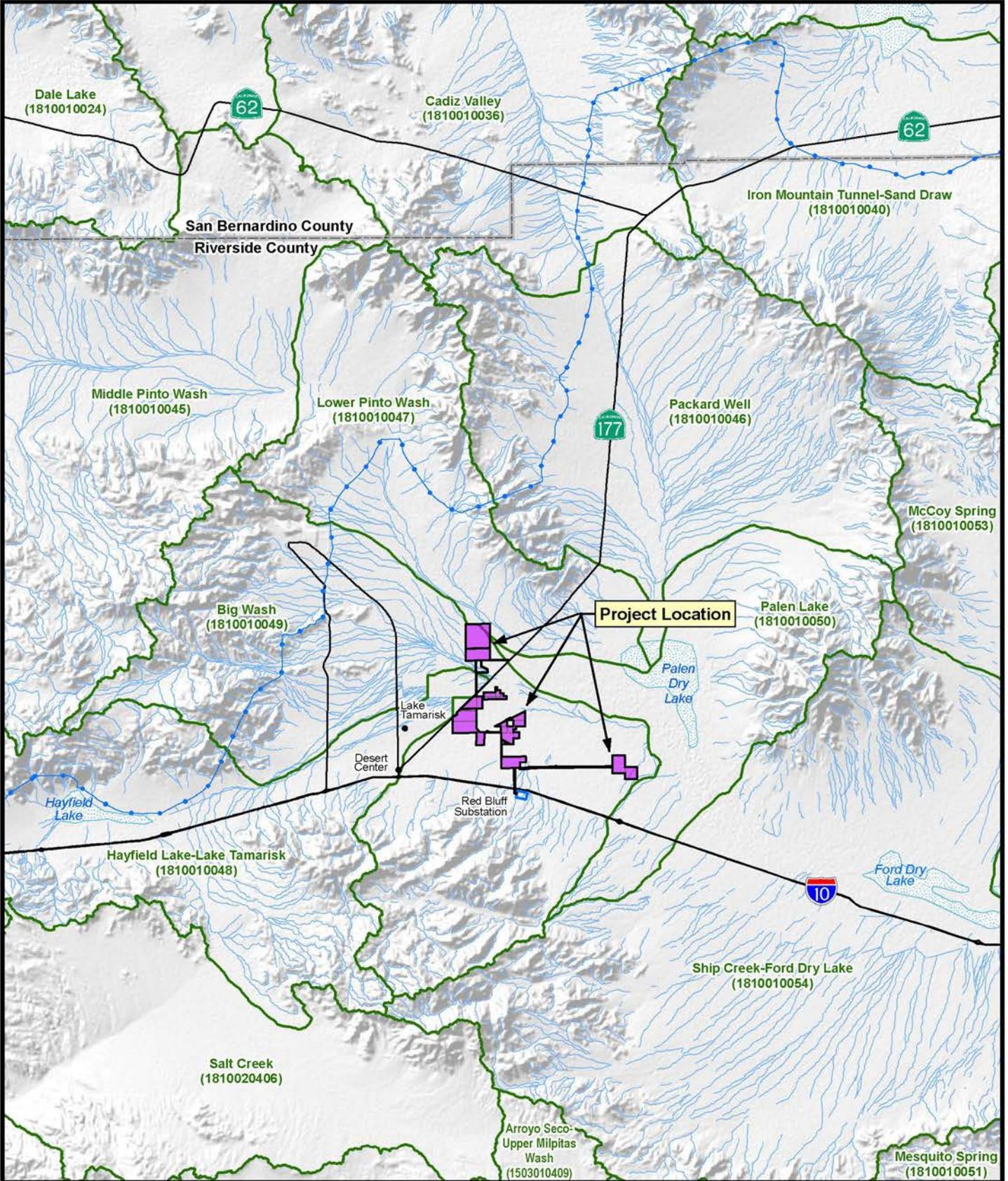
Existing anthropogenic features and private land uses that exist within and adjacent to the Project site include agricultural, residential, renewable energy, energy transmission, historical military, and recreational development. Much of the agricultural activity within proximity of the Project has waned in the past decade, including most of the aquaculture (fish farms) and jojoba ventures; however, active agriculture still occurs within the vicinity of the project including a date palm orchard adjacent to easternmost parcel (parcel group G). Approximately 1,585 acres of private lands occur within one mile of, and immediately adjacent to, the Project site and much of these private lands have been converted from natural desert habitat to active or historical agricultural land.

The I-10 is located south of the Project site and CA-177 divides the northern and southern portions of the Project site (Figure 3). The developed footprint of I-10 and CA-177 have altered surface hydrology and condition of natural habitat over time within Project site.

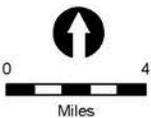
### **3.2 Hydrology**

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 is in the Big Wash, Lower Pinto Wash, and Palen Lake HUC 10 Hydrologic Areas, which flow to closed intrastate basins, not connected with the Colorado River, traditional navigable waters, or interstate waters (Figure 3). Palen Dry Lake and Ford Dry Lake represent the lowest elevations within the basin.

Desert washes within this region contract and expand dramatically in size due to extreme variations in flow, which can range from high-discharge floods to 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.



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 Athos Solar Project

 Ephemeral Drainage

 Aqueduct

 Intermittent Water Feature

 Watershed Boundary

FIGURE 3

Hydrologic Unit Map

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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. Ground surface elevations of the Project site range from approximately 500 feet amsl in the southeast (parcel group G) to 800 feet amsl in the south near the Red Bluff Substation.

Alluvial processes across the majority of the Project site generally flow from southwest to northeast, with the exception of the portion of the Project situated west of CA-177 (parcel group A, gen-tie segments 1, 1A, and the access road), which flow from northwest to southeast. Located south of the Project (parcel groups F and G and gen-tie segments 2B, 3 and 4), the I-10 crosses the alluvial fan that emanates from the Chuckwalla Mountains. 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, rendering portions of the alluvial fan less active than under historical conditions. Minor washes located in the hydrological shadow of I-10 are degraded (transporting lower volumes of water and entrained sediment). Major, culverted washes receive more surface flow and distribute a higher volume and fine sediment compared to conditions that preceded the construction of I-10. These conditions are evident within portions of the Project site downstream of the I-10, specifically the parcel group F and gen-tie 2B, and 3.

### 3.3 Rainfall

Precipitation data was obtained from the Western Regional Climate Center (WRCC 2017) for the most proximate stations to the Project site: Blythe Airport and Eagle Mountain weather stations (approximately 30 and 8 miles from the Project site, respectively). Historical rainfall data from 2009 to 2018 were totaled and averaged for the winter (October through March) and summer (April through September) periods (Table 1). Over the previous ten years, the highest winter rainfall occurred in 2009/2010 and the second highest occurred in 2016/2017. The winter of 2017/2018 recorded the least amount of rainfall of the previous ten years.

**Table 1 - Regional Rainfall Totals Since 2009**

Year	October to March (inches)	April to September (inches)
2009	2.4	0.2
2010	4.8	0.1
2011	2.5	1.2
2012	1.0	3.3 <sup>1</sup>
2013	1.5	2.6
2014	0.7	1.2

Year	October to March (inches)	April to September (inches)
2015	2.1	1.3
2016	1.5	0.7
2017	3.4	1.1
2018	0.1	0.5

Source: Western Regional Climate Center (WRCC 2018): Blythe Airport and Eagle Mountain weather stations.

### 3.4 Soils

The Project site supports two general soil types per the United States General Soil Map (NRCS 2018): (1) the Rositas–Dune land–Carsitas map unit and (2) the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni map unit. The Rositas-Dune land-Carsitas map unit occurs on the eastern 53 percent of the site and is characterized by soils with a very high sand percentage (greater than 95 percent) and is highly susceptible to wind erosion. The remaining 47 percent of the site was 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 (Figure 4).

Windblown (aeolian, or eolian) sand transport is characteristic of the vicinity. 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). Lancaster et al. (2014) characterized the majority of the site as Qyf, which is described as modern alluvial fan deposits consisting of 'unconsolidated to slightly consolidated sand and gravel' (Figure 5).

Lancaster et al. (2014) mapped the major washes that bisect the project site as Qw and Qoa. The distal portions of Pinto Wash that cross parcel group A and gen-tie 1, and eastern washes that cross gen-tie 3 and parcel group G, are mapped as Qw. This soil type is described as unconsolidated fine to coarse-grained sand and sandy gravel with subordinate fine sand and silt with bar and swale morphology and is noted as an active aeolian source. Within this map unit, local alluvial fans serve as a source of aeolian sand.

The southern washes that cross parcel group F, gen-tie 2B, gen-tie 4, and the western extent of gen-tie 3 are mapped as Qoa. This soil type is described as undifferentiated alluvial deposits of Pleistocene age. Within this map unit, deposits typically support gravel lag and desert pavement with desert varnish. The northwestern edge of the project (parcel groups A, B, E, and G) borders areas mapped as Qe, which is described as active windblown deposits consisting of dunes and sand sheets typically greater than 1.5 m in thickness with fine to medium grained sand.

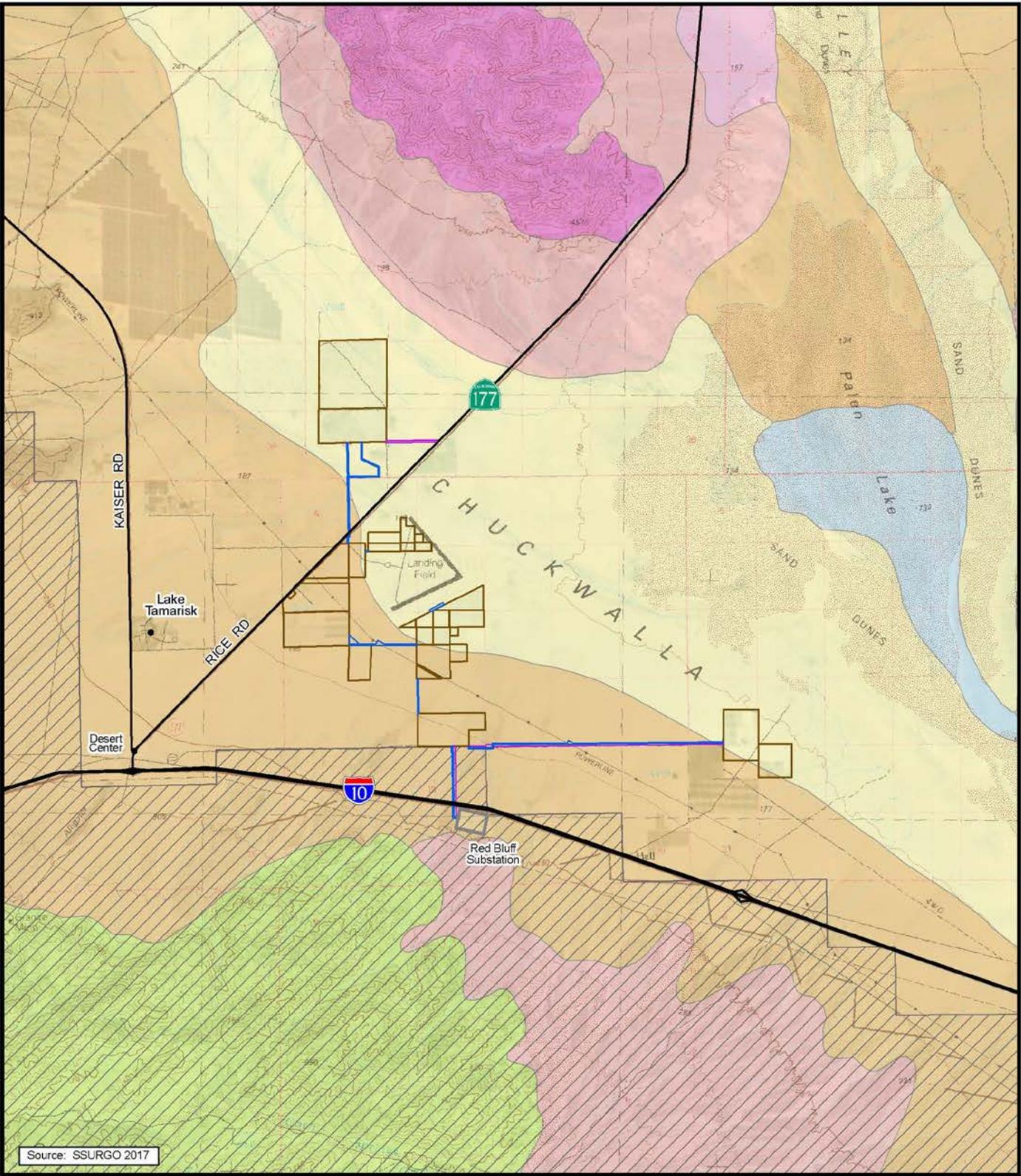
## 4 METHODS

### 4.1 Desktop Review

Initial analysis was performed with Geographic Information Systems (GIS) using the following digital datasets:

- 7.5' USGS topographic quadrangles;
- National Agriculture Imagery Program (NAIP) 4-band imagery (2016);
- National Wetlands Inventory Wetlands Mapper (USFWS 2018);
- National Vegetation Classification Standard (NVCS) layers from the (DRECP) Data Basin (CEC 2015);
- Natural Resource Conservation Service (NRCS) Web Soil Survey (NRCS 2016);
- Eastern Riverside County Soil Mapping (Lancaster et al. 2014);
- Western Regional Climate Center (WRCC 2018);
- USGS National Hydrography Dataset (2018);
- Jurisdictional waters layers for Palen Solar Project;
- Jurisdictional waters layers for Desert Harvest Solar Project; and
- Preliminary Onsite Drainage Study Athos Solar Project.

Relevant digital data were incorporated into ESRI ArcGIS Online and made accessible during field investigations via the ESRI Collector application.



Source: SSURGO 2017

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- Solar Facility Boundary
- Gen-Tie Corridor
- Access/Spur Road
- Desert Tortoise Critical Habitat

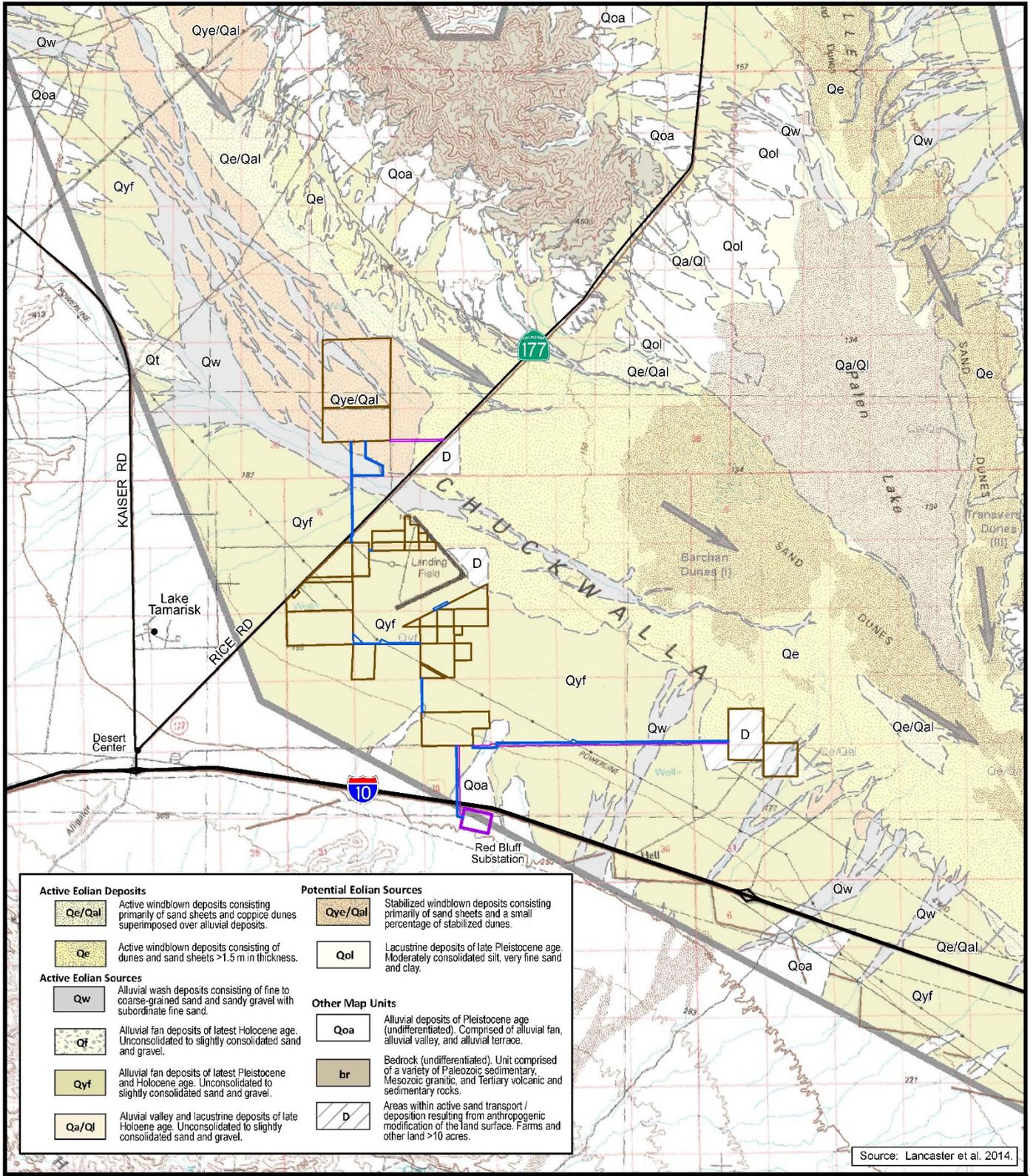
- Playas (s1138)
- Rillito-Gunsight (s1140)
- Rositas-Carrizo (s1137)
- Rositas-Dune land-Carsitas (s1136)

- St. Thomas-Rock outcrop (s1125)
- Tecopa-Rock outcrop-Lithic Torriorthents (s1126)
- Vaiva-Quilotosa-Hyder-Cipriano-Cherioni (s1141)

**FIGURE 4**

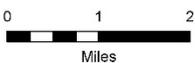
**Soils**

**Athos Solar**



Source: Lancaster et al. 2014.

**Ironwood Consulting**



- Solar Facility Boundary
- Gen-Tie Corridor
- Access/Spur Road

**FIGURE 5**

**Historic Sand Transport**

**Athos Solar**

## 4.2 Field Investigations

Field investigations (surveys) were conducted on seven separate days between March 22 and May 9, 2018. Surveyors included Chris Blandford, Christopher Fabry, and Lehong Chow, who were qualified with 40-hour jurisdictional water training and previous experience with jurisdictional resources associated with arid lands of the California deserts. Due to the anticipated absence of Federal jurisdiction based on the recent Approved Jurisdictional Determination for the Palen Solar Project (USACE 2017; Appendix A), field investigations focused on CDFW's definition of jurisdictional waters, which was consistent with the *MESA (Mapping Episodic Stream Activity) Field Guide and Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants* ("MESA Guide"; Brady and Vyverberg 2013). The MESA Guide provides a current understanding of fluvial geomorphology and ecohydrology and facilitates mapping of State-jurisdictional waters.

Data were collected using a combination of records entered into ESRI ArcGIS Collector<sup>®</sup> and hand-written field notes. Transects were typically performed perpendicular to flow patterns and conducted within all Project components to obtain sufficient quantity of data points to facilitate GIS digitization of jurisdictional features. Over twenty-five miles of pedestrian and vehicular transects were performed. Point data were collected at individual features that displayed characteristic sign of episodic flow and, in some cases, upland areas that lacked watercourse features. Data points were taken for each feature that crossed the Project, typically at the center of each feature and the width of the feature was recorded.

Field investigations were conducted during a dry spring (Table 2). As a result, recent evidence of episodic flow was minimal during the survey; however, historical episodic flow and watercourse features, as defined by the MESA Guide (Brady and Vyverberg 2013), were evident during the surveys and subsequently recorded and photographed when observed. Such features included:

- vegetation channel alignment,
- sand-filled channels,
- levee ridges,
- wrack lines,
- bifurcated flow,
- bar-and-swale topography,
- braided channels,
- cut banks,
- organic drift, and
- low flow and secondary channels.

Upland features including desert pavement, deflated sand sheets, gravel lag deposits, and islands were also recorded. Jurisdictional waters and riparian communities were mapped at a minimum scale of 1:6000, often down to 1:3000, as suggested in the MESA guidance for utility solar projects (Brady and Vyverberg 2013). The field delineation utilized the Holland Code Classification System for vegetation communities (Holland 1986) for identifying xeric riparian vegetation. Where vegetation contained a mixture of upland and wash-dependent indicator species from two or more Holland vegetation communities, the indicator species that appeared with the greatest vegetation coverage (absolute dominance based on percent cover) was used to identify the vegetation community.

Post-field analysis was conducted by surveyors and GIS specialists, in tandem, to code, define, designate, and edit all acquired field data representing jurisdictional waters. Acreages were calculated using GIS by referencing collected digital data and aerial photography. The linear path and extent of Unvegetated Ephemeral Dry Washes were digitized using polylines with an accompanying width measurement. The width value was used to convert polylines to polygons. The resulting features were reviewed and further refined based on interpretation of high-resolution aerial imagery. Rainfall data and historical aerial imagery were reviewed to estimate the time that anthropogenic influences may have affected hydrology and determine whether channels downstream of diversions may have been abandoned.

## **5 RESULTS**

Potential CDFW-jurisdictional waters identified within the Project site consisted of streambeds (Unvegetated Ephemeral Dry Wash) and streambeds-riparian (Desert Dry Wash Woodland), and an agricultural pond (Figures 6a-6f).

### **5.1 Unvegetated Ephemeral Dry Wash**

Unvegetated Ephemeral Dry Washes were mapped consistent with the presence of active channels, primarily within the creosote bush scrub or agricultural lands. Unvegetated Ephemeral Dry Washes were not dominated by xeric riparian vegetation such as desert ironwood or blue palo verde, yet irregular and isolated occurrences of wash-dependent shrubs and trees may be found within mapped Unvegetated Ephemeral Dry Wash.

Active channels within the lower alluvial fan, where the Project is situated, showed sign of frequent avulsion (changes in flow direction following surface water flow events) due to high sand content and patterns of brief, intense surface water flow. The avulsion process results in a network of active and inactive (abandoned) channels. Active channels supported evidence of scour, cut banks, levee ridges, wrack lines, and organic drift. Inactive channels and swales were characterized as discontinuous, shallow depressions with no evidence of recent episodic flow.

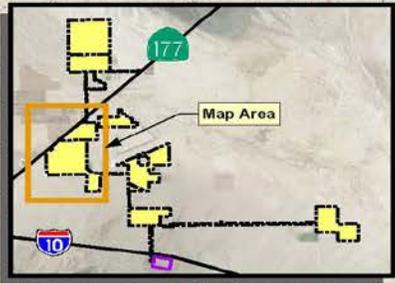
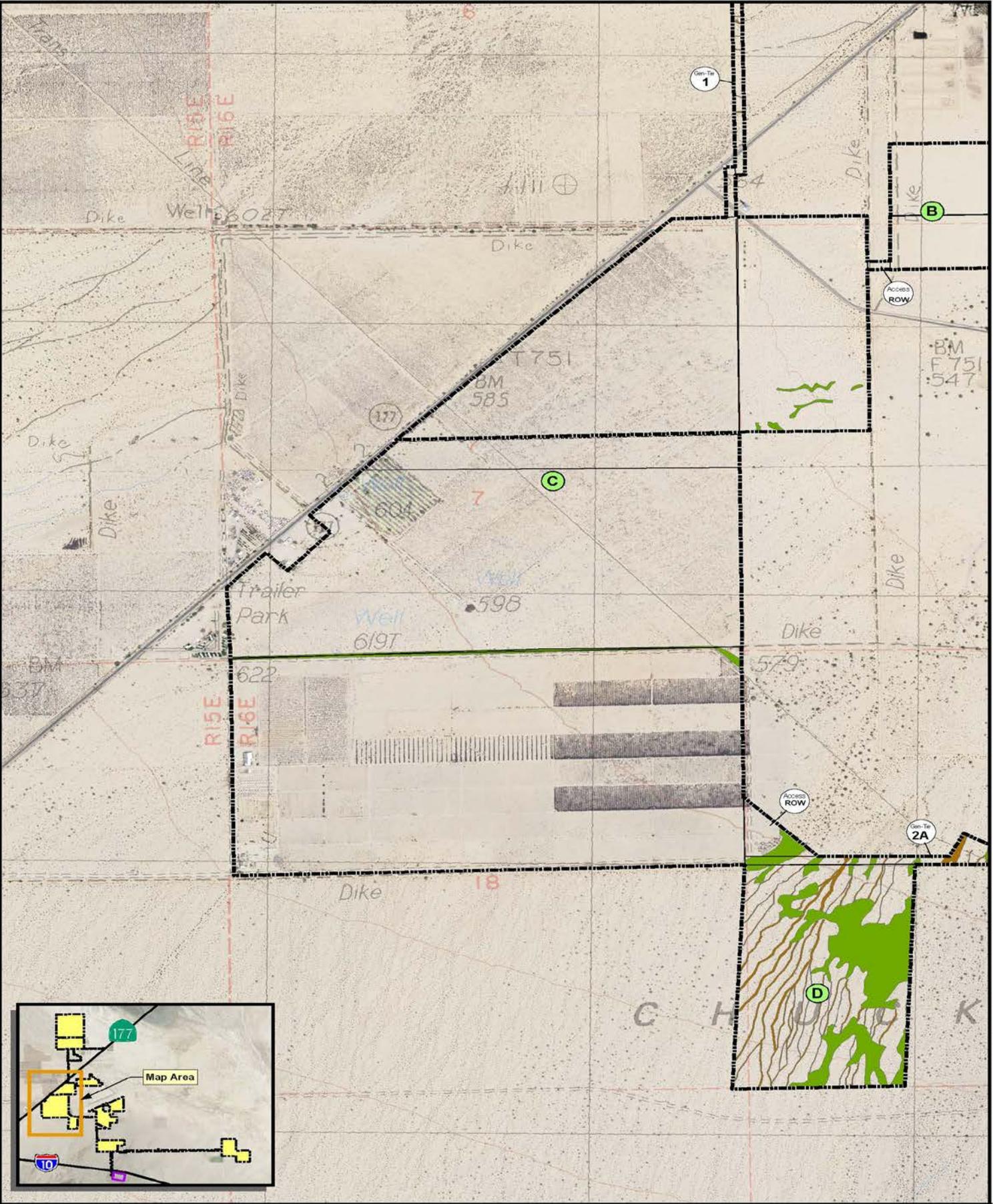
Although some of these features are visible on aerial imagery and may appear to be active, the absence of watercourse indicators, presence of upland indicators (e.g., bioturbation), and isolation from a larger floodplain disqualified these features as being mapped as Unvegetated Ephemeral Dry Wash.

Agricultural lands that had been fallow for longer periods shows more evidence of episodic flow than lands that were undergoing active agricultural practices at the time of field investigations due to the level of recent ground disturbance. Much of the fallow agriculture within the Project site had been cultivated into windrows, which may collect rainfall and concentrate surface flow. Active flow was more evident where upstream diversion berms were absent, or breaches had occurred.

Most of the Project site supported active or fallow agricultural land where evidence of episodic flow and watercourse features was obfuscated by historical and ongoing intensive ground disturbance and flow diversion practices (Appendix B – Photos 3, 10 and 11). Agricultural properties located within active alluvial fans (parcel groups A and E) had historically maintained earthen berms to divert surface flow from coursing through the property and directed flow around the property (Appendix B – Photos 1 and 2). The condition of the existing berms varied within the Project site. The berm located around the western and northern boundary of parcel group A appeared to have been intact for several decades, thus resulting in abandoned channels throughout the agricultural land (Appendix B – Photos 1, 2, and 3). This berm would be subject to washing out only during extremely high flows that occur rarely. The berm around the southern edge of parcel group E showed evidence of more recent breaches, thus allowing flow to course through the agricultural land.

Narrow washes within hydrological shadow of I-10, and its associated levees, were mapped as Unvegetated Ephemeral Dry Washes if they supported watercourse characteristics (gen-tie segments 3 and 4). While these washes have been affected by upstream diversions and likely support far less surface flow than under historical conditions, some could become active after sufficient rainfall, if the reduced drainage area north of the freeway generates sufficient runoff.





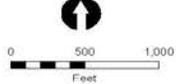
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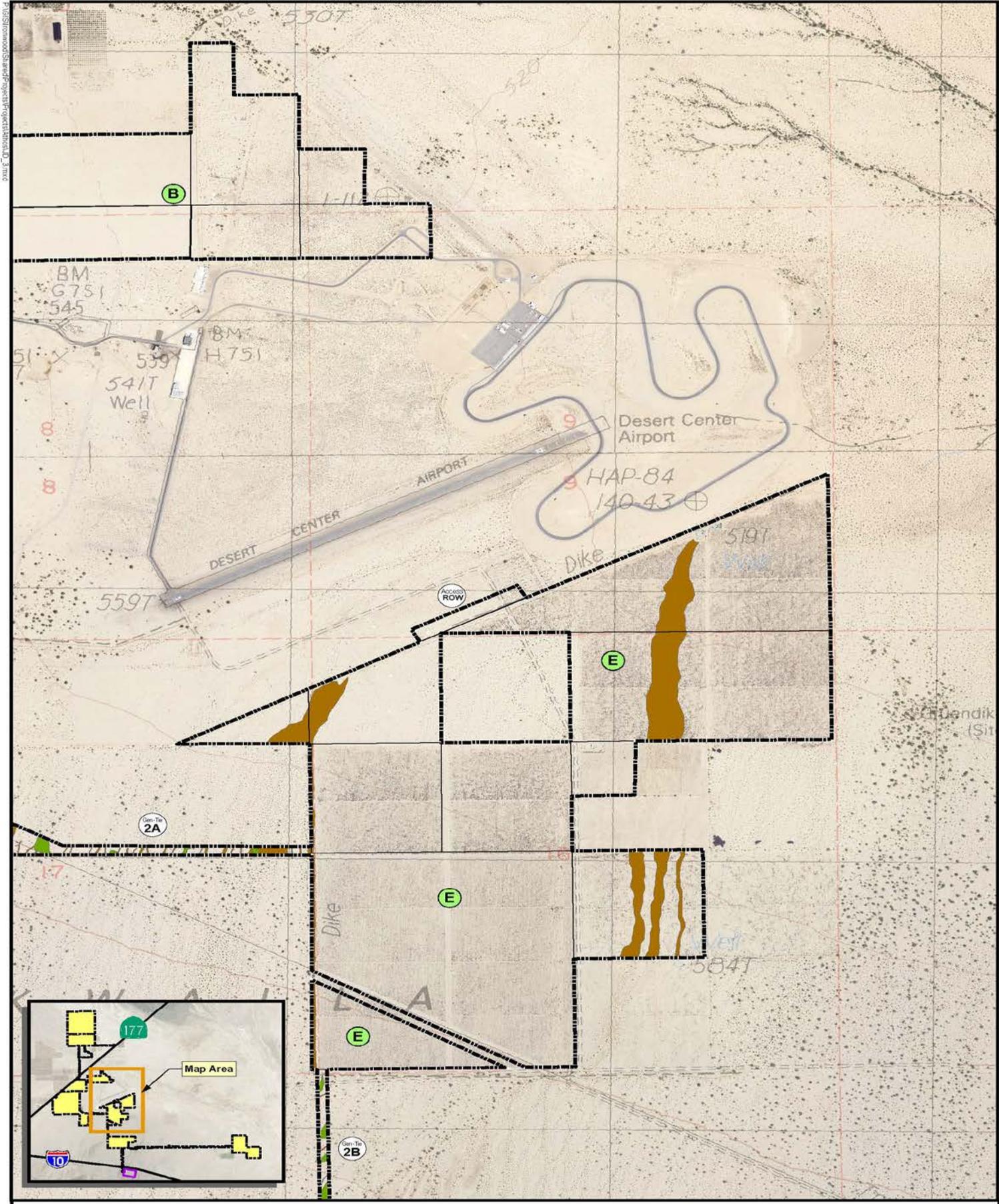
 Athos Solar Project

 Desert Dry Wash Woodland

 Unvegetated Ephemeral Dry Wash

**FIGURE 6b**  
**Potential CDFW - Jurisdictional Areas**





Ironwood Consulting

 Athos Solar Project

 Desert Dry Wash Woodland

 Unvegetated Ephemeral Dry Wash

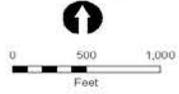
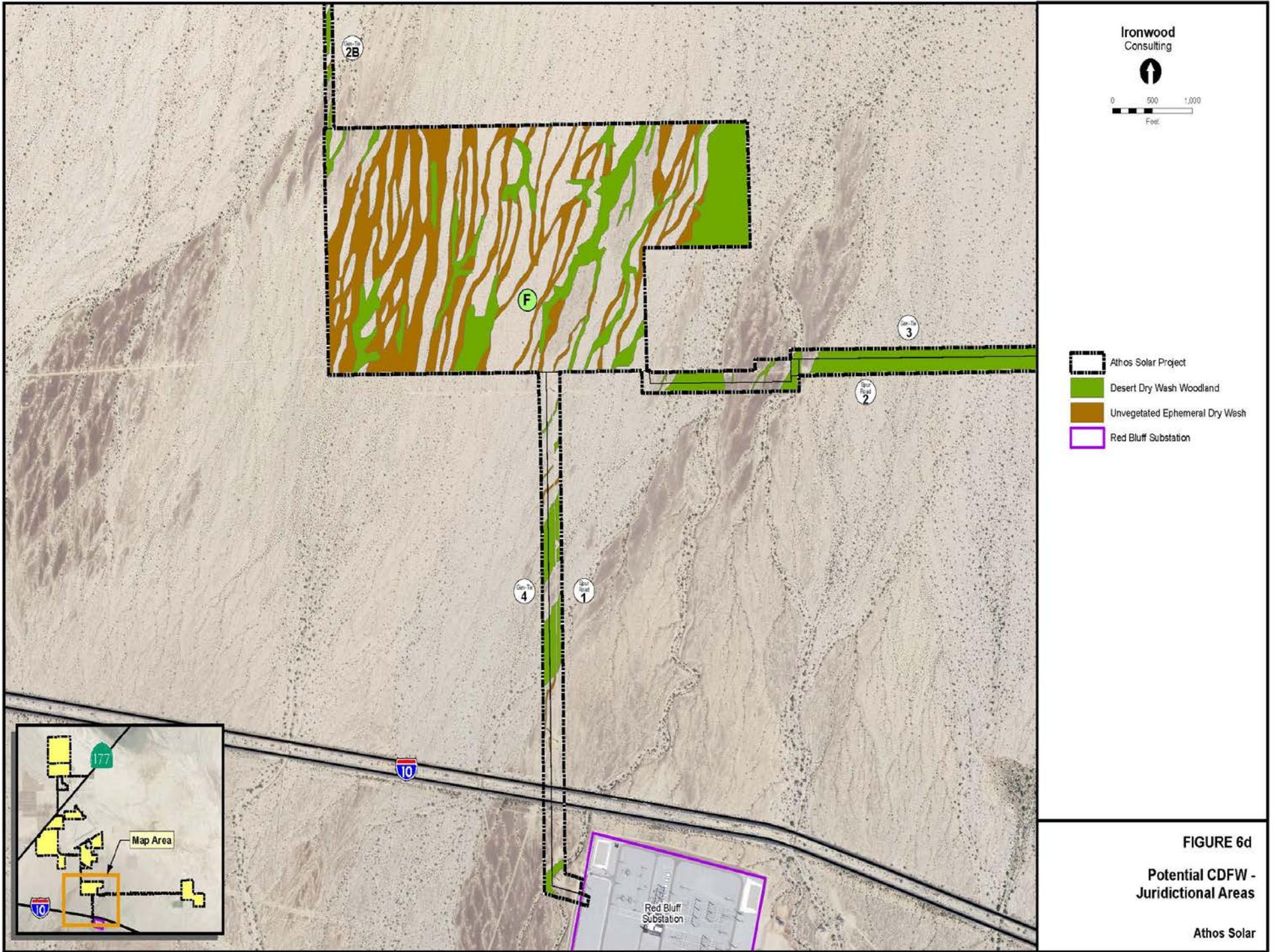


FIGURE 6c

Potential CDFW - Jurisdictional Areas

Athos Solar





**FIGURE 6e**  
**Potential CDFW -**  
**Jurisdictional Areas**

Athos Solar



## 5.2 Desert Dry Wash Woodland

Desert Dry Wash Woodland is a xeric riparian vegetation community (Holland Code 62200). Areas mapped as Desert Dry Wash Woodland were composed of ephemeral dry wash (streambed) and riparian interfluves within a matrix of dominant wash-dependent vegetation. Holland (1986) describes this community as an open to relatively densely covered, drought-deciduous, microphyll (small compound leaves) riparian scrub woodland (Appendix B – Photo 12). Desert Dry Wash Woodland is characterized by braided wash channels that experience regular avulsion. 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). Within the Project site, this vegetation community is dominated by an open tree layer of ironwood, with occasional blue palo verde. The understory typically consisted of creosote bush scrub with big galleta grass, cheesebush (*Ambrosia salsola*), desert lavender (*Hyptis emoryii*), and occasional Russian thistle.

Desert dry wash woodland is located within the southern native parcels of the Project site (parcel groups D and F, and gen-tie segments 2A, 2B, 3 and 4.). Disturbed desert dry wash woodland is associated with a channelized wash that bisects parcel group C and the distal portion of the wash that courses through the southeast corner of the date palm farm (parcel group G). Outside and adjacent to the western and northern boundaries of parcel group A, the distal extent of Big Wash and Pinto Wash supports disturbed desert dry wash woodland (Appendix B – Photos 1 and 2).

## 5.3 Agricultural Pond

The date palm farm (parcel group G) supports one pond with standing water (Figure 6f). The pond is 2.4 acres as measured from on aerial imagery dated 2016. Based on field surveys conducted in 2018, it is evident that the area of surface water associated with this pond is substantially less than in 2016 (Appendix B, Photo 15). The pond likely receives groundwater pumped from a nearby well. As with several other historical ponds within the date palm farm, the volume of water stored in the pond has fluctuated, and continues to fluctuate, over time proportional to the demand of agricultural irrigation. All other historical ponds were dry, supporting no surface water, during the 2018 surveys.

## **6 JURISDICTIONAL FINDINGS AND RECOMMENDATIONS**

The following discussion represents the best effort at determining the jurisdictional boundaries using the most current regulations and guidance from the USACE and CDFW.

### **6.1 Clean Water Act (§ 404)**

An Approved Jurisdictional Determination (SPL-2018-00708) was issued by the USACE on October 29, 2018 for the Athos Renewable Energy Project (Appendix B), The Approved Jurisdictional Determination states the following:

*Based on available information, I have determined waters of the United States do not occur on the project site. The aquatic resources identified are intrastate isolated waters with no apparent interstate or foreign commerce connection. As such, these waters are not currently regulated by the Corps of Engineers. This disclaimer of jurisdiction is only for Section 404 of the Clean Water Act. Other Federal, State, and local laws may apply to your activities.*

Due to the conclusion drawn in the Athos-Approved Jurisdictional Determination, it is assumed that waters of the U.S. do not occur within the Athos Project site

### **6.2 California Porter-Cologne Water Quality Act and Clean Water Act (§ 401)**

The RWQCB regulates discharges to jurisdictional waters under the federal CWA and the California Porter-Cologne Water Quality Control Act, which is implemented through issuance of National Pollutant Discharge Elimination System permits for point source discharges and WDRs for non-point source discharges.

Due to the conclusion drawn in the Athos Approved Jurisdictional Determination, waters of the U.S. do not occur within the Athos Project site; therefore, a CWA § 401 Water Quality Certification is not anticipated to be required.

It is recommended that the Applicant confirms with the Colorado River Basin (Region 7) RWQCB that no Waste Discharge Requirements or Report of Waste Discharge would be required for the Project.

### **6.3 California Fish and Game Code §§ 1600–1616**

The area estimated to meet the definition of CDFW-jurisdictional waters within the Project site are shown in Table 2.

**Table 2 - CDFW-Jurisdictional Waters**

HABITAT TYPE	PRIVATE				PUBLIC		TOTAL (acres)
	Solar Facility (acres)		Gen-Tie <sup>1</sup> (acres)		Gen-Tie BLM <sup>1</sup> (acres)		
	Native	Ag	Native	Ag	Native	Ag	
Streambed - Unvegetated Ephemeral Dry Wash	100.28	45.62	0.39	-	10.38	0.06	<b>156.67</b>
Streambed and Riparian - Desert Dry Wash Woodland	91.2	-	12.54	-	59.19	-	<b>162.93</b>
Agricultural Pond	-	2.3	-	-	-	-	<b>2.3</b>
<b>subtotals</b>	<b>191.48</b>	<b>47.92</b>	<b>12.93</b>	<b>0</b>	<b>69.57</b>	<b>0.06</b>	<b>321.9</b>

<sup>1</sup> Based on gen-tie survey area of 200ft (60m) wide corridor. Includes spur roads and access roads - actual disturbance will likely be substantially less.

California Fish and Game Code § 1602 requires project proponents to notify CDFW prior to any activity that may substantially modify CDFW-jurisdictional streambeds. Based on the findings above, a Notification of Lake or Streambed Alteration form should be submitted to CDFW, along with the required supplemental material (including precise impact calculations) and fee. CEQA review will be required for the effects CDFW-jurisdictional streambeds and associated riparian habitat.

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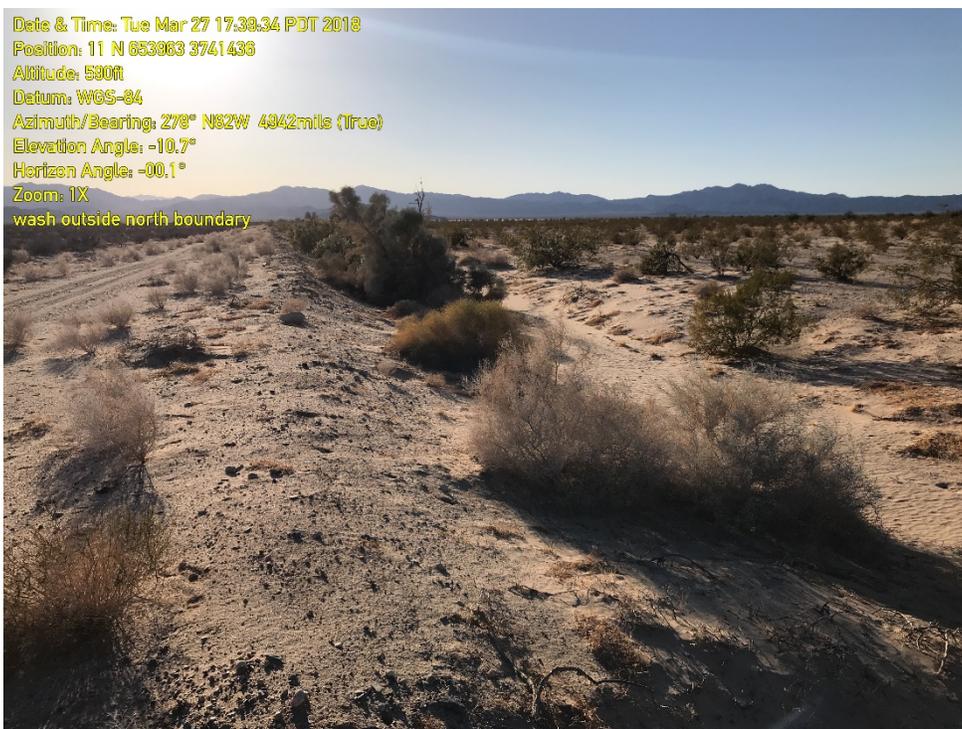
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## **APPENDIX A**

### Representative Photographs



**Photo 1** – Parcel Group A. Northwest corner facing south. Earthen berm intact. Distal extent of Pinto Wash diverted along the western boundary.



**Photo 2** – Parcel Group A. Northern boundary facing west. Earthen berm intact. Distal extent of Pinto Wash diverted along the northern boundary.



**Photo 3** – Parcel Group A. Northern boundary facing southeast. Remnant wash through fallow agricultural land.



**Photo 4** – Parcel Group A. Eastern boundary facing south. Earthen berm on east boundary directing flow down perimeter road. Flow emanates from fallow agriculture field with windrows upslope.



**Photo 5** – Parcel Group B. Facing south. Lack of active watercourse within disturbed scrub.



**Photo 6** – Parcel Group B. Facing east. Channelized wash with disturbed Desert Dry Wash Woodland between earthen berms.



**Photo 7** –Parcel Group C. Facing west. Lack of active watercourse within disturbed saltbush scrub.



**Photo 8** – Parcel Group D. Facing south. Sparse Desert Dry Wash Woodland within active and inactive channel network. Avulsion evident within braided channels.



**Photo 9** – Parcel Group D. Facing northeast. Sparse Desert Dry Wash Woodland within active and inactive channel network. Off highway vehicle disturbance.



**Photo 10** – Parcel Group E. Facing north. Fallow agricultural land with active channels between tilled windrows.



**Photo 11** – Parcel Group E. Facing north. Distal extent of wash within fallow agricultural land.



**Photo 12** – Parcel Group F and gen-tie 4. Facing south. Major wash system with Desert Dry Wash Woodland.

Cut banks, sediment sorting, and wrack lines present



**Photo 13** – Parcel Group G. Facing northeast. Distal portion of major wash *entering* fallow date palm farm.  
Scour, sediment sorting, and cut banks visible.



**Photo 14** – Parcel Group G. Facing north. Distal portion of major wash *exiting* though fallow date palm farm.  
Scour, vegetation alignment, and cut banks visible.



**Photo 15** – Parcel Group G. Facing southeast. Agricultural pond within palm farm. Water levels low compared to historical levels.

## **APPENDIX B**

Athos Renewable Energy Project  
Approved Jurisdictional Determination



**DEPARTMENT OF THE ARMY**  
**CORPS OF ENGINEERS, LOS ANGELES DISTRICT**  
**1451 RESEARCH PARK DRIVE, SUITE 100**  
**RIVERSIDE, CALIFORNIA 92507-2154**

October 29, 2018

SUBJECT: Approved Jurisdictional Determination

Scott White  
Aspen Environmental Group  
615 North Benson Ave., Suite E  
Upland, California 91786

Dear Mr. White:

I am responding to your request (File No. SPL-2018-00708) dated May 9, 2018, on behalf of IP Athos, LLC, for an approved Department of the Army jurisdictional determination (JD) for the Athos Renewable Energy Project. The proposed project is located on approximately 3,300 acres, including approximately seven miles of transmission lines, in Desert Center, Riverside County, California (centered near lat. 33.7519°N, long. -115.3637°W).

The Corps' evaluation process for determining whether or not a Department of the Army permit is needed involves two tests. If both tests are met, a permit would likely be required. The first test determines whether or not the proposed project is located within the Corps' geographic jurisdiction (i.e., it is within a water of the United States). The second test determines whether or not the proposed project is a regulated activity under Section 10 of the Rivers and Harbors Act or Section 404 of the Clean Water Act. This evaluation pertains only to geographic jurisdiction.

Based on available information, I have determined waters of the United States do not occur on the project site. The basis for our determination can be found in the enclosed Approved Jurisdictional Determination (JD) form.

The aquatic resources identified on the project site in the project documentation you provided are intrastate isolated waters with no apparent interstate or foreign commerce connection. As such, these aquatic resources are not currently regulated by the Corps of Engineers. This disclaimer of jurisdiction is only for Section 404 of the Clean Water Act. Other federal, state, and local laws may apply to your activities. In particular, you may need authorization from the California State Water Resources Control Board, the California Department of Fish and Wildlife, and the U.S. Fish and Wildlife Service.

This letter includes an approved jurisdictional determination for the Athos Renewable Energy Project in Desert Center, Riverside County, California. If you wish to submit new information regarding this jurisdictional determination, please do so within 60 days. We will consider any new information so submitted and respond within 60 days by either revising the prior determination, if appropriate, or reissuing the prior determination. If you object to this or

any revised or reissued jurisdictional determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) and Request for Appeal (RFA) form. If you wish to appeal this decision, you must submit a completed RFA form within 60 days of the date on the NAP to the Corps South Pacific Division Office at the following address:

Tom Cavanaugh  
Administrative Appeal Review Officer  
U.S. Army Corps of Engineers  
South Pacific Division, CESPDPDS-O, 2042B  
1455 Market Street  
San Francisco, California 94103-1399

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5 (see below), and that it has been received by the Division Office by **December 28, 2018**.

This determination has been conducted to identify the extent of the Corps' Clean Water Act jurisdiction on the particular project site identified in your request, and is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

Thank you for participating in the regulatory program. If you have any questions, please contact me at (951) 276-6624 x263 or via e-mail at James.E.Mace@usace.army.mil. Please help me to evaluate and improve the regulatory experience for others by completing the customer survey form at [http://corpsmapu.usace.army.mil/cm\\_apex/f?p=regulatory\\_survey](http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey).

Sincerely,

James E. Mace  
Senior Project Manager  
South Coast Branch  
Regulatory Division

Enclosure(s)

**NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND  
REQUEST FOR APPEAL**

Applicant: IP Athos, LLC	File Number: SPL-2018-00708	Date: OCTOBER 29, 2018
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E
SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <a href="http://www.usace.army.mil/cecw/pages/reg_materials.aspx">http://www.usace.army.mil/cecw/pages/reg_materials.aspx</a> or Corps regulations at 33 CFR Part 331.		
A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.		
<ul style="list-style-type: none"> <li>• ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.</li>   <li>• OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.</li> </ul>		
B: PROFFERED PERMIT: You may accept or appeal the permit		
<ul style="list-style-type: none"> <li>• ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.</li>   <li>• APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.</li> </ul>		
C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.		
D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.		

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**E: PRELIMINARY JURISDICTIONAL DETERMINATION:** You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

**SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT**

**REASONS FOR APPEAL OR OBJECTIONS:** (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

**ADDITIONAL INFORMATION:** The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

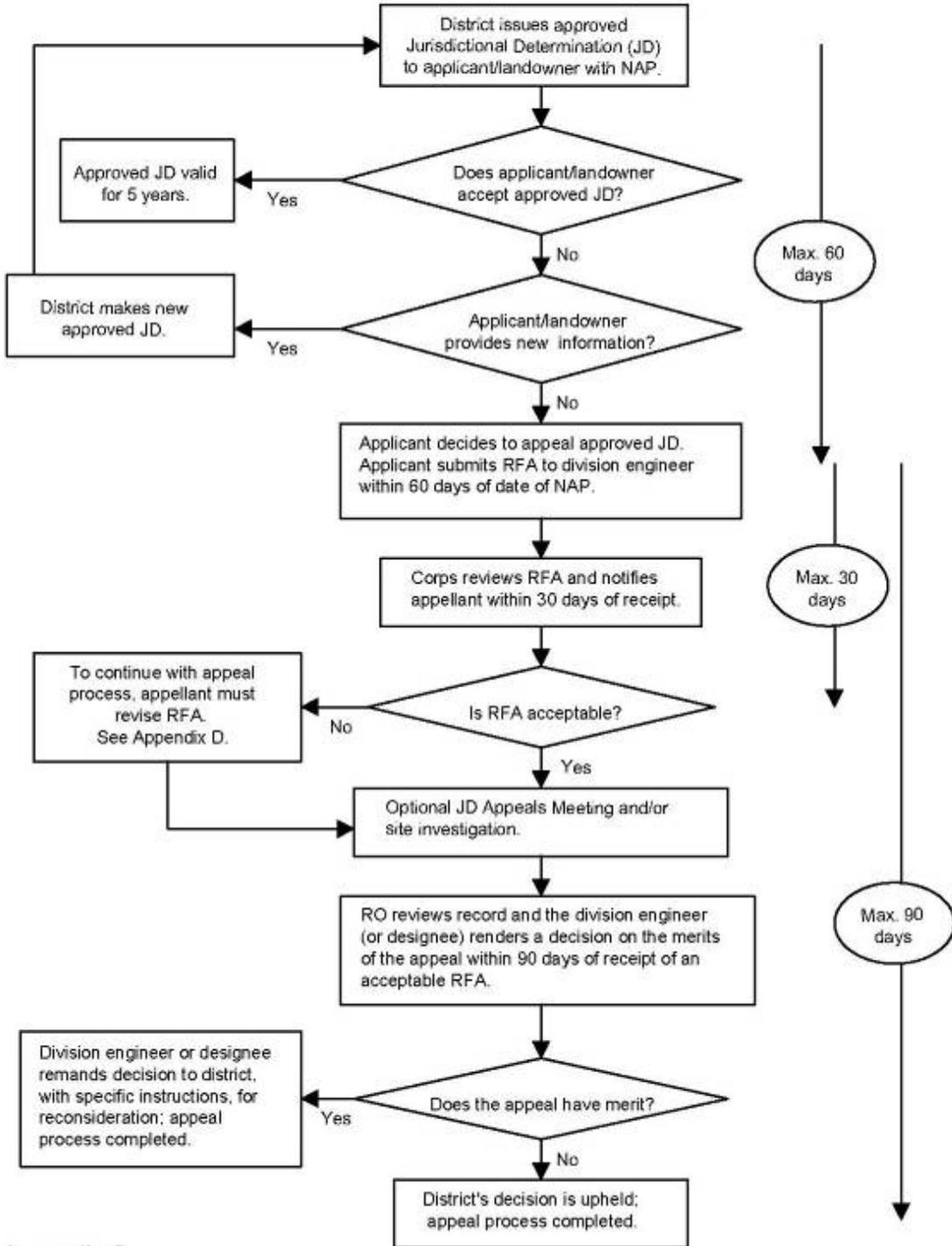
**POINT OF CONTACT FOR QUESTIONS OR INFORMATION:**

<p>If you have questions regarding this decision and/or the appeal process you may contact:</p> <p>James Mace          U.S. Army Corps of Engineers          Los Angeles District          1451 RESEARCH PARK DRIVE, SUITE 100          RIVERSIDE, CALIFORNIA 92507-2154          Phone: (951) 276-6624          Email: James.E.Mace@usace.army.mil</p>	<p>If you only have questions regarding the appeal process you may also contact: Thomas J. Cavanaugh          Administrative Appeal Review Officer,          U.S. Army Corps of Engineers          South Pacific Division          1455 Market Street, 2052B          San Francisco, California 94103-1399          Phone: (415) 503-6574          Fax: (415) 503-6646          Email: thomas.j.cavanaugh@usace.army.mil</p>
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**RIGHT OF ENTRY:** Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

<p>_____ Signature of appellant or agent.</p>	<p>Date:</p>	<p>Telephone number:</p>
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## Administrative Appeal Process for Approved Jurisdictional Determinations



### § 331.5 Criteria.

(a) *Criteria for appeal* —(1) *Submission of RFA*. The appellant must submit a completed RFA (as defined at §331.2) to the appropriate division office in order to appeal an approved JD, a permit denial, or a declined permit. An individual permit that has been signed by the applicant, and subsequently unilaterally modified by the district engineer pursuant to 33 CFR 325.7, may be appealed under this process, provided that the applicant has not started work in waters of the United States authorized by the permit. The RFA must be received by the division engineer within 60 days of the date of the NAP.

(2) *Reasons for appeal*. The reason(s) for requesting an appeal of an approved JD, a permit denial, or a declined permit must be specifically stated in the RFA and must be more than a simple request for appeal because the affected party did not like the approved JD, permit decision, or the permit conditions. Examples of reasons for appeals include, but are not limited to, the following: A procedural error; an incorrect application of law, regulation or officially promulgated policy; omission of material fact; incorrect application of the current regulatory criteria and associated guidance for identifying and delineating wetlands; incorrect application of the Section 404(b)(1) Guidelines (see 40 CFR Part 230); or use of incorrect data. The reasons for appealing a permit denial or a declined permit may include jurisdiction issues, whether or not a previous approved JD was appealed.

(b) *Actions not appealable*. An action or decision is not subject to an administrative appeal under this part if it falls into one or more of the following categories:

(1) An individual permit decision (including a letter of permission or a standard permit with special conditions), where the permit has been accepted and signed by the permittee. By signing the permit, the applicant waives all rights to appeal the terms and conditions of the permit, unless the authorized work has not started in waters of the United States and that issued permit is subsequently modified by the district engineer pursuant to 33 CFR 325.7;

(2) Any site-specific matter that has been the subject of a final decision of the Federal courts;

(3) A final Corps decision that has resulted from additional analysis and evaluation, as directed by a final appeal decision;

(4) A permit denial without prejudice or a declined permit, where the controlling factor cannot be changed by the Corps decision maker (e.g., the requirements of a binding statute, regulation, state Section 401 water quality certification, state coastal zone management disapproval, etc. (See 33 CFR 320.4(j)));

(5) A permit denial case where the applicant has subsequently modified the proposed project, because this would constitute an amended application that would require a new public interest review, rather than an appeal of the existing record and decision;

(6) Any request for the appeal of an approved JD, a denied permit, or a declined permit where the RFA has not been received by the division engineer within 60 days of the date of the NAP;

(7) A previously approved JD that has been superseded by another approved JD based on new information or data submitted by the applicant. The new approved JD is an appealable action;

(8) An approved JD associated with an individual permit where the permit has been accepted and signed by the permittee;

(9) A preliminary JD; or

(10) A JD associated with unauthorized activities except as provided in §331.11.

## Appendix C.3

### Bird and Bat Conservation Strategy

# IP Athos Renewable Energy Project Bird and Bat Conservation Strategy

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**Prepared for:**



IP Athos, LLC  
San Francisco, CA

**Prepared by:**



Aspen Environmental Group  
615 North Benson Ave., Suite E  
Upland, CA 91786

**March 2019**

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## Attachments

- Attachment 1 Construction Avian Nest Reporting Form
- Attachment 2 Operational Avian Nest Reporting Form
- Attachment 3 Avian-Bat Incident Reporting Form

## Abbreviations and Acronyms

amsl	Above mean sea level
ACEC	Areas of Critical Environmental Concern
BGEPA	Bald and Golden Eagle Protection Act
BBCS	Bird and Bat Conservation Strategy
BLM	Bureau of Land Management
CBOC	California Burrowing Owl Consortium
CDCA	California Desert Conservation Area
CEQA	California Environmental Quality Act
DWMA	Desert Wildlife Management Area
DEIR	Draft Environmental Impact Report
ESA	Federal Endangered Species Act
gen-tie line	Generator tie line
MW	Megawatt
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
O&M	Operation and maintenance
PV	Photovoltaic
ROD	Record of Decision
ROW	Right-of-way
SEZ	Solar Energy Zone
SCADA	Supervisory Control and Data Acquisition System
USFWS	U.S. Fish and Wildlife Service
WHMA	Wildlife Management Habitat Area

## 1.0 Introduction

IP Athos, LLC, a subsidiary of Intersect Power, proposes to construct, operate and decommission the IP Athos Renewable Energy Project (Athos or Project), a utility-scale solar photovoltaic (PV) electrical generating and storage facility, and associated infrastructure to generate and deliver renewable electricity to the statewide electricity transmission grid. The proposed Project is located on approximately 3,400 acres across seven (7) groups of non-contiguous parcels in the Desert Center area of Riverside County, California (**Figures 1 and 2**; all figures are in Appendix A). The County of Riverside is reviewing the Project pursuant to the California Environmental Quality Act (CEQA), and Bureau of Land Management (BLM) is performing a separate review of the Project under the National Environmental Policy Act (NEPA).

It is important to note that the implementation of clean solar energy generation is, though difficult to quantify, a compensatory measure by which plant and wildlife species will benefit on a local, regional, and global scale. When solar energy substitutes for fossil fuel energy sources, the result is a net decrease in toxic air emissions and reduced exposure of wildlife to those emissions. When carbon-free electricity substitutes for carbon-emitting electricity, the result is a net contribution toward mitigating the effects of climate change. This benefit to the ecosystem is a part of the Project's purpose. IP Athos is also committed to reducing direct impacts to local wildlife populations by implementing appropriate measures identified in this Bird and Bat Conservation Strategy (BBCS).

IP Athos is voluntarily proposing this BBCS to set forth the measures it will implement to avoid, minimize, or mitigate for potential adverse effects of the Project to birds or bats. Accordingly, IP Athos will collect and evaluate data during the construction, operation and maintenance (O&M), and decommissioning phases of the Project and will implement adaptive management measures as necessary and appropriate to minimize or mitigate impacts to birds or bats. IP Athos does not anticipate that construction, operations, or decommissioning of the Project will cause unauthorized take or prohibited disturbance of bird or bat species.

This BBCS was prepared according to guidelines recommended by the U.S. Fish and Wildlife Service (USFWS, 2010a; 2010b). It describes the proposed Athos Project components, summarizes baseline data regarding birds and bats in the Project vicinity; assesses potential risks to those species that could result from Project construction, operation, and decommissioning; and describes conservation measures to be implemented, to minimize those risks.

### 1.1 Project Description

The proposed Project is located on approximately 3,400 acres across seven (7) groups of non-contiguous parcels in the Desert Center area of Riverside County, California (**Figures 1 and 2**; all figures are in Appendix A). The renewable energy facility sites would occupy approximately 3,228 acres on privately-owned land. The proposed Project is located on primarily disturbed lands to minimize ground disturbance and impacts to resources. The portion of the 220 kilovolt (kV) generation tie (gen-tie) transmission line outside of the solar facility would be located on seven (7) miles of federal lands managed by the BLM, Palm Springs–South Coast Field Office. The remainder of the gen-tie lines would traverse approximately four (4) miles of privately-owned land, primarily on the solar facility sites.

Most of the Athos Project site is former agricultural lands (jojoba farms) or currently active date palm farms. Part of the proposed solar field land and most of the proposed gen-tie routes are natural desert landscape.

The analysis, conservation measures, monitoring, reporting, and adaptive management identified in this BBCS will be applicable for the proposed project or for potential minor variations such as a reduced footprint, or local siting or schedule modifications.

### **1.1.1 Summary of Project Components**

The following summary of the Project components, construction methods, schedule, and operation and maintenance activities are based on information provided by Intersect Power.

### **1.1.2 Solar Facility**

The Project's PV modules would be manufactured at an offsite location and transported to the Project site. Panels would be arranged in strings with a maximum height of 12 feet. Panel faces would be minimally reflective, dark in color, and highly absorptive.

Panels would be arranged on the site in solar arrays. Spacing between each row would be a minimum of four (4) feet. Structures supporting the PV modules would consist of steel piles which would be driven into the soil using pneumatic techniques, such as a hydraulic rock hammer attachment on the boom of a rubber-tired backhoe excavator. The piles typically would be spaced 10 feet apart. The total height of the panel system measured from ground surface would be up to 12 feet. Where excavations are required, the majority would be limited to less than six (6) feet in depth, however, some excavations, such as those undertaken for the installation of collector poles and dead-end structures, may reach depths of 20 feet or more.

Each two-megawatt (MW) PV panel increment would include an inverter-transformer station constructed on a concrete pad or steel skid, and centrally located within the PV arrays. Each inverter-transformer station would contain electrical components and a security camera at the top of an approximately 20-foot pole. An inverter shade structure may also be installed at each one. The shade structure would consist of wood or metal supports and a durable outdoor material shade structure (metal, vinyl, or similar). The shade structure would extend up to 10 feet above the top of the inverter pad.

Underground cables would be installed to convey electricity from the panels, via combiner boxes located throughout the PV arrays, to inverter-transformer stations. From there, the 34.5 kV level collection cables would either be buried underground or installed overhead on wood poles. If the collection system is installed overhead, some of the wood poles could be located at the outside edge of the property line, but a majority of these poles are expected to be located interior to the site. Approximately 300 to 500 wood poles located at 250-foot intervals could be installed across the entire site. The typical height of the poles would be approximately 30 to 50 feet.

Up to four (4) substations would be located within the proposed solar sites. The area of each substation and associated equipment would be approximately 37,500 square feet (150 feet by 250 feet). Substation equipment would be built on concrete pad foundations, and the remaining area would be graveled to a maximum depth of approximately six (6) inches. Each substation would be surrounded by an up-to six-foot (6-foot) high chain link fence topped with one foot of barbed wire.

The Project may use one of the existing homes on the solar facility site as an O&M building, or it may use the septic system of an existing home and build a new O&M building. If a new O&M building is constructed, it would be approximately 3,000 square feet in size and approximately 15 feet at its tallest point.

A fiber optic or other cabling system would be installed for remote monitoring of operation and/or remote control of critical components. It typically would be installed in buried conduit, leading to one or more Supervisory Control and Data Acquisition System (SCADA) system cabinets located within the Project site. External telecommunications connections could be provided through wireless or hard-wired connections to locally available commercial service providers. The Project's SCADA system would interconnect to this

fiber optic network at the Red Bluff Substation, and no additional disturbance associated with telecommunications is anticipated.

The Project could include, at the Applicant's option, a battery or flywheel storage system capable of storing up to 500 MW of electricity. If installed, the storage system would consist of battery or flywheel banks housed in electrical enclosures and buried electrical conduit. The battery system would either be concentrated near the Project substations or dispersed throughout the solar facility sites. Up to 3,000 electrical enclosures measuring approximately 40 feet by 8 feet by 8.5 feet high would be installed on concrete foundations designed for secondary containment. Battery systems are operationally silent, and flywheel systems have a noise rating of 45 dBA.

The Project would include a meteorological (met) data collection system, consisting of approximately 15 met stations, each with multiple weather sensors mounted on a main mast approximately 20 feet tall. Solar field ingress/egress would be via locked gates located at multiple points. The boundaries of the Project sites would be secured by up-to 6-foot-high chain-link perimeter fences, topped with one (1) foot of three-strand barbed wire, or as dictated by Riverside County specifications. If required, site fencing would also adhere USFWS design guidelines (USFWS, 2009) to exclude desert tortoise from the Project site. The fence would typically be set approximately 100 feet from the edge of the solar panel array.

The Project's on-site roadway system would include a perimeter road, access roads, and internal roads. The perimeter road and main access roads would be approximately 20 feet wide and constructed to be consistent with facility maintenance requirements and County standards. These roads would be surfaced with gravel, compacted dirt, or another commercially available surface. Internal roads would have permeable surfaces and be approximately 16 feet in width or as otherwise required by County standards. They would be treated to create a durable, dustless surface for use during construction and operation. This would not involve lime treatment but would likely involve surfacing with gravel, compacted native soil, or a dust palliative.

Motion sensitive, directional security lights would provide illumination around the substation areas, inverter clusters, gates, and along perimeter fencing. All lighting would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties. No Project structures would necessitate aviation lighting per Federal Aviation Administration Part 77 Obstruction Evaluation Consultation.

Infrared security cameras, motion detectors, or other similar technology would be installed to allow for security monitoring. Such cameras or other equipment would be placed along the perimeter of the facility and/or at the inverters. Security cameras located at the inverters would be posted on poles approximately 20 feet high.

### **1.1.3 220 kV Gen-tie Transmission Line**

The Project gen-tie lines would be located within a 100-foot right-of-way (ROW), and would be constructed with either monopoles, lattice steel structures, or wooden H-frame poles. For the overhead gen-tie line, structure foundations would be excavated to a depth of 35 feet or more and include concrete supports depending on final engineering. Gen-tie structures would be on average 90 feet tall. The gen-tie structures would be less than 200 feet tall and would not necessitate aviation lighting per Federal Aviation Administration Part 77 Obstruction Evaluation Consultation. A total of up to 120 gen-tie structures would be built. The gen-tie would include a 3-phase 220 kV conductor, a ground wire, and a telecommunications fiber-optic cable.

### **1.1.4 Access Roads**

Access to the Project site would be via Highway 177, except the easternmost group of parcels would be accessed from Corn Springs Road. Seven new access road segments, totaling approximately 10 miles in length, would be constructed for primary and some secondary access to the seven (7) groups of Project sites. In some cases, access would be via improved existing BLM open routes and agricultural roads, rather than new route construction.

All new and improved access roads would be 24 feet wide with a two-foot-wide shoulder on each side, for a total width of approximately 30 feet, including allowances for side slopes and surface runoff control. Construction of the access road segments would include compacting subsurface soils and placing a four-inch-thick layer of asphalt concrete over a 6-inch-thick layer of compacted aggregate base.

## **1.2 Construction Activities**

Construction is anticipated to occur over a 30-month period with multiple construction activities occurring simultaneously. The Project may be phased. The on-site workforce is expected to reach its peak of approximately 530 individuals with an average construction-related on-site workforce of 320 individuals. In addition, an estimated 40 roundtrips per day would be required to deliver materials and equipment to the Project site. Prior to construction, all contractors, subcontractors, and Project personnel would receive Worker Environmental Awareness Program (WEAP) training to effectively understand and implement the biological commitments in the Project description; implement the mitigation measures; comply with applicable environmental laws and regulations; avoid and minimize impacts; and understand the importance of these resources and the purpose and necessity of protecting them. The following species and their habitat would be specifically covered in the WEAP: desert tortoise, burrowing owl, other raptors and migratory birds, American badger, and desert kit fox. Applicable sensitive plant species would also be covered in the WEAP.

Construction would begin with pre-construction surveys, construction of the main access road, security fencing, biological resource exclusion where needed, clearing and construction of a laydown yard, site grading and preparation, construction of the O&M building, parking area, and pad mounts for transformers. Construction would continue with the installation of temporary power, construction of on-site roads, construction of the Project substation, and assembly and installation of panel blocks and wiring.

Construction equipment would operate between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday for up to a maximum of eight (8) hours per piece of equipment, daily. Weekend construction work is not expected, but may occur on occasion, depending on schedule considerations.

Pre-construction field survey work would identify and stake the site boundaries, fence locations, and gentle ROW boundary. All off-road vehicle travel across BLM-administered land would be monitored by qualified biologists, archaeologists, and tribal monitors, as appropriate. A desert tortoise exclusion fence, if required, would be installed per the USFWS protocol. Fence installation would be monitored by qualified biologists, archaeologists, and tribal monitors, as appropriate. Following fence installation, biological clearance surveys would be conducted. Mammals and owls would be passively relocated using one-way doors or other techniques. Desert tortoise individuals would be moved off-site “out of harm’s way” or actively translocated to an approved site pursuant to an approved Translocation Plan to be developed in consultation with USFWS and the California Department of Fish and Wildlife (CDFW).

Several staging areas would be established within the solar facility site boundaries for storing materials, construction equipment, and vehicles. On-site pre-assembly of trackers would take place in the staging

areas. Grubbing, light grading, and construction of staging areas would be surveyed and monitored by qualified biologists, archaeologists, and tribal monitors, as appropriate.

Since most of the site has nearly level to gently sloping topography, no mass grading would be required; however, much of the solar facility would be impacted by some form of ground disturbance, either from compaction, micro-grading, or disc-and-roll grading. Some of the parcels where facilities and arrays would be located would require light grubbing for leveling and trenching.

Access road beds would be grubbed, graded, and compacted; however minimal grading is anticipated. The cut and fill would be approximately balanced; minimal import/export would be necessary.

A Stormwater Pollution Prevention Plan (SWPPP) or SWPPP equivalent document would be prepared, approved, and implemented before and during construction. The SWPPP will include Project information and best management practices (BMP). The BMPs would include stormwater runoff quality control measures, concrete waste management, stormwater detention, watering for dust control, and construction of perimeter silt fences, as needed.

Underground cables to connect panel strings would be installed using ordinary trenching techniques, which typically include a rubber-tired backhoe excavator or trencher. Wire depths would be in accordance with local, state, and federal requirements, and would likely be buried at a minimum of 18 inches below grade, by excavating a trench approximately three (3) to six (6) feet wide to accommodate the conduits or direct buried cables. The excavated soil would likely be used to fill the trench and lightly compressed. All cabling excavations would be to a maximum depth of 10 feet.

All electrical inverters and the transformer would be placed on concrete foundation structures or steel skids. The substation areas would be excavated for the transformer equipment and control building foundation and oil containment area. The substation sites would be graded and compacted to an approximately level grade. Concrete pads would be constructed as foundations for substation equipment, and the remaining area would be graveled. Concrete for foundations would be brought on-site from a batching plant in Blythe or would be batched on site as necessary.

Since most of the gen-tie ROW has nearly level to gently sloping topography, no grading would be required for the gen-tie structures; however, some light grubbing may be required to clear vegetation from an approximately 12,500 square-foot area (0.3 acre) where the structure would be erected and selectively in some work areas, as needed. Structure installation would consist of the following steps:

- Deliver new structure to structure site;
- Auger new hole using line truck attachment to a depth of up to 35 feet and include concrete supports depending on final engineering;
- Pour concrete foundation;
- Install bottom section by line truck, crane, or helicopter; and
- Install top section(s) by line truck, crane, or helicopter, if required.

Once poles are erected, the conductor will be strung from conductor pull and tension sites at the end of the power line interconnection alignment moving from one pole to the next. The average distance is approximately 4,000 feet between pull and tension sites. The line may also be equipped with optical ground wire (OPGW), which would serve as a ground wire and a telecommunication link. Alternately, telecommunications fiber optic cable may be installed in a small trench within the access roads with no new surface disturbance anticipated.

Construction sites would be kept in an orderly condition throughout the construction period by using approved enclosed refuse containers. All refuse and trash would be removed from the sites and disposed of in accordance with BLM (for the gen-tie lines) and other applicable regulations. No open burning of construction trash would occur. All vegetation that may interfere with equipment would be trimmed and removed using manual non-mechanical means or sprayed with an approved herbicide, as necessary.

Following the completion of major construction, the Project site would be revegetated for the operations phase pursuant to an approved Vegetation Management Plan. Based on the aridity of the Project area and the overall low densities of vegetation present, it is not likely that vegetation would encroach upon structures so that access would become impaired. However, noxious weeds and other nonnative invasive plant species could create a fire hazard if allowed to become established, and invasive weeds could also become problematic from an ecological perspective. Therefore, weed control activities would be implemented within the Project limits.

Weed control activities would include both mechanical and herbicide control methods on non-BLM lands. Mechanical control activities include chaining, disking, grubbing, and mowing using tractors or other heavy equipment, as necessary. On BLM-administered land (gen-tie component only), only mechanical and manual control methods will be utilized; no herbicides will be used.

### **1.3 Operation and Maintenance**

The solar modules would operate during daylight seven (7) days a week, 365 days a year. Operational activities at the Project site would include:

- Solar module washing;
- Vegetation, weed, and pest management;
- Security;
- Responding to automated electronic alerts based on monitored data, including actual versus expected tolerances for system output and other key performance metrics; and
- Communicating with customers, transmission system operators, and other entities involved in facility operations.

Up to 10 permanent staff could be on the site at any one time for O&M activities. Alternatively, approximately two (2) permanent staff and eight (8) Project operators would be located off-site and would be on call to respond to alerts generated by the monitoring equipment at the Project site. Security personnel would be on-call

Site maintenance would be largely conducted during daytime hours, largely in the early morning or evening when the plant would be producing the least amount of energy. Maintenance typically would include panel repairs; panel washing; maintenance of electrical equipment; road and fence repairs; and weed management. On-site vegetation would be managed to ensure access to all areas of the site and to screen facilities as needed. Solar modules would be washed as needed (up to four times each year) using light utility vehicles with tow-behind water trailers, as needed, to maintain optimal electricity production. No chemical cleaners would be used for module washing.

No heavy equipment would be used during normal operation. O&M vehicles would include trucks (pickup and flatbed), forklifts, and loaders for routine and unscheduled maintenance, and water trucks for solar panel washing. Large heavy-haul transport equipment may be brought to the solar facility infrequently for equipment repair or replacement.

Standard defensible space requirements would be maintained surrounding any welding or digging operations. Fire safety and suppression measures, such as smoke detectors and extinguishers, would be installed and available at the O&M facility, per the Riverside County Building and Safety Department's requirements. A Fire Management and Prevention Plan will be prepared and implemented in coordination with the Riverside County Fire Department, BLM Fire, or other emergency response organizations.

## 1.4 Decommissioning and Repowering

As the facility's equipment has a useful life of 40 years, at the end of the power purchase agreement's 25-year contract term, the power from the facility would be sold to another buyer and/or the Project may be repowered to increase efficiency. If the Athos Renewable Energy Project continues to operate, the long-term operations would be the same as described above. At the end of the Project's useful life, the solar arrays and gen-tie line would be decommissioned and dismantled, according to a Closure, Decommissioning, and Reclamation Plan to be prepared.

## 1.5 Regulatory Setting

This BBCS was prepared to ensure Project compliance with state and federal statutes protecting native birds, as well as NEPA and CEQA requirements to disclose environmental effects of the Project, and provide public opportunity for comment. These applicable statutes are summarized below:

### 1.5.1 Federal Regulations

**Endangered Species Act of 1973.** The Endangered Species Act (ESA) (16 USC 1531 et seq.) and subsequent amendments establish legal requirements for the conservation of endangered and threatened species and the ecosystems upon which they depend. Section 9 prohibits the take of any fish or wildlife species listed as endangered and most species listed as threatened, and defines *take* to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." *Harm* is further defined to mean "any act that kills or injures the species, including significant habitat modification." *Harass* is further defined as actions that create the likelihood of injury to listed species to an extent as to significantly disrupt normal behavior patterns which include breeding, feeding, and shelter.

The ESA also includes mechanisms for allowing exceptions to the Section 9 take prohibitions. Section 7 requires federal agencies, in consultation with the U.S. Fish and Wildlife Service (USFWS) to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered terrestrial wildlife species or result in the destruction or adverse modification of critical habitat for these species. Under Section 7, USFWS may authorize limited, incidental take (i.e., incidental to carrying out otherwise lawful activities) of listed species in a Biological Opinion.

The Project is not expected to affect federally listed threatened or endangered bird or bat species, though it is possible that such federally listed migratory species may be found in the Project vicinity during seasonal migrations.

**Migratory Bird Treaty Act.** The Migratory Bird Treaty Act (16 U.S.C. §§ 703, et seq.; MBTA) prohibits the taking, killing, possession, transportation and importation of migratory birds, their eggs, parts, and nests, except where specifically authorized by the USFWS (e.g., hunting waterfowl and upland game species). Under the MBTA, *migratory bird* is broadly defined as "any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle" and thus applies to most native bird species. Except where specifically permitted, most actions that cause bird mortality or result in the permanent or temporary possession of migratory birds or any associated body

parts, feathers, eggs or nests, constitute violations of the MBTA. The U.S. Department of Interior has recently issued a memorandum interpreting the MBTA prohibitions as being inapplicable to incidental take.

The USFWS recommends that electric utilities and utility-scale renewable energy Project developers prepare and implement Bird and Bat Conservation Strategies to minimize the incidental take of migratory birds.

**Bald and Golden Eagle Protection Act.** The Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668-668d; BGEPA) prohibits take of bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*). The BGEPA defines *take* to include “pursuing, shooting, shooting at, poisoning, wounding, killing, capturing, trapping, collecting, molesting, and disturbing.” The USFWS (2007) further defines *disturb* as “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.” Therefore, the requirements for guarding against impacts to eagles generally are more stringent than those required by the MBTA alone.

The USFWS can authorize take of bald and golden eagles when the take is associated with, but not the purpose of, an otherwise lawful activity, and cannot practicably be avoided (50 CFR § 22.26). In order to authorize take, the USFWS must determine that the proposed action is consistent with the goal of maintaining stable or increasing breeding populations. That is, any authorized take must be offset or mitigated by the proposed action. The Project is not anticipated to result in take of eagles.

**Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds.** Directs federal agencies to review the effects of actions and agency plans on migratory birds according to NEPA or other established environmental review processes, with emphasis on species of concern (Section 6 of the order) and identify unintentional take reasonably attributable to agency actions, focusing first on species of concern, priority habitats, and key risk factors and to develop and use principles, standards, and practices to lessen the amount of unintentional take (Section 9).

**Desert Renewable Energy Conservation Plan (DRECP), Land Use Plan Amendment to the California Desert Conservation Area Plan.** The purpose of the DRECP is to conserve and manage plant and wildlife communities in the desert regions of California while facilitating the timely permitting of compatible renewable energy Projects. The DRECP covers over 10 million acres of BLM land. The BLM Proposed Land Use Plan Amendment (LUPA) and Final Environmental Impact Statement for the DRECP was released in November 2015 and the BLM Record of Decision (ROD) for the DRECP was issued in September 2016. The IP Athos Project site is within the Chuckwalla Valley ecoregion subsection of the DRECP area. The DRECP LUPA identifies this area as a Development Focus Area (DFA). The DRECP LUPA identifies a series of Conservation Management Actions (CMAs) to be implemented on BLM lands. The portions of the proposed IP Athos gen-tie routes located on public lands are subject to the DRECP CMAs, including LUPA BIO-17 which requires a BBCS.

## 1.5.2 State Regulations

**California Endangered Species Act.** The California Endangered Species Act (CESA) prohibits take of wildlife listed as threatened or endangered and defines ‘*take*’ as any action or attempt to “hunt, pursue, catch, capture, or kill.” CESA also allows exceptions for take that occur incidental to otherwise lawful activities. Approval requires minimization and full mitigation of projected impacts. For projects that affect a species listed under both CESA and the federal ESA, compliance with the federal ESA will satisfy CESA if CDFW

determines that the federal incidental take authorization is consistent with CESA under Fish and Game Code § 2080.1. For projects that will result in take of a species listed under CESA but not under the federal ESA, the applicants must apply for a take permit under § 2081(b).

**Native Birds (California Fish and Game Code, Sections 3503, 3503.5, and 3513).** California Fish and Game Code § 3503 prohibits take, possession, or needless destruction of bird nests or eggs except as otherwise provided by the Code; § 3503.5 prohibits take or possession of birds of prey or their eggs except as otherwise provided by the Code; and § 3513 provides for the adoption of the MBTA's provisions (above). With the exception of a few non-native birds such as European starling, the take of any bird or loss of active bird nests or young is regulated by these statutes. As with the MBTA, these statutes offer no statutory or regulatory mechanism for obtaining an incidental take permit for the loss of non-game migratory birds.

**California Fully Protected Species.** Prior to enactment of CESA and the federal ESA, California enacted laws to “fully protect” designated wildlife species from take, including hunting, harvesting, and other activities (Fish and Game Code § 3511). Unlike the subsequent CESA and ESA, there was no provision for authorized take of designated fully protected species. Currently, 36 fish and wildlife species are designated as fully protected, including golden eagle and several other desert species.

## 2.0 Agency Coordination

IP Athos has initiated a series of meetings with state and federal resource agencies (BLM, USFWS, and CDFW) to discuss environmental review of the Athos Project, including review of potential impacts to native birds, and minimization or mitigation of those impacts. Meetings and other communications relative to this Bird and Bat Conservation Strategy took place on:

- June 26, 2018. Agency coordination meeting, CDFW Ontario office. Representatives from CDFW Ontario office, BLM Palm Springs Field Office, BLM California Desert District, USFWS Palm Springs Fish & Wildlife Office, IP Athos, Aspen Environmental Group, and Ironwood Consulting.
- July 17, 2018. Follow-up agency coordination meeting, BLM Palm Springs Field Office. Representatives from BLM Palm Springs Field Office, BLM California Desert District, USFWS Palm Springs Fish & Wildlife Office, CDFW Ontario office, IP Athos, Aspen Environmental Group, and Ironwood Consulting.
- July 31, 2018. Riverside County Planning Department pre-application meeting, UC Riverside Palm Desert facility. Representatives from Riverside County Planning, BLM Palm Springs Field Office, BLM California Desert District, USFWS Palm Springs Fish & Wildlife Office, IP Athos, Aspen Environmental Group, and Ironwood Consulting.
- August 8, 2018. Field meeting, Desert Center. Representatives from BLM Palm Springs Field Office, BLM California Desert District, USFWS Palm Springs Fish & Wildlife Office, CDFW Ontario office, IP Athos, Aspen Environmental Group, and Ironwood Consulting.
- A letter provided by USFWS dated June 11, 2018. The USFWS has made a number of recommendations in regard to minimization and avoidance measures to sensitive bird species that may occur in the Athos Project Area, including Yuma Ridgway's rail, southwest willow flycatcher, yellow-billed cuckoo, golden eagle, and burrowing owl. The Service encourages the applicant to develop and implement a statistically robust, systematic avian monitoring program as a component of a project-specific BBCS. In addition, the Service recommends that an adaptive management program should be developed that outlines the implementation and success of various bird deterrents during the construction and operational phases of the Project. The Service advises that mortality monitoring typically requires carcass

collection, which must be authorized by a Special Purpose Utility Permit (SPUT) and requests the applicant contact them for BBCS guidance and SPUT permit requirements.

## 3.0 Siting

### 3.1 Site Overview

The Athos Project site is located in the Chuckwalla Valley near the community of Desert Center, about halfway between the cities of Indio and Blythe, in unincorporated Riverside County, California. It consists of approximately 3,396 acres, including 3,216 acres of privately owned land, proposed as solar generator facilities and, in part, transmission line routes (i.e., generator-tie or gen-tie routes) and approximately 152.3 acres of BLM-managed public land, entirely within proposed gen-tie routes. The portions of the Project site proposed for PV and storage components, consist of seven non-contiguous groups of privately-owned parcels. The seven groups of parcels are identified as A through G and the gen-tie segments are referred to as Gen-tie 1 through Gen-tie 4.

The proposed Project site is located within the BLM California Desert Conservation Area (CDCA) and the Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan area. The proposed Project site is located outside boundaries of BLM designated Areas of Critical Environmental Concern (ACECs) and wilderness areas. It is within the USFWS designated southern Desert Tortoise Recovery Unit, and Gen-tie 4 is located within designated critical habitat for the desert tortoise. Two BLM designated Desert Wildlife Management Areas (DWMAs), established to support management and recovery of the listed threatened desert tortoise, are located within close proximity to the proposed Project site: The Chuckwalla DWMA is located just south of I-10 (including the southernmost portion of Gen-tie 4, but south of the proposed solar facilities), and the Joshua Tree National Park DWMA is located approximately two miles north of the northernmost portion of the Project site.

The proposed Project site is within the Riverside East Solar Energy Zone (SEZ) identified in the Solar Programmatic Environmental Impact Statement (BLM, 2012). Additionally, the Project site is within the Chuckwalla Valley ecoregion subsection of the Desert Renewable Energy Conservation Plan (DRECP) area (BLM, 2015).

The proposed Project site is in the central portion of Chuckwalla Valley in the Colorado Desert. The elevation of the surrounding landscape ranges from less than 400 feet above mean sea level (amsl) at Ford Dry Lake to over 3,000 feet amsl in the mountains that enclose the Chuckwalla Valley. The topography of the proposed Project site generally slopes toward the southeast at gradient of less than one (1) percent. Elevations of the Project site itself ranges from approximately 491 feet amsl in the southeast to 588 feet amsl in the northwest. Anthropogenic features and private land uses in the vicinity include agricultural, residential, renewable energy, energy transmission, historical military, and recreational development.

### 3.2 Habitat

This description of the biological resources of the proposed IP Athos Renewable Energy Project site is based on the *Biological Resources Technical Report, Athos Renewable Energy Project, Riverside County, California* (BRTR) prepared by Ironwood Consulting Inc. (Ironwood) in 2018.

Most of the Project site is disused or fallow agricultural land. 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) within the gen tie routes and proposed solar fields D and F. Some of the former

agricultural lands have partially recovered from previous disturbance and are mapped as recovering creosote bush scrub or salt bush scrub. One vegetation community (desert dry wash woodland) is identified by BLM (2002) and CDFW (2010) as sensitive due to its association with alluvial processes and likely California state water jurisdiction. Acreages of vegetation communities are summarized in Table 1 and mapped on Figure 3.

The term habitat refers to the environment and ecological conditions where a species is found. Wildlife habitat is generally described in terms of vegetation, though a more thorough explanation often must encompass further detail, such as availability or proximity to water; suitable nesting or denning sites; shade; foraging perches; cover sites to escape from predators; soils that are suitable for burrowing or hiding; limited noise and disturbance; or other factors that are unique to each species. Vegetation reflects many aspects of habitat, including regional climate, physical structure, and biological productivity and food resources (for many wildlife species). Thus, vegetation is a useful overarching descriptor for habitat and it is one of the primary factors in the assessments of habitat suitability presented in this section.

**Sonoran creosote bush scrub.** This vegetation is found on much of the undisturbed portions of the Project site and intergrades with desert dry wash woodland along desert washes. It is not designated as a sensitive plant community by BLM or CDFW. 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 most widespread creosote bush scrub habitat of the Colorado Desert (Holland, 1986). Dominant plants are creosote bush (*Larrea tridentata*) and white burr-sage (*Ambrosia dumosa*). Other occasional components include indigo bush (*Psoralea argemone*), sweetbush (*Bebbia juncea*), and button brittlebush (*Encelia frutescens*). There are also areas of recovering creosote bush scrub within the Project site where formerly fallow agricultural areas are recovering back to native vegetation. These areas have recolonized with ruderal species and sparse native vegetation with some evidence of former agricultural use.

**Desert Dry Wash Woodland.** Desert dry wash woodland is located along ephemeral washes within Parcel Groups D and F, and on some of the gen-tie routes. It is a sensitive vegetation community recognized as S4 by the CNDDDB and the BLM (2002) and the DRECP. Desert dry wash woodland is characteristic of desert washes, and often meets CDFW jurisdictional criteria as waters of the state. This community is synonymous with blue palo verde—ironwood (*Parkinsonia florida*—*Olneya tesota*) (microphyll) woodland alliance (Sawyer et al., 2009). 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 (*Psoralea argemone*). The understory is a modified creosote scrub with big galleta grass (*Hilaria rigida*), brittlebush (*Encelia farinosa*), desert lavender (*Hyptis emoryi*), and occasional Russian thistle.

**Desert Pavement.** The term desert pavement is primarily descriptive of soil and substrate conditions, rather than vegetation. It has a state rarity rank of S4 and is synonymous to rigid spineflower—hairy desert sunflower (*Chorizanthe rigida*—*Geraea canescens*) desert pavement sparsely vegetated alliance (Sawyer et al., 2009). It is sparsely vegetated and may have an intermittent layer of cryptogamic crust. The ground surface is sandy and gravelly mixed alluvium with various rocks and gravel, cemented together by fine sediment or mineral deposits. The shrub layer of creosote bush is extremely sparse. The herb layer, though also sparse, is slightly greater (seasonally) and more diverse. Within the Project site, desert pavement is interwoven between areas of creosote bush scrub and desert dry wash woodland on solar sites D and F and some of the gen-tie routes in the southern portion of the site.

The remainder of the proposed Project area consists of active or former agricultural lands, and lands that have been developed or disturbed for human activities such as abandoned structures, completely denuded sections of former agricultural fields, and dirt roads. Portions of these former agricultural lands are recovering some components of natural vegetation (recovering creosote bush scrub and recovering saltbush scrub, see Table 1).

**Table 1. Vegetation, Habitat, and Land Cover Acreages, by Land Ownership**

Vegetation, habitat, or land cover	Solar facility (private)	Gen-tie (private)	Gen-tie ROW (BLM)	Total
<b>Natural vegetation and habitat types</b>				
Sonoran creosote bush scrub	295.6	7.1	88.6	391.3
Desert pavement	7.5	2.1	12.5	22.1
Desert dry wash woodland	92.4	10.3	40.4	143.1
<i>subtotals</i>	<i>395.3</i>	<i>19.5</i>	<i>141.5</i>	<i>556.5</i>
<b>Recovering vegetation and habitat types</b>				
Recovering creosote bush scrub	183	2.6	1.8	187.4
Recovering salt bush scrub	295.1	-	-	295.1
<i>subtotals</i>	<i>478.1</i>	<i>2.6</i>	<i>1.8</i>	<i>482.5</i>
<b>Anthropogenic land use and cover types</b>				
Developed/disturbed	172.8	-	4.5	177.3
Active agriculture	151.3	-	-	151.3
Fallow agriculture	2,029.8	0.9	9.0	2,070.8
<i>subtotals</i>	<i>2,353.9</i>	<i>0.9</i>	<i>9.0</i>	<i>2,363.8</i>
<b>Totals<sup>1</sup></b>	<b>3,227.5</b>	<b>23.0</b>	<b>152.3</b>	<b>3,402.8</b>

<sup>1</sup> - Minor variations from total acreage identified in the EIR and text above are due to rounding error or differing GIS files created for the Project and/or obtained from other sources.

## 4.0 Bird and Bat Species of the Project Vicinity

### 4.1 Information Compiled to Date (Pre-Construction Surveys)

The following discussion of bird and bat occurrence in the area is based on field surveys conducted by Ironwood in the fall of 2017 and spring of 2018 on all portions of the proposed Athos Project site, and a review of field surveys for previous projects in the vicinity (Ironwood, 2010, 2017, 2018; Aspen, 2012). Aspen and Ironwood biologists reviewed the California Natural Diversity Data Base (CNDDDB; CDFW, 2018a) to identify special status species known from the area. Aspen and Ironwood biologists also reviewed applicable documents pertaining to the Desert Sunlight, Desert Harvest, and Palen projects, including the Biological Resources Technical Reports for each project (Aspen 2012, Ironwood Consulting 2011, 2018). During all field surveys conducted for the Athos Project, all incidental bird species observations were recorded in field notes.

On undisturbed habitats and gen-tie routes, the wildlife surveys for the Athos Project employed belt transects spaced approximately 10 meters (32.8 feet) apart to provide 100 percent (full) coverage. Along the gen-tie routes, 10-meter belt transects were employed 30 meters on each side of the gen-tie centerline, resulting in a 60-meter-wide survey corridor. On the agricultural and former agricultural lands,

the surveys employed belt transects approximately 20 meters (65.6 feet) apart. All burrows or holes with potential to shelter special-status wildlife (e.g., burrowing owl) were carefully inspected for potential occupancy or sign of recent wildlife use.

Wildlife surveys described here provided one full-coverage burrowing owl survey conducted during breeding season. 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.

Presence/absence surveys for elf owl and Gila woodpecker surveys by visual and auditory searches, focusing on Parcel Group G in and around the date palm farm where there are perches, potential nesting trees, and plentiful water from irrigation. Nocturnal callback surveys for elf owls were conducted at 12 locations.

All sign or other evidence of burrowing owl was recorded. Type of sign recorded included live or dead individuals, tracks, burrows, pellets, white wash, and burrow complexes. Activity for each burrow or complex was determined by the freshness of the sign found. If fresh tracks, scratches, pellets or white wash were found at a burrow or complex, it was categorized as active.

Incidental observations of bats and roosts would have been recorded, if detected during wildlife surveys. Targeted surveys for bats were not conducted. Acoustic bat surveys previously conducted for adjacent proposed projects provide supplementary information about the status of current bat populations within the Project vicinity.

During all wildlife surveys, biologists recorded all wildlife species observed, regardless of status. The BRTR provides a compilation of special-status wildlife with potential to occur in Project vicinity, and evaluates probability of occurrence for each species, based on habitat, elevational and geographic ranges, and field survey results. The complete methods and results of the surveys are provided in the BRTR (Ironwood, 2018).

Most of the birds occurring in the Project vicinity have no special conservation status but all native birds are protected under the federal MBTA and California Fish and Game Code. In addition to the common birds of the area, a list of special-status bird and bat species with potential to occur in the vicinity of the proposed Project was compiled. Special status criteria include:

- Officially listed, or candidate for listing, by California or the federal government as endangered, threatened, or rare;
- Birds or bats which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA);
- BLM Sensitive Species;
- Birds or bats identified by CDFW as Species of Special Concern (CNDDDB, 2018);
- Birds or bats included in the CDFW lists of Special Plants or Special Animals (CNDDDB, 2018);
- Birds or bats protected under other statutes or regulations (e.g., Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, etc.)

All special-status birds or bats identified by this literature review, and others known from the general region, are included in Table 2, which summarizes the natural history, agency status, and occurrence probability on the site for each species.

**Table 2. Special Status Bird and Bat Species of the Chuckwalla Valley Area**

Species	Habitat and Distribution	Activity Season	Conservation Status	Occurrence Probability
<b>BIRDS</b>				
<i>Circus cyaneus</i> Northern harrier	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. N America and Eurasia	Winter; rare in summer	Fed: none State: SSC S3 (nesting)	Wintering/Migration: High; Nesting: Low Foraging: Expected rarely, mainly winter; observed flying over Project
<i>Aquila chrysaetos</i> Golden eagle	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. Forages over shrublands and grasslands; breeds throughout W N America, winters to E coast	Year-around	Fed: Eagle Protection act (see text) State: FP, WL	Nesting/Wintering: Minimal on-site; occurs in surrounding mtns Foraging: Low (year-around)
<i>Pandion haliaetus</i> Osprey	Nests in northern N America and Mexican coastlines near large water bodies, preys primarily on fish; winters in central Calif to S America;	Spring and fall migr. seasons	Fed: none State: WL S3 (nesting)	Nesting: Minimal (outside range; no suitable sites) Migration: Present, occasional flyover
<i>Buteo swainsonii</i> Swainson's hawk	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. Central Valley (Calif.) and east to cent. U.S., S. Canada, N. Mexico; winters in S America. A few nesting records in W Mojave Des (e.g., Lancaster area)	Spring and fall migr. seasons	Fed: BCC State: ST S2	Nesting: Low Migration: Moderate to high; observed at site G on Private Lands and at gen-tie 3 on BLM Lands
<i>Buteo regalis</i> Ferruginous hawk	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. Forages over grassland and shrubland; winters in W and SW N Amer. (breeds in Great Basin and N plains)	Winter	Fed: BCC State: SSC S3S4, WL (wintering)	Nesting: Low Wintering/Migration: Moderate; not observed
<i>Accipiter striatus</i> Sharp-shinned hawk	Nests and hunts in forest & woodland mainly to N (may breed in S Calif. Mtn woodlands); also forages in open areas; regularly winters in S Calif.	Winter	Fed: none State: SSC S3 (nesting)	Nesting: Minimal (no habitat, outside range) Winter/Migration: High

**Table 2. Special Status Bird and Bat Species of the Chuckwalla Valley Area**

Species	Habitat and Distribution	Activity Season	Conservation Status	Occurrence Probability
<i>Accipiter cooperii</i> Cooper's hawk	Nests and hunts in forest & woodland, also forages in open areas; most of U.S., Central and S America	Year-around	Fed: none State: SSC S3 (nesting)	Nesting: Minimal (no habitat) Winter/Migration expected
<i>Falco columbaris</i> Merlin	Uncommon in winter in S Calif. desert and valleys (breeds in northern N America and Eurasia)	Winter	Fed: none State: SSC S3 (wintering)	Nesting: Minimal (outside range) Winter: Expected during winter
<i>Falco mexicanus</i> Prairie falcon	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; occurs throughout arid western U.S. and Mexico	Year-around	Fed: BCC State: SSC S3 (nesting), WL	Nesting: Low, occurs in surrounding mtns Foraging: High (year-around), observed
<i>Athene cucularia hypugaea</i> Western Burrowing owl	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; forages in open habitat; increasingly uncommon in S Calif.; occurs through W U.S. and Mexico	Year-around	Fed: none BLM: Sensitive State: SSC S2 (burrow sites)	High potential for nesting in Project area; foraging observed live on Private Lands at G, sign at A, B, C, D, E, F, G; foraging not observed on BLM Lands.
<i>Falco peregrinus anatum</i> American peregrine falcon	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. Widespread but rare worldwide	Spring - summer	Fed: none (former FE) BLM: sensitive State: FP S2 (former SE)	Nesting: Low (no suitable nest sites; well outside breeding range) Foraging: Moderate
<i>Asio flammeus</i> Short-eared owl	Require open country that supports small mammal 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. Breeds; temperate N & S America, Eurasia	Year-around	Fed: none State: SSC S3 (nesting)	Migration – moderate; nesting low; not observed
<i>Asio otus</i> Long-eared owl	Breed in riparian woodlands; forage (nocturnally) over open land; sea level to about 6000 ft. elev.; through N America and Eurasia	Year-around	Fed: none State: SSC S3 (nesting)	Breeding: Minimal (no habitat) Winter: Occurs at Lake Tamarisk
<i>Micrathene whitneyi</i> Elf owl	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	Spring and Summer	Fed: BCC BLM: Sensitive State: SE	Nesting: Low to Moderate; Foraging: Low to Moderate; not observed

**Table 2. Special Status Bird and Bat Species of the Chuckwalla Valley Area**

Species	Habitat and Distribution	Activity Season	Conservation Status	Occurrence Probability
<i>Chaetura vauxi</i> Vaux's swift	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. Breeds central Calif. and northward, in coastal and montane forests; winters in Central and S America	Spring and fall migr. seasons	Fed: none State: SSC S3 (nesting)	Nesting: Low (outside range) Migration: High, not observed
<i>Progne subis</i> Purple martin	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.	Spring and Fall	Fed: none State: SSC	Migration: Moderate; Nesting: Low; no suitable wintering or nesting habitat
<i>Riparia riparia</i> Bank swallow	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.	Spring and Fall	Fed: none BLM: Sensitive State: ST	Wintering: Low; Nesting: Low; Migration: Moderate
<i>Cypseloides niger</i> Black swift	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.	Spring and Fall	Fed: BCC State: SSC	Migration: Low; Nesting: Low
<i>Colaptes chrysoides</i> Gilded flicker	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.	Year-around	Fed: BCC BLM: Sensitive State: SE	Low potential for occurrence.
<i>Melanerpes uropygialis</i> Gila woodpecker	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. Saguaro woodlands, sometimes other woodlands; cavity nester mainly in cactus; SE Calif., S Ariz., W Mexico (incl. Baja)	Year – around	Fed: BCC BLM: Sensitive State: SE S1S2	Nesting: Low to Moderate; Foraging: Low to Moderate; not observed

**Table 2. Special Status Bird and Bat Species of the Chuckwalla Valley Area**

Species	Habitat and Distribution	Activity Season	Conservation Status	Occurrence Probability
<i>Lanius ludovicianus</i> Loggerhead shrike	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; widespread in N America; valley floors to about 7000 ft. elev.	Year-around	Fed: BCC State: SSC S4 (nesting)	Nesting: High; Foraging: High; observed at site E on Private Lands
<i>Aphelocoma californica cana</i> Scrub jay (Eagle Mtn population)	Locally endemic year-around resident in pinyon woodlands in the Eagle Mountains; long-disjunct from other populations	Year-around	Fed: none State: WL S1S2	Present (observed as transient, Oct 2011)
<i>Aythya Americana</i> Redhead	During breeding season may be found along e Colorado River and Salton Sea. Breeds locally in the Central Valley, coastal Southern California, eastern Kern County, and the Salton. Nests in fresh emergent wetland bordering open water.	Spring and summer	Fed: none State: SSC (nesting)	Nesting – Low
<i>Charadrius montanus</i> Mountain plover	Habitat includes short-grass prairie or their equivalents, and in southern California deserts are associated primarily with agricultural areas	Winter	Fed: BCC BLM: Sensitive State: SSC	Wintering/Migration: Moderate; Nesting: Low, not observed
<i>Pelecanus erythrorhynchos</i> American white pelican	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)	Spring and Fall	Fed: none State: SSC	Migration: Moderate; Nesting/Wintering: Low; not observed
<i>Chlidonias niger</i> Black tern	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)	Spring and Fall	Fed: none State: SCC	Migration: Low; Nesting: Low; uncommon migrant
<i>Grus canadensis</i> Sandhill crane	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.	Winter	Fed: none State: SSC	Migration: Moderate; Nesting: Low, observed flying over Project
<i>Numenius americanus</i> Long-billed curlew	Preferred breeding and winter habitats include large coastal estuaries, upland herbaceous areas, and croplands. On estuaries, feeding occurs mostly on intertidal mudflats.	Spring and Fall; some Winter	Fed: BCC State: WL	Migration: Moderate; Nesting: Low; no suitable foraging

**Table 2. Special Status Bird and Bat Species of the Chuckwalla Valley Area**

Species	Habitat and Distribution	Activity Season	Conservation Status	Occurrence Probability
<i>Rallus obsoletus yumanensis</i> Ridgway's (Yuma) clapper rail	Occurs in inland areas in the south-western 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.	Spring and Fall, Winter	Fed: FE State: ST, CFP	Wintering: Low; Nesting: Low; rare migrants only
<i>Eremophila alpestris actia</i> California horned lark	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).	Spring and summer migrants, winter	Fed: none State: WL	Wintering: High, observed
<i>Coccyzus americanus occidentalis</i> Western yellow-billed cuckoo	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.	Spring and Summer	Fed: FT, BCC BLM: Sensitive State: SE	Migration: Low; Nesting: Low; uncommon migrant
<i>Calypte costae</i> Costa's hummingbird	Primary habitats are desert wash, edges of desert riparian and valley foothill riparian	Spring and summer; some year-around	Fed: BCC (nesting) State: none	Nesting – Low; Foraging – Low; not observed
<i>Toxostoma bendirei</i> Bendire's thrasher	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; mainly E Mojave Des in Calif. (scarce in W Mojave); American SW and mainl. Mexico; winters in S Arizona, New Mexico, and mainl. Mexico	Spring and Summer	Fed: BCC BLM: Sensitive State: SSC S3	Foraging: Moderate; Nesting: Low

**Table 2. Special Status Bird and Bat Species of the Chuckwalla Valley Area**

Species	Habitat and Distribution	Activity Season	Conservation Status	Occurrence Probability
<i>Toxostoma crissale</i> Crissal thrasher	This species prefers habitats characterized by dense, low scrubby vegetation, which, at lower elevations, includes desert and foothill scrub and riparian brush; Sonoran Des, E Mojave Des, to Texas, W mainland Mexico	Year - around	Fed: none State: SSC S3	Wintering: Low; Nesting: Low; Migration: Moderate
<i>Toxostoma lecontei</i> Le Conte's thrasher	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; Calif. deserts, SW Central Val. & Owens Val., east to Utah, Arizona	Year - around	Fed: none State: SSC S3	Potential to occur: High; Private Lands: Sites C, D, E, F, G, and gen-tie 1A, 3; BLM Lands: gen-tie 1A, 1C, 2A, 2B, 3, 4
<i>Empidonax traillii</i> Willow flycatcher	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.	Spring and Fall	Fed: none State: SE	Wintering: Low; Nesting: Low; uncommon migrant
<i>Empidonax traillii extimus</i> Southwestern willow flycatcher	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.	Spring and Fall	Fed: FE State: SE	Wintering: Low; Nesting: Low; uncommon migrant
<i>Pyrocephalus rubinus</i> Vermillion flycatcher	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; SE Calif., east through S Texas, and S through Mexico; winters in Mexico	Spring and Summer	Fed: none State: SSC S2S3 (nesting)	Wintering: Low; Nesting: Low; migration through Project site
<i>Poliophtila melanura</i> Black-tailed gnatcatcher	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.	Year-around	Fed: none State: WL	Foraging: High; Nesting: High

**Table 2. Special Status Bird and Bat Species of the Chuckwalla Valley Area**

Species	Habitat and Distribution	Activity Season	Conservation Status	Occurrence Probability
<i>Vireo bellii arizonae</i> Arizona Bell's vireo	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.	Summer	Fed: none BLM: Sensitive State: SE	Wintering: Low; Nesting: Low; Migration: Moderate
<i>Vireo bellii pusillus</i> Least Bell's vireo	Least Bell's vireo (endemic to California and Baja California) 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.		Fed: FE BLM: Sensitive State: SE	Wintering: Low; Nesting: Low; Migration: Moderate
<i>Icteria virens</i> Yellow-breasted chat	This species occupies shrubby riparian habitat with an open canopy, and will nest in non- native species, including tamarisk.	Spring, Summer, and Fall	Fed: none State: SSC (nesting)	Migration: Moderate; Nesting: Low; Foraging potential during migration
<i>Xanthocephalus xanthocephalus</i> Yellow-headed blackbird	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	Spring and Fall	Fed: none State: SSC	Wintering: Low; Nesting: Low; Migration: Moderate
<i>Poocetes gramineus</i> Vesper sparrow	Fairly common locally in southern deserts in the winter and during migration. Occupies grasslands, croplands, and open brushlands.	Winter, Spring and Fall	Fed: none State: SSC	Migration: Moderate; Nesting: Low; no suitable wintering or nesting habitat
<i>Spinus lawrencei</i> Lawrence's goldfinch	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.	Spring and Fall	Fed: BCC State: none	Wintering: Low; Nesting: Low; Migration: Moderate
<i>Setophaga petechia sonorana</i> Sonora yellow warbler	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	Spring and Fall	Fed: BCC State: SSC	Nesting: Low; Migration: Moderate

**Table 2. Special Status Bird and Bat Species of the Chuckwalla Valley Area**

Species	Habitat and Distribution	Activity Season	Conservation Status	Occurrence Probability
<i>Vermivora luciae</i> Lucy's warbler	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 typical desert nesting habitat, mesquite wash and desert riparian habitats. May use abandoned verdin nests; cavity-nesting species; breeds through much of Arizona; winters on Pacific Coast of mainl. Mexico	spring - summer	Fed: BCC BLM: Sensitive State: SSC S2S3 (nesting)	Nesting: Moderate (margin of known range); Foraging: Moderate; not observed
<b>MAMMALS</b>				
<i>Antrozous pallidus</i> Pallid bat	Inhabit rock outcrops of shrublands, arid deserts and canyonlands, mostly below about 6000 ft. elev. 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, 2016). Calif, SW N Amer through interior Oregon and Washington; hibernates in winter	Warm season	Fed: none BLM: Sensitive State: SSC S3	Moderate potential for foraging; low potential for roosting; not observed.
<i>Corynorhinus (Plecotus) townsendii</i> Townsend's big-eared bat (incl. "pale," "western," and other subspecies)	Habitat associations include coniferous forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Day roosts in caves, tunnels, mines. Foraging associations include edge habitats along streams, adjacent to and within a variety of wooded habitats. Feed primarily on moths. Many habitats throughout Calif and W N Amer, scattered pop'ns in E;	Year-around	Fed: none BLM: Sensitive State: SSC, S2S3	Low-moderate potential for roosting on site; moderate potential for foraging in area; not observed
<i>Euderma maculatum</i> Spotted bat	Arid, low desert habitats (cool seasons) to high elevation conifer forests (summer), much of SW N Amer. but very rare; roosts in deep crevices in cliffs, feeds on moths captured over open water	Not known	Fed: none BLM: Sensitive State: SSC S2S3	Low potential for roosting or foraging on site; not observed
<i>Eumops perotis</i> Western mastiff bat	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; cent. and S Calif., S Ariz., NM, SW Tex., N Mexico; roost in deep rock crevices, forage over wide area	Year-around	Fed: none BLM: Sensitive State: SSC S3?	Low potential for roosting on site; moderate potential for foraging in area; not observed
<i>Lasiurus xanthinus</i> Western yellow bat	Recorded below 600 m (2000 ft) in valley foothill riparian, desert riparian, desert wash. Mexico and Cent. Amer., to S AZ; Riv., Imperial and San Diego Cos.; roosts in trees; evidently migrates from Calif. during winter	Year-around	Fed: none State: SSC S3	Moderate potential for roosting on site; Moderate potential for foraging in area; not observed

**Table 2. Special Status Bird and Bat Species of the Chuckwalla Valley Area**

Species	Habitat and Distribution	Activity Season	Conservation Status	Occurrence Probability
<i>Macrotus californicus</i> California leaf-nosed bat	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, 2016). Arid lowlands, S Calif., S and W Ariz., Baja Calif. and Sonora, Mexico	Year-around	Fed: none BLM: Sensitive State: SSC S2S3	Low potential for roosting on site; moderate potential for foraging in area; not observed
<i>Myotis occultus</i> Arizona myotis	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.	Year-around	Fed: none BLM: none State: SSC	Low potential for roosting on site; low potential for foraging in area; not observed
<i>Myotis velifer</i> Cave myotis	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	Late spring, summer, and fall	Fed: none BLM: Sensitive State: SSC	Low potential for roosting on site; low potential for foraging in area; not observed
<i>Myotis yumanensis</i> Yuma myotis	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.	Year-around	Fed: none BLM: Sensitive State: none	Low potential for roosting on site; low potential for foraging in area; not observed
<i>Nyctinomops macrotis</i> ( <i>Tadarida molossa</i> ) Big free-tailed bat	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; scattered localities in W N. Amer. through Cent. Amer.; ranges widely from roost sites; often forages over water	Year-around (?)	Fed: none BLM: none State: SSC S2	Low potential for roosting on site; moderate potential for foraging in area
<i>Nyctinomops femorosaccus</i> ( <i>Tadarida femorosaccus</i> ) Pocketed free-tailed bat	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, deserts and arid lowlands, SW U.S., Baja Calif., mainland Mexico; Roost mainly in crevices of high cliffs; forage over water and open shrubland	Spring and summer	Fed: none BLM: none State: SSC S2S3	Low potential for roosting on site; low potential for foraging in area; not observed

General References: American Ornithologists Union 1998; BLM CDD 2002; CDFW 2018a; 2018b; Cogswell 1977; Garrett and Dunn 1981; Grinnell and Miller 1944; Hall 1981; McCaskie et al., 1979; Rosenberg, et al., 1991; Schuford and Gardali 2008; Serena 1982; WBWG 2016

## Conservation Status

**Federal designations:** (federal Endangered Species Act, U.S. Fish and Wildlife Service). Until 1996, FWS maintained a list of Category 2 candidates, described as species of concern, but with insufficient data to support listing. This list is no longer maintained and FWS has no SOC category.

FE: Federally listed, endangered.

FT: Federally listed, threatened.

BCC: Fish and Wildlife Service: Birds of Conservation Concern

Candidate: Sufficient data are available to support federal listing, but not yet listed.

Proposed: Formally proposed for federal status shown.

**State designations:** (California Endangered Species Act, California Dept. of Fish and Wildlife)

SE: State listed, endangered.

ST: State listed, threatened.

RARE: State listed as rare (applied only to certain plants).

SSC: California species of special concern. Considered vulnerable to extinction due to declining numbers, limited geographic ranges, or ongoing threats.

FP: Fully protected. May not be taken or possessed without permit from CDFW.

WL: Watch list

**CDFG Natural Diversity Data Base Designations:** Applied to special status plants and sensitive plant communities; where correct category is uncertain, CDFG uses two categories or question marks.

S1: Fewer than 6 occurrences or fewer than 1000 individuals or less than 2000 acres.

S1.1: Very threatened

S1.2: Threatened

S1.3: No current threats known

S2: 6-20 occurrences or 1000-3000 individuals or 2000-10,000 acres (decimal suffixes same as above).

S3: 21-100 occurrences or 3000-10,000 individuals or 10,000-50,000 acres (decimal suffixes same as above).

S4: Apparently secure in California; this rank is clearly lower than S3 but factors exist to cause some concern, i.e., there is some threat or somewhat narrow habitat. No threat rank.

S5: Demonstrably secure or ineradicable in California. No threat rank.

SH: All California occurrences historical (i.e., no records in > 20 years).

SX: Presumed extirpated in California.

## 4.2 Listed Threatened or Endangered Species

**Gila woodpecker (*Melanerpes uropygialis*).** The Gila woodpecker is listed as endangered under CESA but has no status under the federal ESA. It is identified as a bird species of conservation concern (USFWS, 2008). 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). Suitable habitats include riparian woodlands, uplands with concentrations of large columnar cacti, old-growth xeric-riparian wash woodlands, and urban or suburban residential areas (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).

**Athos Project occurrence:** No Gila woodpeckers were observed within the Project site during surveys, but a nesting pair feeding young was incidentally observed in a palm tree at the Corn Springs Campground seven miles from the Project site, during the spring 2018 survey period.

Potentially suitable habitat within the Project site is found in desert washes (if there are palo verde trees large enough for cavity nests) but they would be expected to more readily use palm trees in parcel group G than palo verde or ironwood trees. The probability of this species nesting on the Project site is low to moderate because the site supports sparse riparian woodland habitat and the existing date palms on the old agricultural land may be attractive. Where Gila woodpeckers occur, they generally are loud and conspicuous, and readily located by field biologists.

**Swainson's hawk (*Buteo swainsoni*).** The Swainson's hawk is listed as a threatened species under CESA but has no federal listing status. It is a migratory raptor. Swainson's hawk 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, well 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.

*Athos Project occurrence:* An immature Swainson's hawk was incidentally observed flying over the Project site on two occasions during the spring 2018 surveys (parcel group G and gen-tie 3) and was likely a migrant since the nearest nesting area for Swainson's hawk is in Antelope Valley.

The Project site provides potential migration habitat but is well outside the nesting range. It may be found throughout the Project site during migration.

**Elf owl (*Micrathene whitneyi*).** The elf owl is listed as endangered under CESA but has no federal listing status. The elf owl 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; the nearest nesting occurrence is near Corn Springs (Garret and Dunn, 1981). 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).

*Athos Project occurrence:* 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, Director, San Bernardino County Museum; SBCM, 2012a). The palm groves (parcel group G) and desert wash woodland habitat (parcel groups D and F as well as gen-tie 1A, 1C, 2A, 2B, 3, and 4) on the site may provide suitable (albeit probably marginal) habitat for nesting elf owls.

## 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.

**Yuma Ridgway's rail (*Rallus obsoletus yumanensis*).** Yuma Ridgway's rail, formerly known as Yuma clapper rail (*Rallus longirostris yumanensis*), is listed as a threatened species under CESA and an endangered species under the federal ESA. Yuma Ridgway's rail 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 (USFWS, 2014). It is believed that most Ridgway's rails do not migrate (USFWS, 2014). The extent of dispersal or migration between the populations is not well known (USFWS, 2009d); however, outlier records across the desert show that some level of movement occurs (CNDDDB, 2018). 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 (CNDDDB, 2018).

**Southwestern willow flycatcher (*Empidonax traillii extimus*).** Southwestern willow flycatcher is listed as endangered under CESA and the federal ESA. Southwestern willow flycatcher 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 (CNDDDB, 2018). Recent studies indicate that southwestern willow flycatchers do not migrate over the area of the desert where the Athos 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 the site appears to be outside the southwestern willow flycatcher's migratory routes.

**Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*).** Western yellow-billed cuckoo is listed as endangered under CESA and threatened under the federal ESA. Western yellow-billed cuckoo 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 (CNDDDB, 2018). 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 Athos Project site, although it is possible that western yellow-billed cuckoo could occur on the site briefly, during migration season.

**Least Bell's vireo (*Vireo bellii pusillus*).** Least Bell's vireo is listed as endangered under CESA and the federal ESA. Least Bell's vireo 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 (USFWS, 2016). The closest known breeding habitat to the Athos site is to the northwest in the Big Morongo Canyon (USFWS, 2016). 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 Athos Project site, although least Bell's vireo could occur on the site briefly, during migration season.

### 4.3 Species Protected Under the Federal Bald and Golden Eagle Protection Act

**Golden Eagle (*Aquila chrysaetos*).** 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 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 (USFWS, 2016) and suggest a level of sustainable take is approximately 2,000 individuals annually. Additional unmitigated mortality will steepen the rate of decline that the golden eagle population is presently undergoing (USFWS, 2016).

Golden eagle surveys have been conducted on a multitude of projects within 10 miles of the Project vicinity between 2010-2015.

*Athos Project occurrence:* No golden eagles were observed within four (4) miles of the Project during the surveys between 2010-2015 or during the 2017-2018 wildlife surveys for the Project site. Within the Project area, is the highest concentration of surveys repeated over time between 2010-2015.

The mountain ranges surrounding the Project site provide suitable golden eagle nesting habitat. No on-site impacts to nest sites are expected, but golden eagles are sensitive to human disturbances during the nesting season. If there is an active nest nearby, then human activity and noise during Project construction could adversely affect golden eagle nesting success.

The Project site and gen-tie alignments provide suitable golden eagle foraging habitat. Golden eagles could forage at the Athos Project site at any time of year. Foraging birds could include mated pairs using the surrounding nesting territories; or, if the territories are inactive, unmated golden eagles or adult birds whose nests may have failed, could forage over the site during breeding season. Foraging would be somewhat more common during winter and migration seasons due to larger numbers of golden eagles in the region and their larger winter foraging ranges.

### 4.4 Species Fully Protected Under the California Fish and Game Code

Most of the state's designated fully protected species occur well outside the Project vicinity, but two fully protected birds could occur in the area. These are: golden eagle (discussed above, Species Protected Under the Bald and Golden Eagle Protection Act) and American peregrine falcon.

**American peregrine falcon (*Falco peregrinus anatum*).** The American peregrine falcon is distributed worldwide. Peregrine falcons were formerly listed under CESA and ESA, but have been delisted under both Acts. In California, range is primarily central to northern California, with wintering habitat located 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. 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.

*Athos Project occurrence:* There is only minimal likelihood that American peregrine falcon would be found in the Project vicinity, except as brief overflight during migration. Project implementation would not affect nesting habitat and has little likelihood of adversely affecting foraging behavior.

Suitable migratory or foraging habitat is present throughout the Project site, but the site lacks suitable nesting habitat.

## 4.5 BLM Sensitive Species

The BLM maintains a list of Sensitive Species, including species that are rare, declining, or dependent on specialized habitats (BLM, 2010). It manages sensitive species to provide protections comparable to species that may become listed as threatened or endangered (i.e., candidate species for federal listing). In addition to species addressed in this section of the BBCP, all listed threatened or endangered species (above) are managed as BLM sensitive species.

**Burrowing owl (*Athene cunicularia*).** The burrowing owl is a BLM Sensitive Species and a CDFW Species of Special Concern. 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 depend on other species to dig suitable burrows for use. If those species do not return to an area to dig new burrows or repair collapsed burrows, then burrowing owls would not be able to use those collapsed burrows.

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). 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 populations, 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.

*Athos Project occurrence:* Burrowing owls and their sign were observed at several locations within the Project site. A total of seventeen burrows were observed with burrowing owl sign consisting of white wash, feathers, or pellets. Four live individuals were observed at burrows during the spring 2018 surveys and one live individual was observed at a burrow during the fall 2017 surveys. All live individuals were

observed in the southern portion of the Project site with all 2018 observations concentrated on the eastern portion of the Project site on parcel group G (see Figure 2 for locations). Burrowing owls may have been more prevalent in the eastern portion of the site due to the increased prey availability from artificial water sources. No burrowing owl sign was found on the public components of the gen-tie.

**Bendire's thrasher (*Toxostoma bendirei*).** Bendire's thrasher is a BLM Sensitive Species and CDFW Species of Special Concern. California populations are migratory, though Bendire's thrasher is found year-around in more southern portions of its range, in southern Arizona and adjacent Mexico. The Athos Project site is near the southern boundary of its breeding range in California. It breeds in open, upland desert shrublands of JTNP and surrounding area, and northward through several disjunct regions of the Mojave Desert (Sterling, 2008). Its habitat requirements are poorly understood, but it is generally associated with *Yucca* (e.g., Joshua tree) and *Opuntia* (cholla cacti) species on gently sloping terrain. Soil texture is apparently important to habitat suitability, perhaps because Bendire's thrashers largely forage on ground-dwelling insects. Hard rocky soils (e.g., desert pavement) and loose sands (e.g., dry wash sands) are apparently less suitable than firmly packed, fine-textured soils.

*Athos Project occurrence:* Bendire's thrashers were not observed on the Project site during the fall 2017 and spring 2018 surveys. Habitat throughout the site appears to be of marginal suitability, due to relatively low cover of *Yucca* and *Opuntia* species, and seemingly poorly-suitable soil texture. There is a low to moderate probability that Bendire's thrasher may occur on the site.

**Lucy's warbler (*Vermivora luciae*).** Lucy's warbler is a migratory songbird that breeds in desert riparian woodlands and winters on Pacific Coast of mainland Mexico. Its breeding range extends through much of Arizona, and parts of the eastern California deserts. It is a cavity-nesting species (i.e., it generally nests in unoccupied woodpecker nests or other cavities in trees). Its primary nesting habitat is mesquite thickets, but also uses native riparian trees and saltcedar (*Tamarix* spp.).

*Athos Project occurrence:* Lucy's warblers were not observed on the Project site during the fall 2017 and spring 2018 surveys, though no focused surveys were conducted. The probability of Lucy's warblers nesting and/or foraging in desert wash woodlands on or near the proposed solar facility site or gen-tie alignment alternatives is moderate.

Project development would eliminate desert dry wash woodland habitat and potential nesting and foraging habitat for Lucy's warbler on the proposed solar generator site, and could also affect smaller areas of suitable habitat along gen-tie alignments (see Table 1 for a summary of vegetation and habitat types). In addition to habitat impacts, the Project could cause mortality or injury to a Lucy's warbler (including juvenile birds or eggs), if an active nest were damaged or disturbed during construction or other phases of the Project. Potential Project impacts would be comparable to those described for nesting birds, below.

**Bats.** The BLM includes several bat species on its list of sensitive species. The special status bats of the local area roost in rock crevices, tunnels, or caves; one species (western yellow bat) roosts in the foliage of riparian trees. Roost sites may be used seasonally (e.g., inactive cool seasons) or daily (day roosts, used during inactive daylight hours). Maternity roosts are particularly important overall for bat life histories. Knowledge of bat distributions and occurrences is sparse. The majority of adverse impacts to bat populations in the region result from disturbance of roosting or hibernation sites, especially where large numbers of bats congregate; physical closures of old mine shafts, which eliminates roosting habitat; elimination of riparian or desert wash microphyll vegetation which is often productive foraging habitat; more general habitat loss or land use conversion; and agricultural pesticide use which may poison bats or eliminate their prey-base (Pierson & Rainey, 1998; Gannon, 2003). Bat life histories vary widely. Some species hibernate

during winter, or migrate south. During the breeding season, bats generally roost during the day, either alone or in communal roost sites, depending on species. All special status regional bats are insectivorous, catching their prey either on the wing or on the ground. Some species feed mainly over open water where insect production is especially high, but others forage over open shrublands such as found on the Project site.

*Athos Project occurrence:* No active bat roosts were documented on the Project site during any of the surveys to date. 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. Suitable foraging habitat for special-status bats is found on the Project site, particularly within the desert dry wash woodland (parcel groups D and F) and near the date tree farm (parcel group G) where water is available year-round. This is especially true for California leaf-nosed bats and pallid bats that feed on large insects they glean from the foliage. Bat roosts occur in the vicinity of the Project site in the McCoy Mountains, Eagles Nest Mine within the Little Maria Mountains, and Paymaster Mine within the Pinto Mountains (Ironwood Consulting, 2018).

## 4.6 Other Special Status Bird and Bat Species

**Raptors.** In addition to raptors discussed above, several other special-status birds of prey are found seasonally, especially during winter, in the region. These include ferruginous hawk (*Buteo regalis*), Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*A. striatus*), northern harrier (*Circus cyaneus*), prairie falcon (*Falco mexicanus*), merlin (*F. columbaris*), short-eared owl (*Asio flammeus*), and long-eared owl (*A. otus*). Outside their breeding seasons, these raptors need not return to their nests to feed young or tend eggs. Thus, they are able to forage over wide areas, where they capture birds or small mammals. Suitable winter or migratory season foraging habitat for all of these raptors is widely available throughout the region.

*Athos Project occurrence:* Potential Project impacts to these species and their foraging habitat would be comparable to those discussed above for wintering golden eagles. In summary, Project construction would eliminate suitable foraging habitat (see Table 1 for vegetation and habitat types), cause increased noise and disturbance to adjacent habitat, and may present collision or electrocution hazards, such as the gen-tie line and other Project facilities.

**Upland Perching Birds.** Several upland perching bird species are included in the CDFW Special Animals compilation. These include LeConte's thrasher (*T. lecontei*), Crissal thrasher (*T. crissale*), the Eagle Mountains scrub-jay population (*Aphelocoma californica cana*), vermilion flycatcher (*Pyrocephalus rubinus*), Vaux's swift (*Chaetura vauxi*), black-tailed gnatcatcher (*Polioptila melanura*), California horned lark (*Eremophila alpestris*), Sonora yellow warbler (*Setophaga petechia sonorana*), and loggerhead shrike (*Lanius ludovicianus*).

*Athos Project occurrence:* Suitable habitat for loggerhead shrike is found throughout the Project site. One live individual was observed on a native parcel of the proposed solar facility and another was observed west of parcel group E on private lands (Ironwood, 2018). Neither LeConte's thrasher nor Crissal thrasher have been reported on-site, but suitable habitat for Le Conte's thrasher is located in the Project site, primarily within desert dry wash woodland (parcel groups D and F, as well as gen-tie 1A, 1C, 2A, 2B, 3, and 4) and the Sonoran creosote bush scrub (parcel groups C, D, E, and F, as well as gen-tie 1A, 1C, 2A, 2B, 3, and 4); and suitable nesting and foraging habitat for Crissal thrasher primarily associated with dry wash woodlands (parcel groups D and F as well as gen-tie 1A, 1C, 2A, 2B, 3, and 4). The Project site contains suitable habitat throughout the Project for California horned lark. It was observed frequently on the Project site, including the gen-tie routes, during the wildlife surveys. The Project site contains suitable

foraging and potential nesting habitat for the black-tailed gnatcatcher in the components with native vegetation such as parcel groups C, D, E, and F as well as gen-tie 1A, 1C, 2A, 2B, 3, and 4. One individual was observed during the fall 2017 survey. The Project site contains suitable foraging habitat (during migration) for Sonora yellow warbler in the dry wash woodland (parcel groups D, and F as well as gen-tie 1A, 1C, 2A, 2B, 3, and 4) but no suitable nesting habitat. The entire Project site provides suitable habitat for Vaux's swift during migration for foraging, but no suitable nesting habitat.

Project development would eliminate suitable habitat as well as poorly suitable anthropogenically disturbed habitat for one or more of these species at the solar generator site, and would also affect smaller areas of suitable habitat along gen-tie alignments (see Table 1 for a summary of vegetation and habitat types). Other potential impacts to these species would be similar to those discussed below, under the MBTA.

## **5.0 Risk Assessment**

This section of the BBCS describes project-specific risks that the Athos Project would or could pose to birds and bats. The USFWS (2010b) recommends that the project-specific risk assessments for solar projects should address the potential for take, including lethal take, based on each of the threats described below (Sections 5.1 through 5.9).

### **5.1 Burning from Concentrated Light at Solar Arrays**

As a PV solar facility, the Athos Project would not concentrate light for electricity generation and would not pose a burning risk to birds or bats.

### **5.2 Transmission Line, Distribution Line, Power Tower, Meteorological Tower, or Guy Line Collision**

The Project component of greatest potential concern that would pose lethal collision risk to birds or bats is the gen-tie line, during the construction, O&M, and decommissioning Project phases. Smaller risks would be posed by other components, during any of the three phases. These include the above-ground distribution lines, above-ground collection lines, the meteorological station(s) and any guy-wires that may support meteorological instruments, and large equipment such as cranes that would be in use during the construction and decommissioning phases. As a PV solar facility, the Project would not include a power tower.

Bird collisions with structures typically occur when the structures are not visible (e.g., bare power lines or guy wires at night), deceptive (e.g., glazing and reflective glare), or confusing (e.g., light refraction or reflection from mist). Transmission lines, including the proposed gen-tie line, present collision hazards to birds. Based on mortality data for another project's gen-tie within the Riverside East SEZ, mortality of approximately 24 birds per year per kilometer of gen-tie is expected for the proposed Project.

The Athos Project will construct all transmission lines and distribution lines according to APLIC guidelines to minimize the risk of avian and bat collision, and to monitor bird fatality at the Athos Project site to evaluate need for follow-up adaptive management measures (see Monitoring and Adaptive Management sections, below). The Project will endeavor to design the gen-tie lines without the use of guy wires to the greatest extent feasible. In addition, the Project will consolidate the gen-tie infrastructure in the area by stringing conductors on existing structures or allowing another project to string its conductors on the Project's poles.

### 5.3 Electrocutation Potential

Large birds can be electrocuted by transmission lines if a bird's wings simultaneously contact conductors, or a conductor and a groundwire or grounded hardware. This happens most frequently when a bird attempts to perch or take off from a structure with insufficient clearance between these elements. Distribution lines that are less than 69 kilovolts (kV) but greater than 1 kV generally have less spacing than transmission lines, thus posing an electrocution hazard for perching raptors. Configurations less than 1 kV or greater than 69 kV typically do not present an electrocution potential, based on conductor placement and orientation (APLIC, 2006).

IP Athos will monitor the death and injury of birds and the resulting data will be used to inform an adaptive management program to mitigate or minimize any substantial project-related avian impacts. IP Athos will design and construct the gen-tie lines to avoid potential for electrocution and minimize potential for roosting on the structures or colliding with them. These measures would effectively minimize or mitigate adverse effects of electrocution to the extent feasible.

### 5.4 Territory Abandonment

Construction activities would cause most mobile vertebrate wildlife to leave the site, or attempt to leave. Animals dispersing from the site would be subject to further adverse effects, potentially including mortality. They would be at increased risk of predation as they flush from cover during site clearing. After leaving their home territories, displaced animals may be unable to find suitable food or cover in new, unfamiliar areas. They may attempt to return to their home ranges, possibly resulting in increased predation risk or other effects. Or, if they find food and other resources at new locations off site, these may be within the occupied territory of another individual of the same or similar species, resulting in competition for resources. These displacement effects would apply to common wildlife species and to special-status species.

### 5.5 Nest and Roost Site Disturbances

The entire Project site and surrounding area provides suitable nesting habitat for resident and migratory bird species. Many adult birds would flee from equipment during initial vegetation clearance for Project construction. However, nestlings and eggs would be vulnerable to impacts during Project construction. If initial site grading or brush removal were to occur during nesting season, then it likely would destroy bird nests, including eggs or nestling birds. One special-status species, the burrowing owl, is unlikely to flee the site during construction, due to its characteristic behavior of taking cover in burrows. Potential Project impacts and avoidance for burrowing owl are summarized below.

Some birds will likely nest in the Project area during construction and O&M phases, even after initial grading and clearing. Depending on the species, birds may nest on the ground close to equipment; within the open metal framework of the panel support structures; on buildings, foundations, structures, or construction trailers; or on idle vehicles or construction equipment left overnight or during a long weekend. In areas where construction is phased (e.g., footings, or tower structures) birds may quickly use these features as nest sites between active construction phases. The species most likely to nest in the Project area during construction are common ravens (*Corvus corax*), house finches (*Carpacus erythrinus*), and mourning doves (*Zenaida macroura*), all of which are protected by the MBTA and Fish and Game Code Sections 3503 and 3513.

IP Athos will conduct pre-construction surveys for active nests throughout the entire Project and adjacent off-site habitat areas, beginning January 1 for raptors and hummingbirds and February 1 for other species, and continue through August 15. Pre-construction nest surveys will occur no more than seven days prior to scheduled activities at any given site and will be repeated as needed if activities are delayed. At each active nest, the qualified biologist will establish and mark buffer areas of various sizes depending upon the species, baseline environmental conditions, and construction activity levels. If for any reason a bird nest must be removed during the nesting season, IP Athos will notify CDFW and USFWS and retain written documentation of the correspondence. Nests would only be removed if they are inactive, or if an active nest presents a hazard. Due to the high probability that birds may nest on site during construction, IP Athos will conduct monitoring of the work area throughout the breeding season, so that all active work sites and equipment are monitored at least weekly. During bird breeding season, surveys for active nests will occur no more than 7 days prior to ground disturbance at any work site.

**Burrowing Owl.** Potential direct Project impacts to burrowing owls would be similar to those described for nesting birds, but construction activities also could destroy occupied burrows or cause the owls to abandon burrows during any season. If owls were present, construction during the breeding season could cause nest abandonment, or the incidental loss of fertile eggs or nestlings. IP Athos will conduct pre-construction surveys for burrowing owls, possible burrows, and sign of owls (e.g., pellets, feathers, white wash). If owls are or active burrows are found within the solar facility, avoidance measures and set-back distances will be implemented. Disturbance of owls or occupied burrows during the breeding season (February 1 through August 31) will not be permitted. Any unoccupied suitable burrows within the solar facility footprint will be excavated and filled in under the supervision of the Lead Biologist prior to site preparation. If necessary, passive relocation of burrowing owls will occur and a three-year monitoring program will be implemented. IP Athos will also minimize habitat impacts, avoid direct impacts to owls, and give a worker environmental awareness training to all personnel on the Project. These measures would prevent take of occupied burrowing owl burrows.

**Golden Eagle.** Human intrusions near golden eagle nest sites have resulted in nest abandonment, high nestling mortality when young go unattended due to altered behavior by the parent birds, premature fledging, and ejection of eggs or young from the nest (reviewed by Pagel, 2010). Project activities that result in nest-site abandonment would constitute take under the Bald and Golden Eagle Protection Act (USFWS, 2007).

Project construction is not expected to cause substantial direct disturbance (e.g., noise, lighting, visual disturbance) to nest sites in the local nesting territories due to their distance from the site. Moreover, implementation of preconstruction surveys and regular monitoring during the nesting season will prevent any impacts to golden eagle nest sites.

## 5.6 Habitat Loss and Fragmentation

**Habitat Loss.** The majority of the Project facilities would be located on anthropogenically disturbed lands. However, Project construction would result in permanent and long-term impacts to natural vegetation and habitat types, including Sonoran Creosote Bush Scrub, Desert Pavement, and Desert Dry Wash Woodland (see Table 1 for a summary of vegetation and habitat types). Project construction would also result in permanent and long-term impacts to recovering disturbed habitat types, including recovering Sonoran creosote bush scrub and recovering salt bush scrub (see Table 1). Site preparation and construction methods are intended to minimize impacts on soils and vegetation, and revegetation in temporarily disturbed areas will replace certain habitat values (e.g., food sources and shaded cover). Vegetation and habitat conditions following construction would likely remain suitable for many species, such as side-

blotched lizard (*Uta stansburiana*), house finch (*Carpacus erythrinus*), northern mockingbird (*Mimus polyglottos*), and desert cottontail (*Sylvilagus audubonii*).

**Golden Eagle.** Athos does not anticipate that project-related loss of potential foraging habitat will appreciably reduce foraging habitat availability for golden eagles. The nearest golden eagle nesting territory is in the Coxcomb Mountains, about four (4) miles from the Athos site. Athos does not believe that foraging habitat loss would constitute disturbance to golden eagles (pursuant to USFWS, 2007); and would not cause decrease in productivity, or substantially interfere with normal breeding, feeding, or sheltering behavior.

**Gila Woodpecker.** The probability of this species nesting on the Project site is low to moderate. The site is at the margin of the Gila woodpecker's geographic range and supports only sparse riparian woodland habitat, but the existing date palms on the site may be suitable for nesting. Loss of anthropogenic palm groves would not be offset, although other palm groves and ornamental trees are available in the area. Project impacts to dry wash woodland will be offset through compensatory habitat.

**Habitat Fragmentation.** Wildlife, including birds and bats, are often restricted to specific habitat types or elevations. Their habitats may be contiguous over extensive areas, or they may be scattered in patches in a landscape. For species with patchy distributions, dispersal between habitat patches may be important in colonizing (or recolonizing) areas or in supplementing demography or genetic makeup in isolated populations. Increasingly, land use planners designate wildlife dispersal corridors among open space areas to maintain movement routes for wildlife populations among the larger habitat areas. Public discussion of movement corridors tends to focus on uncommon, large, wide-ranging mammals, particularly mountain lions. But wildlife corridors also are intended to enable dispersal for other species, including small mammals, birds, amphibians, reptiles, and plants. The Project would not present an absolute barrier to bird or bat movement, but it could reduce movement throughout the area for resident shrubland species, possibly including loggerhead shrike, Crissal thrasher, Le Conte's thrasher, or Gila woodpecker. Any of these species would be likely to disperse around, but not across, the Project site. For migratory birds or wide-ranging non-migrants routinely flying long distances within or among habitat patches, the Project's effects on habitat fragmentation would be relatively unimportant. Examples include most raptors, common raven, and migratory passerines such as Lucy's warbler and Bendire's thrasher.

## 5.7 Disturbance Due to Ongoing Human Presence at the Facility

Construction noise would be a substantial increase over existing background noise levels near the solar field site, which are expected to be low. In addition, if construction activities were to occur at night, lighting would be required. Noise and lighting during construction would affect wildlife in adjacent habitats by disrupting foraging, breeding, sheltering, and other activities; or it cause animals to avoid otherwise suitable habitat surrounding the site. The effects of construction noise include annoyance, which causes birds and other wildlife to abandon nests or dens; increased stress hormone levels, interference with sleep and other activities; and interference with acoustic communication by masking important sounds or sound components, such as territorial calls, contact calls, or alarm calls (Dooling and Popper, 2007). Many species rely on vocalizations during the breeding season to attract a mate within their territory, and noise from construction could disturb nesting birds and other wildlife and adversely affect nesting and other activities.

Lighting during Project construction may affect nocturnal wildlife species. Lighting can affect behavior and physiology, and may also increase the risk of predation of wildlife because they may be more detectable to nocturnal predators. Lighting would be likely to attract nocturnal insects and, in turn, bats; possibly including special-status bats, discussed further below. IP Athos will minimize the impacts of noise and lighting by ensuring lighting is focused only on work areas and does not unnecessarily extend beyond work

areas, and scheduling noisy construction activities near the Project site perimeter outside the most sensitive season.

During operation, some birds and other small wildlife species would re-occupy the solar field site once construction activities are completed, where ongoing O&M noise and lighting may affect them. Noise and lighting may also affect wildlife in the nearby off-site habitat. These effects would be qualitatively similar to the description of construction phase effects of noise and lighting, but would be of lesser magnitude. IP Athos will minimize these impacts as described above.

## 5.8 Additional Risk Factors

**Predator subsidies.** Project construction, operation, and decommissioning activities could provide resources in the form of trash, litter, or water, which attract and subsidize unnaturally high numbers of predators such as common ravens, coyotes, and feral dogs. This influx of predators could cause unnaturally high predation pressure on wildlife species in the vicinity. Ravens are opportunistic omnivores and they prey on the eggs and nestlings of native birds, among many other food sources (Zeiner et al., 1990), including juvenile desert tortoises. Ravens and coyotes habituate to human activities and are subsidized by food (trash, road killed animals), water (irrigation or dust control overspray), and (for ravens) new perching, roosting, and nesting sites (transmission line structures and other structures) that are introduced or augmented by human encroachment.

IP Athos will require management of all potential predator subsidies (i.e., food trash, pooled water, shelter), monitoring of raven presence and abundance, and control measures as needed.

## 5.9 Cumulative Impacts

The development of numerous large-scale renewable energy projects, including the Athos Project and other solar and wind projects in the region, would result in a substantial permanent conversion of desert habitat to industrial and commercial uses. Existing and foreseeable future projects in the NECO planning area (not including the Athos Project) would constitute a substantial cumulative impact to plant communities and wildlife habitat through direct habitat loss and habitat fragmentation.

### Solar Facility

**Common Wildlife.** The Athos Project's incremental contribution to cumulative impacts to common wildlife, including most resident and migratory birds, would be habitat loss and fragmentation. Most common wildlife species range widely over California, and these species have not been identified as conservation priorities. The Athos would contribute incrementally to impacts to common wildlife such as disruption of movement, disturbance, mortality, loss of habitat, and fragmentation. With the incorporation of recommended mitigation measures, this incremental contribution would be mitigated to the extent feasible and would not result in the loss of a population or a trend toward federal or state listing for any common wildlife species. With incorporated mitigation, the Athos Project would not make a considerable contribution to the cumulative regional impacts to common wildlife, when combined with the effects of past and future projects in the NECO planning area.

**Special-Status Raptors, including Golden Eagle.** No special-status raptors (except burrowing owl) are expected to nest on the solar facility site. However, the site provides suitable seasonal or year-round foraging habitat for several raptor species and is within potential foraging distance of known golden eagle nesting territories. Several raptors are likely to forage infrequently on the solar facility site at any time of year, including winter and migration seasons. Much of the Project area consists of anthropogenic land

uses and previously converted desert habitat. Effects of the other projects in the cumulative scenario would be similar to potential effects of the proposed solar facility. Cumulatively, these projects could result in significant impact due to habitat loss. The incremental contribution of the proposed solar facility to the cumulative impacts to special-status raptors, including habitat and collision mortality, would not be considerable because native habitat loss would be offset and potential collision would be mitigated as described above for native birds. The residual net loss of habitat would not make a material difference to the scope, nature or extent of the cumulative impact.

**Burrowing Owl.** Potential impacts of the solar facility to burrowing owl include habitat loss or degradation, possible injury or mortality if they happen to be present in a work area, particularly during nesting season, and possible mortality from collision with facilities, as described above for native birds. Other projects in the cumulative scenario include several transmission lines and solar energy projects with similar habitat for burrowing owl. Effects of the other projects would be similar to potential effects of the proposed solar facility. Together these projects would result in significant impact to habitat loss and mortality to burrowing owls. The incremental contribution of the proposed Project to the cumulative impacts to burrowing owls, including habitat, construction-related mortality, or collision mortality, would not be considerable because native habitat loss would be offset, no take would occur during construction, and potential collision would be mitigated as described above for native birds. The residual net loss of habitat would not make a material difference to the scope, nature or extent of the cumulative impact.

**Gila Woodpecker and Elf Owl.** Potential habitat for Gila woodpecker and elf owl is present in desert dry wash woodland and commercial palm groves on the proposed solar facility site. There is a low possibility that either species may nest on or adjacent to the site or may be subject to potential collision with the facilities. Potential impacts, including mortality or other direct impacts as well as habitat loss for both species would be avoided or mitigated. These measures are expected to effectively avoid any take of Gila woodpecker or elf owl and to offset native habitat loss. Impacts of the projects in the cumulative scenario not on agriculture lands would cumulatively result in significant loss of desert dry wash woodland habitat, potentially affecting Gila woodpecker and elf owl habitat availability. The incremental contribution of the proposed solar facility to the cumulative impacts to Gila woodpecker and elf owl, including habitat loss and collision mortality, would not be considerable because native habitat loss would be offset and potential collision would be mitigated as described above for native birds. The residual net loss of habitat would not make a material difference to the scope, nature or extent of the cumulative impact.

**Native Birds, including Special-Status Passerine Birds.** Migratory birds are expected to occur throughout the area during construction and O&M of the solar Project. Land use conversion for the solar Project and any of the cumulative projects would result in habitat loss and degradation, displacement, decreased foraging activities, and potentially disruption or failure of nesting, increased predation, or mortality. Solar panels of the proposed Project as well as other solar PV projects may cause a “lake effect” leading to increased bird mortality. Collision hazards would occur due to the transmission lines and gen-tie lines associated with the solar projects and the Eagle Crest Pumped Storage Project. Taken together, the projects would result in a cumulatively significant impact for native birds.

The proposed Project’s impacts would be mitigated to the extent feasible through pre-construction surveys, avoidance of active nests, O&M phase mortality monitoring, and mitigation applied through adaptive management, depending on monitoring results. Additionally, the majority of the Project’s solar facilities would be built on disturbed lands, and natural habitat loss would be minimized and offset through mitigation. Therefore, the incremental contribution of the proposed Project to the cumulative impacts to native bird habitat and nesting success would not be considerable because no take would

occur, and native habitat loss would be offset. The residual net loss of native habitat would not make a material difference to the scope, nature or extent of the cumulative impact.

Regarding potential collision or lake effect mortality, IP Athos will monitor for bird kills and implement adaptive management as needed. With implementation of these project-specific measures, the contribution to cumulative impacts to native bird populations from the proposed solar facilities would not be considerable.

**Special-Status Bats.** Solar facility construction could adversely impact special-status bats through the elimination of desert shrubland foraging habitat or (less likely) loss of roost sites in desert dry wash woodland habitat, palm groves, or the existing structures (homes, trailers, etc.) on the site. Removal of those features could disturb, injure, or kill bats. IP Athos will implement measures that will minimize and offset habitat loss, inspect structures and remove wildlife or allow wildlife to escape prior to demolition, and require pre-construction surveys or scheduling of tree removal outside the bat maternal roosting season. These measures are expected to effectively minimize potential impacts to special-status bats, and to offset habitat loss. Cumulative projects would also eliminate desert shrubland foraging habitat and result in the loss of roost sites, a significant cumulative impact to special-status bats. These projects would implement measures similar to those identified for the proposed Project, including offset of native habitats, avoidance of active roosts, and Bird and Bat Conservation Strategies. The incremental contribution of the proposed solar facility to the cumulative impacts to special-status bats, including habitat loss and collision mortality, would not be considerable because native habitat loss would be offset and potential collision would be mitigated as described above for native birds. The residual net loss of habitat would not make a material difference to the scope, nature or extent of the cumulative impact.

## 220 kV Generation-Tie Line

The cumulative analysis for the gen-tie lines would be the same as for the solar facility because the habitat and affected species would be the same. The contribution of the gen-tie lines would be less than the solar facility because of the minor disturbance associated with the gen-tie poles.

Regarding potential collision or electrocution mortality, IP Athos will require monitoring of bird kills and implementation of adaptive management. IP Athos will design and construct the gen-tie lines to avoid potential for electrocution and minimize potential for roosting on the structures or colliding with them. Future projects on public BLM lands would incorporate applicable DRECP Conservation Management Actions, activity-specific bird and bat CMAs, bird and bat conservation strategies, and bird and bat habitat compensation. Projects not subject to the DRECP would implement any applicable mitigation measures required by Riverside County or other lead agencies. With implementation of the project-specific conservation measures, the contribution to cumulative impacts to native bird populations from the proposed gen-tie line would not be considerable.

## 6.0 Conservation Measures

IP Athos will adopt conservation measures to avoid and minimize impacts. The measures that relate to bird and bat conservation are listed and briefly summarized below.

**Biological Monitoring.** IP Athos will assign biological monitors to the Project. Some of the duties include conducting clearance surveys, marking sensitive biological resource areas, monitoring construction activities for compliance, removing inactive nests (except for raptor nests, which will be coordinated with the resource agencies), preparing written compliance reports for agency review, and presenting worker environmental awareness trainings.

**Minimization of Vegetation and Habitat Impacts.** Work areas (including, but not limited to, staging areas, access roads, and sites for temporary placement of construction materials and spoils) will be delineated with orange construction fencing or staking to clearly identify the limits of work. When feasible, construction activities will minimize soil and vegetation disturbance to minimize impacts to soil and root systems.

**Compensation for Natural Habitat Impacts.** IP Athos will acquire and protect, in perpetuity, compensation habitat to offset loss of natural habitat on the Project site where required. No compensation is proposed for impacts to anthropogenic land use or recovering areas.

**Wildlife Protection.** IP Athos will avoid or minimize impacts to wildlife during construction and O&M by implementing the following measures: conducting preconstruction surveys; allowing animals to escape from work sites prior to disturbance; enforcing vehicle speed limits; designing, installing, and maintaining lighting to not affect surrounding wildlife habitat; scheduling noisy construction activities as to minimize impacts to sensitive species; managing use of toxic substances to prevent spills, contamination, or wildlife exposure; covering water sources such as tanks and pipes to prevent animals from entering; avoiding overwatering and pooling of water that could attract animals; containing all food-related trash in containers inaccessible to ravens or other wildlife; regularly inspecting and maintaining bird deterrent netting; securing Project excavations and covering or capping all pipes to prevent wildlife entrapment; and reporting all dead or injured special-status species wildlife to CDFW.

**Wildlife Water Source.** IP Athos will coordinate with the County, BLM, CDFW, and USFWS to offset potential Project impacts to wildlife resulting from loss of existing irrigation water supplies at Parcel Group G. In coordination with the agencies, the Applicant will support replacement, repairs, maintenance, or monitoring of existing wildlife water sources in the Project vicinity; support access improvements to existing sources; support removal of invasive saltcedar from natural water sources (to improve surface flow); or provide an alternative water source as a replacement or supplement to existing sources.

**Burrowing Owl Avoidance and Relocation:** Burrowing owl protection and relocation will incorporate the following requirements: pre-construction surveys for burrowing owls, possible burrows, and sign of owls (e.g., pellets, feathers, white wash) will be conducted throughout each work area no more than 30 days prior to construction; if burrowing owl or active burrows are found within the solar facility, avoidance and set-back distances will be implemented (disturbance of owls or occupied burrows during the breeding season from February 1 through August 31 will be avoided); any unoccupied suitable burrows within the solar facility footprint will be excavated and filled in under the supervision of the Lead Biologist prior to site preparation; and if relocation of burrowing owls is necessary, a plan with detailed methods for passive relocation and monitoring and management, including a three-year monitoring program, will be implemented.

**Gen-tie lines.** IP Athos will design the gen-tie line support structures and other facility structures in compliance with APLIC guidelines and current standards and practices to discourage their use by raptors for perching or nesting (e.g., by use of anti-perching devices). This design will also reduce the potential for increased predation of special-status species, such as the desert tortoise. Mechanisms to visually warn birds (permanent markers or bird flight diverters) will be placed on gen-tie lines at regular intervals to prevent birds from colliding with the lines (APLIC, 2006). To the extent practicable, the use of guy wires shall be avoided because they pose a collision hazard for birds and bats. Necessary guy wires will be clearly marked with bird flight diverters to reduce the probability of collision. Shield wires will also be marked. Gen-tie lines will maintain sufficient distance between all conductors and grounded components to prevent potential for electrocution of the largest birds that may occur in the area (e.g., golden eagle and turkey vulture). They will utilize non-specular conductors and non-reflective coatings on insulators.

## 7.0 Monitoring and Reporting

### 7.1 Bird and Bat Monitoring Requirements

Several of the conservation measures summarized above specify monitoring and reporting requirements. The Lead Biologist will be responsible for monitoring and reporting on biological resources for Project activities, beginning during pre-construction surveys and continuing through the construction and O&M Project phases. Specific monitoring requirements related to bird and bat conservation are the following:

- Biologists will conduct pre-construction surveys of work areas prior to the start of construction (time varies for different species)
- Biologists will ensure biologically sensitive resources are clearly marked for avoidance.
- Biologists will conduct monitoring of construction activities for compliance with agency permits and other Project requirements.
- Lead Biologist will prepare monitoring reports for agency submittals and review.
- Biologists will conduct required on-going monitoring and reporting during O&M activities.

### 7.2 Athos Project Bird and Bat Monitoring Approach and Strategy

The primary objective of the post-construction bird and bat monitoring is to monitor undesirable nest construction on Project equipment and estimate the annual number of avian and bat fatalities attributable to the Project. These data will provide a measure of plan efficacy and inform adaptive management. Because of the presumed low risk potential for the site, this BBCS does not direct the assignment of a full-time operational Project biologist. IP Athos will implement a wildlife reporting system to document incidentally found bird and bat fatalities and to monitor for significant fatality events. The site manager will lead the program. Site personnel will be trained to follow the wildlife reporting system procedures and complete the wildlife reporting form. Post-construction monitoring will be conducted by facility operators and field engineers during normally scheduled activities.

Employees and subcontractors of the Athos Project are required to comply with all environmental laws and regulations. As discussed previously, all native birds that occur in the vicinity of the Athos Project are protected by the federal MBTA. Bat species are not afforded specific federal legal protection, unless they are federally listed under the Endangered Species Act. Sensitive species such as the burrowing owl (*Athene cunicularia*) are afforded special status by CDFW and BLM, and are afforded varying levels of protection under legal statute and agency policy. It is illegal to take or collect birds or other special-status species unless otherwise permitted by the respective jurisdictional agencies. These regulations affect the handling and disposition of injured or dead birds or bats or their parts.

The following procedures are to be followed when Athos Project personnel discover a dead or injured animal on site. Until updated with future revisions of this BBCS, monitoring for nesting materials is intended to be in place for the duration of the Athos Project including during construction and O&M. Mortality monitoring and reporting is intended to continue for a three year period beginning at onset of project operations and maintenance.

Personnel will complete searches of solar arrays within the Project development area as part of normal maintenance and line patrols of the gen-tie line. Searches will consist of walking around solar generation structures to identify carcasses of birds or bats or nesting materials on equipment. Bird nest monitoring and reporting forms for gen-tie line and the solar array are provided in Attachment 2. When a reportable

mortality or injury incident is discovered, an avian/bat incident reporting form will be filled out (Attachment 3) and turned in to the site manager, following the protocol in Section 7.3, Injury and Mortality Procedures. Reportable incidences include, but are not limited to, a complete carcass, carcass parts, bones, scattered feathers, or an injured animal observed within the Athos Project generation facility or interconnection facilities ROW. When encountering a potentially dead or injured bird or bat, Athos Project personnel will observe the animal's behavior long enough to determine whether or not it is indeed injured or dead. Most bats enter daily torpor (a deep, sleep-like state) while roosting during the day and may appear dead and hanging from equipment to a casual observer. If a bat does not show obvious injuries or is not directly on the ground, personnel will assume that it is normal and simply note its location. If the same bat is seen in the same location during subsequent equipment searches, personnel will proceed with the protocol. Once it is confirmed that an animal is either injured or dead, the protocol will be followed. Project personnel will photograph dead birds or bats in place but will not handle them. Additionally, only those personnel who are trained and permitted will handle any live bird or bat. If an injured raptor or sensitive species is found, the CDFW and USFWS will be contacted to determine whether a rehabilitator should come pick up the injured animal.

Bird nests constructed on equipment can lower efficiency, create operational problems, and lead to down time (outages) and safety issues. Because the solar facilities and gen-tie line provide vertical structure over a fairly large area, the probability exists for birds to occasionally attempt nest construction on equipment. Workers should be diligent in observing attempts by birds to construct nests on equipment during the breeding season. Athos Project personnel are not authorized to remove active nests or destroy young birds at this time. In the event that an active nest is observed on equipment, Athos Project personnel will contact CDFW and USFWS for direction. As needed, Athos Project personnel will coordinate with CDFW and USFWS to remove or manage inactive nests to avoid safety issues and minimize future nest locations for ravens.

### **7.3 Injury and Mortality Procedures**

This section details procedures to be employed in the event of a reportable incident of bat or bird mortality, as defined above. In order to ensure that procedures are implemented consistently and efficiently, a "bird kit" will be kept on site at all times. No birds, bats, or carcasses will be handled during normal procedures; handling supplies such as bags and gloves are included in the kit but will be used only on specific direction from agency staff on a case-by-case basis. Items in the kit will include:

- Copy of the BBCS
- Copies of Avian/Bat Incident Reporting Forms
- Avian/Bat Injury and Mortality Log binder for retaining forms
- Athos Project personnel and agency contact information
- Camera
- Zip-top bags (quart and gallon size to be used in the event that carcasses or parts must be retained at agency direction)
- Garbage bags or similarly sized bags with zip fasteners (for larger carcasses)
- Latex or protective disposable gloves
- Large forceps
- Leather gloves
- Pin flags and flagging

- Permanent markers, pencils, and pens
- 3x5 index cards

If a dead or injured bird or bat is found, the following procedures will be followed:

1. When an injured bird or bat is found, Athos Project personnel will maintain a large enough distance so as not to further disturb or distress the animal. Athos Project personnel will follow the procedures for reporting and care of injured wildlife found in step 2 below. If a bat is hanging, head down, in a concealed or semi-concealed location, Athos Project personnel will not disturb it, but will re-check later. If a bird or bat is certainly dead, Athos Project personnel will continue on to step 3 below.
2. Athos Project personnel will immediately report observations of injured wildlife to the site manager responsible for implementing the BBCS. They will in turn report to the applicable agency contact for further instructions. No live animal will be handled or harassed in any way by unauthorized personnel. Only qualified personnel who are trained to implement BBCS injury procedures and appropriately permitted as applicable will be authorized to handle dead or injured animals.
  - Athos Project site manager will contact CDFW personnel responsible for the injured animal species for further instructions and to determine whether a rehabilitator should come and pick up the injured animal. If the injured animal is found after normal business hours, the Athos Project site manager will leave a message (if possible) and report it again the next available working day.
  - If Athos Project personnel cannot reach the appropriate agency contact with the initial phone call, they will phone the USFWS Division of Law Enforcement and request further instruction.
  - Athos Project personnel will fill out an Avian/Bat Incident Reporting Form as would be required for a fatality, and place the form in the Athos Project Avian/Bat Injury and Mortality Log maintained for the facility.
3. For dead bats or birds, Athos Project personnel will flag the location of the carcass while data is being taken. Carcasses present a potential human health hazard and may attract scavengers (bird and mammal) to Project facilities and work areas, further increasing the risk of wildlife mortality. Athos Project personnel will not dispose of any bird or bat carcasses in dumpsters onsite. Carcasses of eagles or other raptors, state-listed species, and sensitive species require special consideration described under step 8. Unless otherwise directed (see step 8), other carcasses will be covered with an open crate or similar container to prevent scavenging. Scavenged or scattered carcasses (e.g., bones, feathers), will be left in place and the location documented so that they are not reported again during subsequent facility inspections.
4. Athos Project personnel will complete an Avian/Bat Incident Reporting Form (Attachment 3). All reportable incidences discovered by Athos Project personnel will be recorded using the reporting form that identifies the type of animal (bird or bat), the species (if known), its condition (e.g., recently run over, predated), surrounding vegetation type or Project component, and the date, time, and location of the incident. Personnel will then determine whether the death appears to be related to Athos Project construction or O&M activities. If the mortality apparently occurred through contact with equipment, the observer will also list the type of equipment and damage sustained by the equipment (if any).
5. Athos Project personnel will record the date and time of the discovery and the observer's name on a 3x5 index card using a permanent marker. This card will be photographed with the bird or bat remains to ensure that photos and datasheets are correctly correlated to the incident.

6. Athos Project personnel will photograph the bird or bat carcass as it was found. The carcass will be photographed from at least four angles: two close-up shots with the 3x5 index card next to the animal, and two more expansive views that include the area surrounding the animal.
7. After completing the Avian/Bat Incident Reporting Form and photographs, Athos Project personnel will immediately contact the site manager responsible for implementing the BBCS. The site manager will take the appropriate steps listed below to report the mortality to the resource agencies. Based on feedback from the agencies, personnel will be instructed to take appropriate action (e.g., remove the carcass). These actions will be recorded on the Mortality Reporting Form and maintained in the Athos Project Avian/Bat Injury and Mortality Log, copies of which will be provided to agency representatives on an annual basis. Reporting of bird incidents will also be reported to USFWS using their online USFWS Bird Fatality/Injury Reporting Program (<https://birdreport.fws.gov/>). The site manager will be responsible for making sure the incident data is entered into the USFWS Bird Fatality/Injury Reporting Program. A record of all other dead or injured bird or bat species will be maintained in the Athos Project Avian/Bat Injury and Mortality Log, copies of which will be provided to agency representatives on an annual basis.
8. Carcasses will not be handled by Athos personnel except at the specific direction of USFWS, to temporarily store the specimen on site until it can be shipped to that agency or retrieved by representatives of the agency. If directed, Athos Project personnel will place a large, open crate upside-down over the carcass, and secure the crate to the ground with stakes or other devices to reduce scavengers' access to the carcass.

Each year, a concise annual report will be provided to USFWS, briefly summarizing each year's wildlife reporting system findings. If a significant fatality event is discovered (e.g., any eagle fatality, more than three raptors in a single event, more than ten birds or bats in a single event) or if nesting attempts reach a nuisance level, the site manager will contact environmental contractors (if any), and the USFWS as soon as possible for coordination.

## **8.0 Adaptive Management**

### **8.1 Adaptive Management Process**

Adaptive management is an iterative process in which impact minimization and mitigation measures are continuously reevaluated to improve upon them. As action is taken, the results are monitored and future actions are modified accordingly. This is an especially useful strategy for managing resources where uncertainty surrounds appropriate management actions and their consequences. Because utility-scale solar energy development is a relatively new and rapidly expanding industry, its effect on bird and bat populations is uncertain. There is also uncertainty surrounding current fatality predictions as well as which measures are most effective at reducing fatalities and mitigating impacts to bird and bat populations. As more data are gathered at facilities and new strategies are tested, these uncertainties will be reduced and agency guidance will be refined.

IP Athos is committed to incorporating adaptive management principles into its BBCS. To facilitate the adaptive management process, IP Athos will submit timely reports to USFWS and CDFW summarizing results of operational monitoring and the wildlife reporting system, including fatalist estimates calculated as fatalities/MW/year. Fatality thresholds and future conservation measures may be subject to revision in coordination with USFWS and CDFW as new information is obtained. If a threshold is surpassed, IP Athos will evaluate the species, timing, and locations of fatalities and consult with USFWS and CDFW to

determine if additional avoidance or minimization measures are appropriate. If thresholds are surpassed again, IP Athos will coordinate with USFWS and CDFW to reconsider the applicability of the threshold or identify and implement additional avoidance and minimization measures.

## 8.2 Avian and Bat Fatality Thresholds and Risk Reduction Measures

The criteria identified below have been developed as initial thresholds to trigger adaptive management actions. As part of the adaptive management process, the thresholds may be adjusted as new information is developed regarding bird or bat population trends and the extent to which solar facility fatalities may affect those trends, or whether solar-related mortality may be offset by natural density-dependent demographic factors (e.g., lower natural mortality or higher productivity). In every case, these initial thresholds consider only those bird or bat fatalities or injuries that are conclusively attributed to the Project.

- 1) more than four total native bird fatalities/MW/year,
- 2) more than 0.3 raptor fatalities/MW/year,
- 3) more than one golden eagle fatality,
- 4) more than one active raptor nest constructed on generating equipment,
- 5) more than three bat fatalities/MW/year, or
- 6) more than ten active non-raptor nests requiring removal

In the event that the above thresholds are exceeded, one or more of the following adaptive measures will be implemented to reduce impacts. This BBCS will be updated to reflect the additional measures and monitoring for efficacy will be conducted for one year following implementation.

- Installation of remedial avian protection equipment (bird flight diverters or perch preventers or dissuaders) in problem areas
- Manage, monitor and remove potential bird nesting materials near solar arrays
- Modification of existing equipment to prevent nesting, perching or other undesired bird access
- Obtain necessary federal and state permits for problem nest removal
- Formal, systematic fatality monitoring along the gen-tie line or within problem areas at the array facilities
- Employ a dedicated and qualified site biological monitor either full-time or seasonally, depending on the specific issue identified

Additional adaptive measures may include investigation, evaluation of the factors associated with the fatalities, exploration of engineering solutions, consideration of available avoidance and minimization measures. Monitoring for efficacy will be conducted for one year following implementation of any adaptive measures. Upon implementing any adaptive measures, this BBCS will be updated to reflect the additional measures and, if appropriate, the adequacy of the thresholds.

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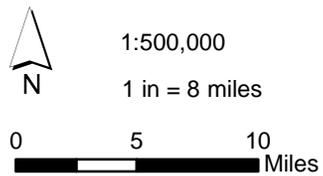
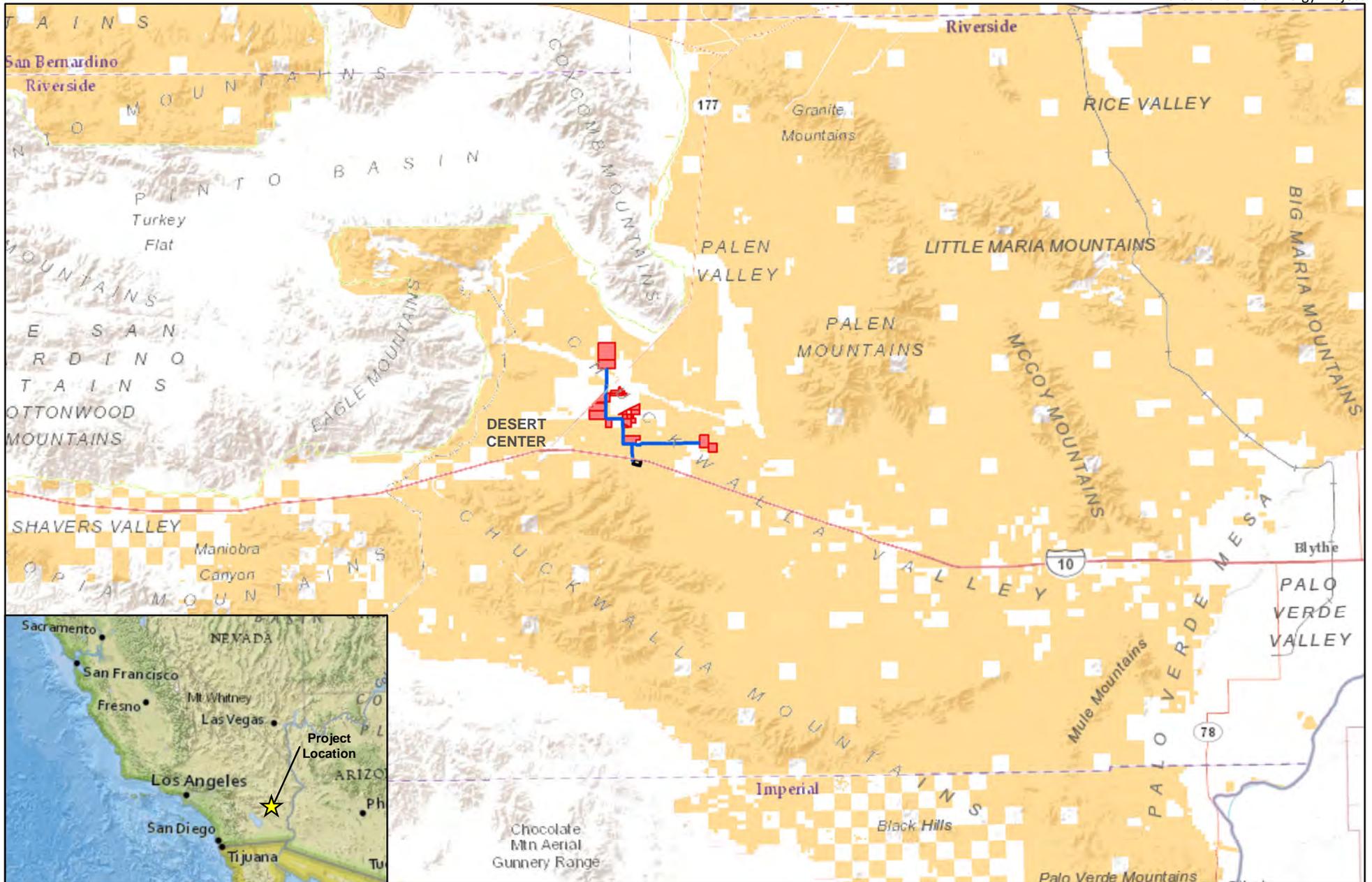
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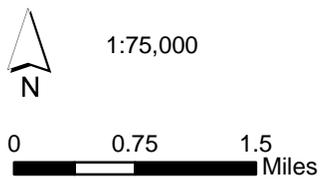
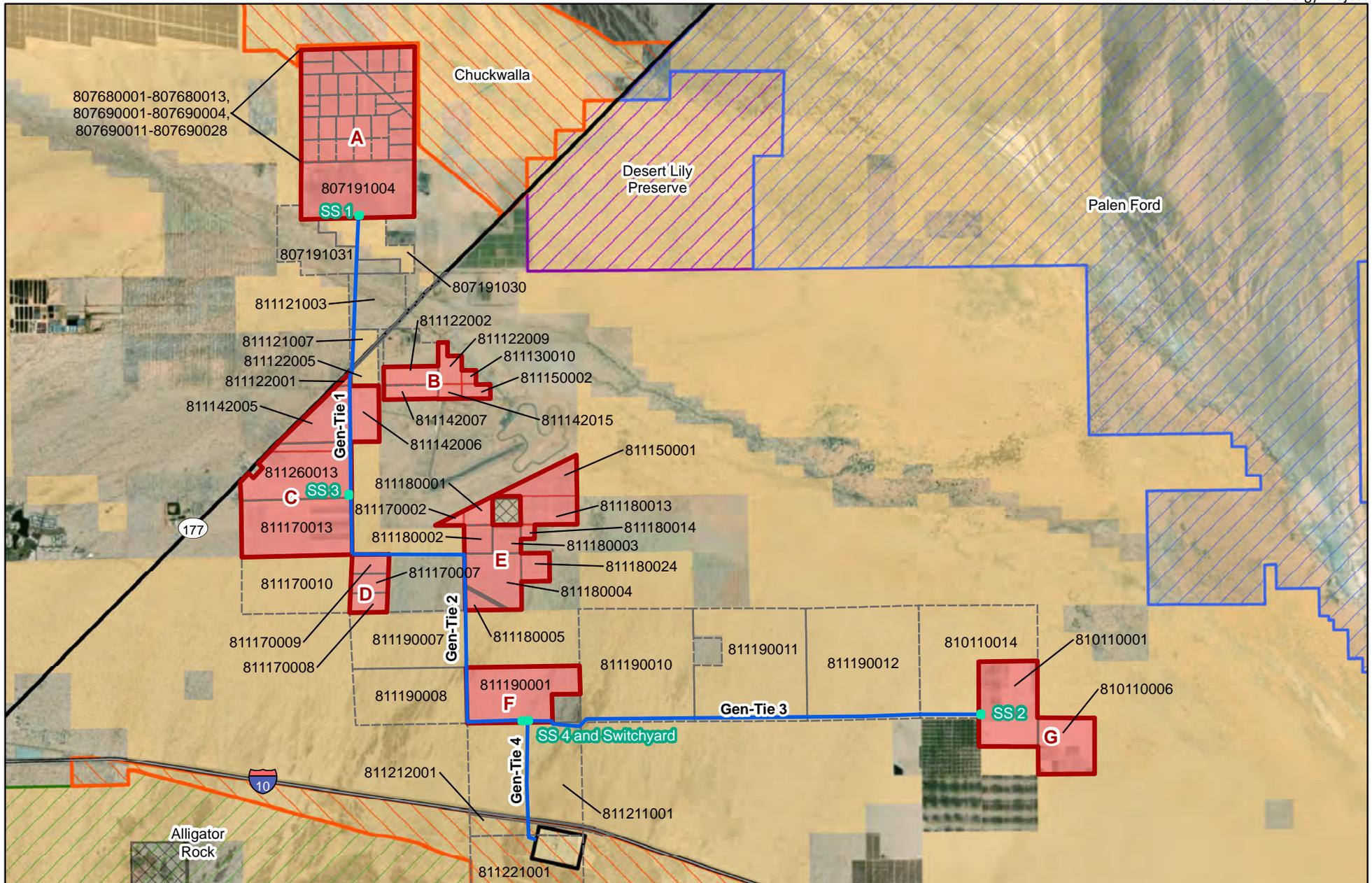
**Appendix A – Figures**



-  Proposed Gen-Tie
-  Solar Facility
-  Red Bluff Substation
-  BLM Land

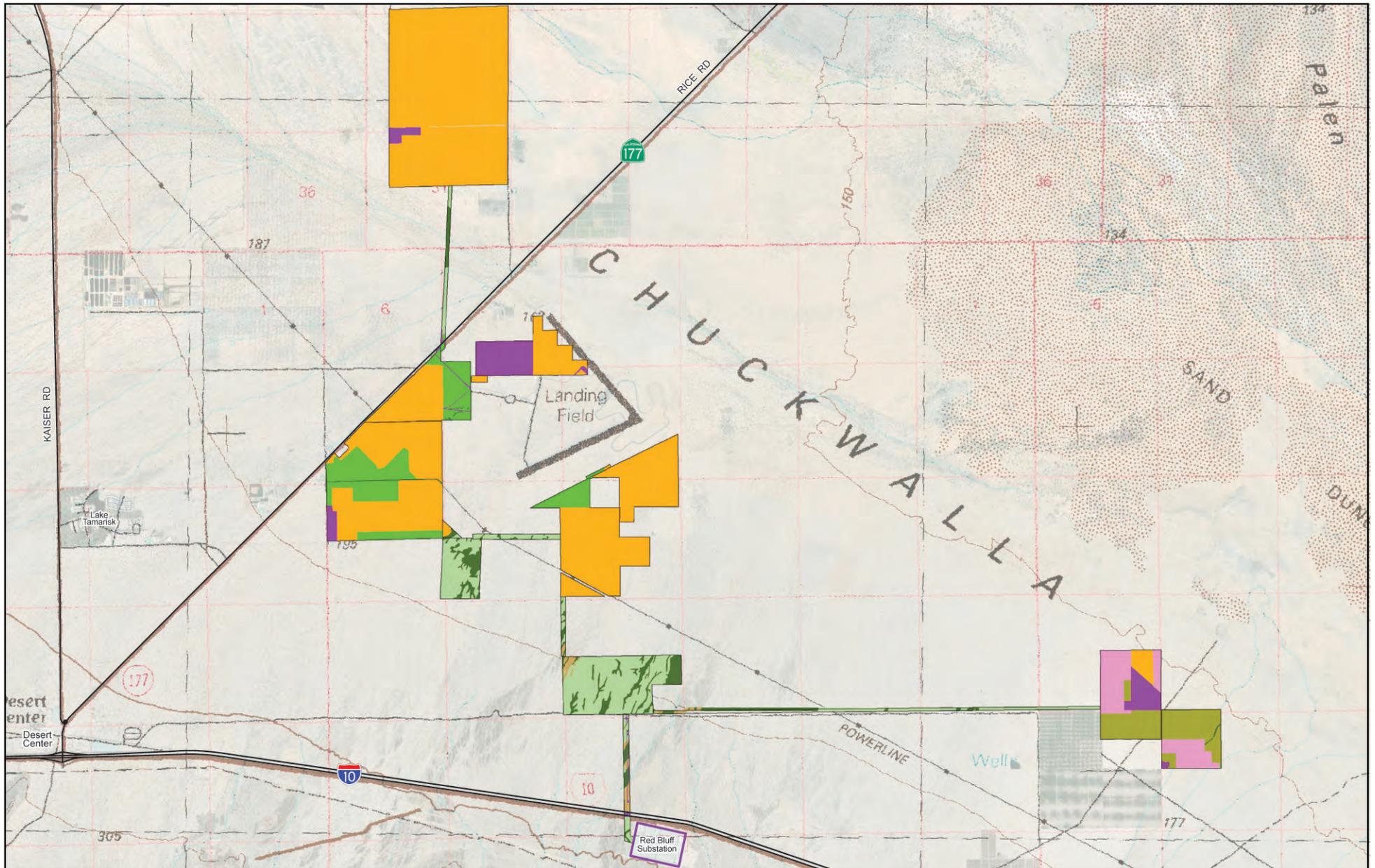
Figure 1

Project Vicinity



- Proposed Gen-Tie
- Substation
- Solar Facility (Private Land)
- Parcel Groups
- Red Bluff Substation
- Bureau of Land Management
- CA State Lands Commission
- Parcel Line
- Alligator Rock ACEC
- Chuckwalla ACEC (on BLM Land only)
- Desert Lily Preserve
- Palen Ford ACEC

**Figure 2**  
**Project Area**



Source: Ironwood Consulting, 2018.



0 4,000 8,000 Feet

 Red Bluff Substation

Native Vegetation

-  Creosote Bush Scrub
-  Desert Dry Wash Woodland
-  Desert Pavement
-  Recovering Creosote Bush Scrub
-  Recovering Salt Bush Scrub

Non-Native Vegetation

-  Active Agriculture
-  Developed/Disturbed
-  Fallow Agriculture

Figure 3

**Vegetation Communities**

**Attachment 1 – Construction Avian Nest Reporting Form**





**Attachment 2 – Operational Avian Nest Reporting Form**



## Athos Solar Project Operations Phase – Gen-tie Line Avian Nest Reporting Form

Discoverer's Name \_\_\_\_\_

Phone Number \_\_\_\_\_ Date of Nest Discovery \_\_\_\_\_

Pole Number of Nest Location \_\_\_\_\_

Other Location Information \_\_\_\_\_

Surrounding Habitat (circle all that apply)

Agricultural

Desert Scrub

Riparian

Grassland

Disturbed/Developed

Bare

Nest Condition (circle one)    Inactive    Under Construction    Active

Describe any Bird Signs Around the Nest (feathers, scat, prey remains) \_\_\_\_\_

Are Birds Present? (circle one)    Yes    No

Number of Birds Visible \_\_\_\_\_

Age of Bird(s) (circle all that apply)    Adult    Juvenile    Nestling    Eggs    Unknown

Bird Species (if known) \_\_\_\_\_

Type of Bird (circle one if species is unknown)

Diurnal Raptor (hawk, falcon, eagle)

Owl

Crow/Raven

Passerine (songbird)

Unknown

Risk to Electrical Equipment (circle one)

Potential Risk – Not Imminent

Potential Risk – Imminent

Additional Comments \_\_\_\_\_

**Attachment 3 – Avian-Bat Incident Reporting Form**

### Athos Solar Project Avian/Bat Incident Reporting Form

Discoverer's Name \_\_\_\_\_

Phone Number \_\_\_\_\_ Date of Discovery \_\_\_\_\_

Date and Time of Incident/Discovery \_\_\_\_\_

Location, include Pole and GPS Coordinates (if available) \_\_\_\_\_

Species (if known) \_\_\_\_\_

Type of Bird or Bat (circle one if species is unknown)

Diurnal Raptor (hawk, falcon, eagle)	Owl	Crow / Raven
Passerine (songbird)	Bat	Unknown / Other

Number of Individuals \_\_\_\_\_

Age of Bird(s) (circle all that apply)    Adult    Juvenile    Nestling    Eggs    Unknown

Surrounding Habitat (circle all that apply)

Agricultural	Chaparral/Shrubs	Desert Scrub
Disturbed/Developed	Grassland	Riparian

Type of Incident (circle one)                      Injury                      Mortality

Description of Incident. Include condition of bird, circumstances of incident and cause of injury or mortality (if known), and any damage to facilities. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please attach a picture of the bird or bat, if possible.

**ATHOS SOLAR PROJECT**

**OPERATIONS MORTALITY REPORTING FORM FOR AVIAN AND BAT SPECIES**

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_ OBSERVER: \_\_\_\_\_

PROXIMAL TO PROJECT COMPONENT: \_\_\_\_\_

**CARCASS POSITION**

GPS COORDINATES (UTM NAD83) 11S East: \_\_\_\_\_ North: \_\_\_\_\_

BEARING (degrees) to PROJECT COMPONENT: \_\_\_\_\_

DISTANCE (meters) to PROJECT COMPONENT: \_\_\_\_\_

**CARCASS DESCRIPTION**

SPECIES: \_\_\_\_\_

SEX (*circle*): M F U AGE (*circle*): A J U Tag/Band Number: \_\_\_\_\_

CONDITION (*circle*): intact scavenged dismembered feather spot injured

ESTIMATED TIME SINCE DEATH/INJURY (no. of days): >1 1 2 3 4 5 6 7 7+

CAUSE OF DEATH:

\_\_\_\_\_  
\_\_\_\_\_

OBSERVABLE INJURIES:

\_\_\_\_\_  
\_\_\_\_\_

SUBSTRATE/GROUND COVER (*at carcass location*): \_\_\_\_\_

DISPOSITION OF CARCASS<sup>1</sup> (*circle*): left in place removed collected for trials collected for other: \_\_\_\_\_

SHIPPED TO:

[name of institution] \_\_\_\_\_

[physical address] \_\_\_\_\_

[phone/email] \_\_\_\_\_

**WEATHER CONDITIONS**

AIR TEMPERATURE (degrees Fahrenheit): \_\_\_\_\_

PRECIPITATON (last 24 hours, *circle*): none light rain rain heavy rain hail snow

CLOUD COVER (*circle*): clear mostly clear partly cloudy mostly cloudy cloudy

WIND DIRECTION: \_\_\_\_\_ SPEED (mph, *circle*): 0-10 10-20 20-30 30+ gusty

NOTES (describe noteworthy weather conditions since last search, including high wind, fog, precipitation, and storm events):

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**PHOTOGRAPHS<sup>2</sup>:**

Close Up: Photo 1 \_\_\_\_\_ Photo 2 \_\_\_\_\_

Landscape: Photo 3 \_\_\_\_\_ Photo 4 \_\_\_\_\_

PHOTO NOTES:

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**NOTIFICATION<sup>3</sup>:**

DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

NAME: \_\_\_\_\_ AGENCY/ASSOCIATION: \_\_\_\_\_

**NOTES:**

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<sup>1</sup> Permit required to handle bird carcasses.

<sup>2</sup> At least four photographs should be taken. Two should be close-in shots of the carcass and should be taken from at least two different angles. Two should be shots taken farther away showing the landscape (project components, surrounding habitat, etc.) and should be taken from at least two different angles).

<sup>3</sup> Indicate who was notified of the event, date, time, etc.

# Appendix C.4

Spring 2019 Plant Survey Memo



# Athos Memo Report

**To:** Aspen Environmental Group

**From:** Lehong Chow, Ironwood Consulting, Inc.

**Date:** April 3, 2019

**Re:** Athos Supplemental Spring 2019 Botanical Surveys

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This memo report presents the methods and results for supplemental botanical surveys conducted for the Athos Solar Energy Project in March 2019 and supplements the Biological Resources Technical Report (BRTR; Ironwood 2019) which reported on field surveys conducted in 2018.

## BACKGROUND

Botanical surveys were previously conducted in the spring and fall of 2018 for the entirety of the project site for the Athos Solar Energy Project (Athos). However, due to insufficient rain, many plant species did not germinate for proper identification during 2018 spring surveys. Fall surveys in 2018 were conducted only on a reconnaissance-level due to low levels of rain. Regional winter rainfall from the two nearest weather stations showed rainfall averaging at 0.1 inches during botanical surveys conducted in 2018 (Ironwood, 2019). In addition, gen-tie alignments have changed slightly and alternatives, access roads and spur roads have been added.

## PURPOSE

The purpose of this survey was to survey all new additions and re-survey areas of interest including public lands (limited to portions of the gen-tie segments), parcels supporting native vegetation and habitat, and windblown sandy areas where sensitive plant species may occur. The private land parcels in current or former agricultural use were not surveyed (parcel groups A, B, C, E, and part of G).

## METHODS

### Survey Areas:

The area surveyed for biological resources included the entirety of gen-tie routes (including alternates), spur roads, access roads on public land, parcels supporting native vegetation (parcel groups D and F), and areas covered by windblown sand where sensitive species may occur (portion of parcel group G). See Figures 1 and 2 for survey areas.

### Survey Preparation

Botanist Michelle Cloud-Hughes, along with Dave Kesonie and Emily Thorn, visited reference populations on January 29, 2019 at two locations: Highway 62 and Ironage Road and the Desert Lily Sanctuary, near Hwy 177, just north of Desert Center. *Eriastrum harwoodii* (CRPR 1B and BLM Sensitive; was identified at both localities. Individuals of *Astragalus* species and *Cryptantha* species were observed but needed an additional 2-3 weeks to distinguish whether they were indeed the special-status species *Astragalus insularis* var. *harwoodii* (CRPR 2B.2, no BLM status) and *Cryptantha costata* (CRPR 4.3, no BLM status). *Ditaxis serrata* var. *californica* (CRPR 3.2, no BLM status) has been reported to occur within the area but was not located even after contacting the botanist who originally collected from that local population. Please refer to the BRTR (Ironwood, 2019) for additional details.

The results of the 2018 botanical inventories and sensitive species previously observed on the project site were reviewed prior to beginning surveys.

### Survey Method

Botanical surveys began on March 4, 2019 and concluded on March 9, 2019.

Field surveys were conducted according to the methods described in the BRTR (Ironwood, 2019). Along the gen-tie line and access roads, botanists walked along parallel linear belt transects spaced at 10-meter intervals within the first 30 meters on each side of the centerline, and covered an additional 50-meter buffer at 20-meter intervals on each side. A total width of 80 meters on each side of the gen-tie centerline was covered resulting in a 160-meter wide survey corridor. Gen-tie segments 3 and 4 have additional spur roads 1 and 2, resulting in a wider 60 meters of coverage on each side of the centerline at 10-meter intervals with an additional 50-meter buffer at 20-meter intervals on each side of the gen-tie. These survey areas have a survey corridor of 220-meters. Native parcels (D, F, and G) were surveyed at 10-meter intervals (Figure 2).

An inventory of all plant species observed was recorded. Any California Rare Plant Rank (CRPR) plants were noted and their locations were recorded. Locations of any cacti (excluding cholla species, genus *Cylindropuntia*) on BLM lands were also recorded. The field team also searched for creosote bush rings on BLM lands.

All locational information for special status species observed were recorded using a Global Positioning System (GPS). In addition to recording sign with the GPS unit, standardized paper datasheets were also completed.

Surveyors included: Michelle Cloud-Hughes, Marc Baker, Dave Kesonie, Emily Thorn, and Lehong Chow.

## RESULTS

### Sensitive Species

One special-status plant species not previously reported was detected during spring 2019 botanical surveys: *Astragalus insularis* var. *harwoodii* (CRPR 2B.2). Individuals of this plant were observed on gen-tie segment 2A and parcel group G (see Figure 3). No additional occurrences of special-status species reported previously were observed during the Spring 2019 survey.

Locations of all special-status species detected on the Project site, including 2018 and 2019 field surveys, are shown in Figure 3.

### Cacti Counts

Two species of cacti (excluding *Cylindropuntia* species) were observed during spring 2019 botanical surveys. Table 1 lists the cacti observations.

**Table 1.** Cacti Count Results

Cactus Species	Location	# Individuals
Fishhook cactus ( <i>Mammalaria tetrancistra</i> )	gen-tie 3	1
Barrel cactus ( <i>Ferocactus cylindraceus</i> )	parcel group F	2

### Creosote Rings

No creosote rings were observed.

### Plant list

Several plant species were observed during the 2019 botanical surveys that were not previously detected due to poor germination. The full list of all plants observed since 2018 is included in Table 2 below.

**Table 2.** Athos 2018-2019 Plants Observed

SCIENTIFIC NAME	COMMON NAME	GENUS	SOLAR FARM	GEN-TIE
<i>Abronia villosa</i>	sand verbena	Nyctaginaceae	X	
<i>Abronia villosa</i> var. <i>villosa</i>	hairy sand verbena	Nyctaginaceae	X	X
<i>Achyronychia cooperi</i>	onyx flower	Caryophyllaceae	X	X
<i>Acmispon strigosus</i>	strigose lotus	Fabaceae	X	X
<i>Aliciella latifolia</i>	broad leaf gilia	Polemoniaceae	X	X
<i>Allionia incarnata</i>	windmills	Nyctaginaceae	X	

SCIENTIFIC NAME	COMMON NAME	GENUS	SOLAR FARM	GEN-TIE
<i>Ambrosia acanthicarpa</i>	annual burweed	Asteraceae		X
<i>Ambrosia dumosa</i>	white bursage	Asteraceae	X	X
<i>Ambrosia ilicifolia</i>	holly leaf bursage	Asteraceae		X
<i>Ambrosia salsola</i>	cheesebush	Asteraceae	X	X
<i>Amaranthus fimbriatus</i>	fringed amaranth	Amaranthaceae	X	
<i>Amsinckia tessellata</i>	devil's lettuce	Boraginaceae	X	X
<i>Antirrhinum filipes</i>	tangled snapdragon	Plantaginaceae		X
<i>Aristida</i> sp.	three-awn	Poaceae	X	
<i>Aristida adscensionis</i>	three-awn	Poaceae		X
* <i>Antennaria</i> sp.	pussy toes	Asteraceae	X	
<i>Asclepias erosa</i>	desert milkweed	Apocynaceae	X	X
<i>Asclepias subulata</i>	skeleton milkweed	Apocynaceae	X	
<b><i>Astragalus insularis</i> var. <i>harwoodii</i></b>	<b>Harwood's milkvetch</b>	<b>Fabaceae</b>	<b>X</b>	<b>X</b>
<i>Astragalus didymocarpus</i>	dwarf white milkvetch	Fabaceae	X	
<i>Astragalus lentiginosus</i> var. <i>variabilis</i>	freckled milkvetch	Fabaceae	X	X
<i>Atriplex canescens</i>	hoary saltbush	Chenopodiaceae	X	X
<i>Atriplex polycarpa</i>	allscale saltbush	Chenopodiaceae	X	X
<i>Atrichocercis platyphylla</i>	gravel ghost	Asteraceae	X	X
<i>Baileya pauciradiata</i>	laxflower	Asteraceae	X	X
<i>Baileya pleniradiata</i>	wooly marigold	Asteraceae		X
<i>Baileya</i> sp.	desert marigold	Asteraceae	X	
<i>Bebbia juncea</i>	sweetbush	Asteraceae	X	
<i>Bebbia juncea</i> var. <i>aspera</i>	rush sweetbush	Asteraceae	X	
<i>Boerhavia</i> sp.	slender spiderling	Nyctaginaceae	X	
<i>Bouteloua</i> sp.	six-weeks gramma	Poaceae	X	
<i>Bouteloua aristidoides</i> var. <i>aristidoides</i>	needle grama	Poaceae	X	X
<i>Brandegea bigelovii</i>	desert starvine	Cucurbitaceae	X	
* <i>Brassica tournefortii</i>	Sahara mustard	Brassicaceae	X	X
<i>Calycoseris wrightii</i>	white tackstem	Asteraceae	X	X
<i>Camissonia campestris</i>	Mojave suncup	Onagraceae		X
* <i>Carpobrotus edulis</i>	highway ice plant	Aizoaceae	X	
<b><i>Castela emoryi</i></b>	<b>crucifixion thorn</b>	<b>Simaroubaceae</b>	<b>X</b>	
<i>Caulanthus lasiophyllus</i>	California mustard	Brassicaceae	X	X
<i>Chaenactis carphoclinia</i>	pebble pincushion	Asteraceae	X	X
<i>Chaenactis fremontii</i>	Fremont's pincushion	Asteraceae	X	X

SCIENTIFIC NAME	COMMON NAME	GENUS	SOLAR FARM	GEN-TIE
<i>Chaenactis stevioides</i>	desert pincushion	Asteraceae	X	X
<i>Chaenactis xantiana</i>	fleshcolor pincushion	Asteraceae		X
<i>Chaenactis</i> sp.	pincushion	Asteraceae	X	X
* <i>Chenopodium murale</i>	nettle leaf goosefoot	Chenopodiaceae	X	X
<i>Condea emoryi</i>	desert lavender	Lamiaceae	X	X
<i>Chorizanthe brevicornu</i>	brittle spineflower	Polygonaceae	X	X
<i>Chorizanthe rigida</i>	spiny herb	Polygonaceae	X	
<i>Chorizanthe corrugata</i>	wrinkled spineflower	Polygonaceae		X
<i>Chylismia brevipes</i> ssp. <i>brevipes</i>	golden suncup	Onagraceae	X	X
<i>Chylismia claviformis</i>	browneyes	Onagraceae	X	
<i>Croton californicus</i>	California croton	Euphorbaceae	X	
<i>Cryptantha angustifolia</i>	narrow leaved cryptantha	Boraginaceae	X	X
<i>Cryptantha dumetorum</i>	bush-loving cryptantha	Boraginaceae		X
<i>Cryptantha maritima</i>	Guadalupe cryptantha	Boraginaceae	X	
<i>Cryptantha micrantha</i>	redroot cryptantha	Boraginaceae	X	
<i>Cryptantha nevadensis</i>	Nevada forget me not	Boraginaceae	X	X
<i>Cryptantha pterocarya</i>	winged nut forget me not	Boraginaceae		X
<i>Cryptantha</i> sp.	cryptantha	Boraginaceae	X	
<i>Cucurbita palmata</i>	coyote melon	Cucurbitaceae	X	
<i>Cylindropuntia echinocarpa</i>	silver cholla	Cactaceae	X	X
<i>Cylindropuntia ramosissima</i>	pencil cholla	Cactaceae	X	X
<i>Dalea mollis</i>	hairy prairie clover	Fabaceae	X	X
<i>Dalea mollissima</i>	silky dalea	Fabaceae	X	X
<i>Datura discolor</i>	small datura	Solanaceae	X	X
<i>Datura wrightii</i>	jimson weed	Solanaceae	X	X
<i>Descurainia pinnata</i>	western tansy mustard	Brassicaceae	X	X
<i>Diplacus bigelovii</i>	Bigelow's mimulus	Phrymaceae	X	X
<i>Distichlis spicata</i>	salt grass	Poaceae	X	
<i>Ditaxis lanceolata</i>	narrowleaf ditaxis	Euphorbaceae	X	
<i>Ditaxis neomexicana</i>	New Mexico ditaxis	Euphorbaceae	X	
<i>Dithyrea californica</i>	spectacle pod	Brassicaceae	X	X
<i>Draba cuneifolia</i>	wedge leaved draba	Brassicaceae	X	X

SCIENTIFIC NAME	COMMON NAME	GENUS	SOLAR FARM	GEN-TIE
<i>Emmenanthe penduliflora</i>	whispering bells	Boraginaceae		X
<i>Encelia farinosa</i>	brittlebush	Asteraceae	X	X
<i>Encelia frutescens</i>	button brittlebush	Asteraceae	X	
<i>Erigeron bonariensis</i> [= <i>Conyza bonariensis</i> ]	flax-leaved horseweed	Asteraceae	X	
<i>Eremalche exilis</i>	white mallow	Malvaceae		X
<i>Eremalche rotundifolia</i>	desert fivespot	Malvaceae	X	X
<i>Eremothera boothii</i> ssp. <i>condensata</i>	Booth's suncup	Onagraceae	X	X
<i>Eremothera refracta</i>	narrow leaved primrose	Onagraceae	X	X
* <i>Erodium cicutarium</i>	red stem filaree	Geraniaceae	X	X
<i>Erodium texanum</i>	desert heron's bill	Geraniaceae	X	X
<i>Eriastrum diffusum</i>	miniature wool star	Polemoniaceae		X
<i>Eriogonum inflatum</i>	desert trumpet	Polygonaceae	X	X
<i>Eriogonum deflexum</i>	flat topped buckwheat	Polygonaceae	X	X
<i>Eriogonum pusillum</i>	yellow turban	Polygonaceae		X
<i>Eriogonum reniforme</i>	kidney leaf buckwheat	Polygonaceae	X	
<i>Eriogonum trichopes</i>	little desert buckwheat	Polygonaceae	X	X
<i>Eriogonum thomasi</i>	Thomas' buckwheat	Polygonaceae	X	X
<i>Eriogonum</i> sp.	annual buckwheat	Polygonaceae	X	
<i>Eschscholzia californica</i> ssp. <i>Mexicana</i>	desert California poppy	Papaveraceae	X	X
<i>Eschscholzia glyptosperma</i>	desert gold poppy	Papaveraceae	X	X
<i>Eschscholzia minutiflora</i>	pygmy poppy	Papaveraceae	X	X
<i>Eucrypta chrysanthemifolia</i>	spotted eucrypta	Boraginaceae	X	X
<i>Eulobus californicus</i>	California primrose	Onagraceae	X	X
<i>Euphorbia eriantha</i>	beetle spurge	Euphorbaceae	X	
<i>Euphorbia micromera</i>	Sonoran sandmat	Euphorbaceae	X	X
<i>Euphorbia setiloba</i>	Yuma sandmat	Euphorbaceae	X	X
<i>Euphorbia polycarpa</i>	smallseed sandmat	Euphorbaceae	X	X
<i>Fagonia laevis</i>	California fagonia	Zygophyllaceae	X	
<i>Ferocactus acanthodes</i>	barrel cactus	Cactaceae	X	
<i>Ferocactus cylindraceus</i>	California barrel cactus	Cactaceae	X	
<i>Fouquieria splendens</i>	ocotillo	Fouquieriaceae	X	X

SCIENTIFIC NAME	COMMON NAME	GENUS	SOLAR FARM	GEN-TIE
<i>Funastrum hirtellum</i>	hairy milkweed	Apocynaceae		X
<i>Geraea canescens</i>	desert sunflower	Asteraceae	X	X
<i>Gilia stellata</i>	star gilia	Polemoniaceae	X	X
<i>Gilia latifolia</i>	broad leaf gilia	Polemoniaceae	X	X
<i>Heliotropium curassavicum</i>	Chinese parsley	Boraginaceae	X	
<i>Hesperocallis undulata</i>	desert lily	Liliaceae	X	
<i>Hibiscus denudatus</i>	paleface	Malvaceae	X	
<i>Hilaria rigida</i>	big galleta grass	Poaceae	X	X
<i>Hyptis emoryi</i>	desert lavender	Lamiaceae	X	
<i>Isocoma acradenia</i>	alkali goldenbush	Asteraceae	X	
<i>Justicia californica</i>	chuparosa	Acanthaceae	X	
<i>Kallstroemia californica</i>	California caltrop	Zygophyllaceae	X	
<i>Krameria bicolor</i>	white rhatany	Krameriaceae	X	X
<i>Larrea tridentata</i>	creosote bush	Zygophyllaceae	X	X
<i>Lepidium lasiocarpum</i>	pepperweed	Brassicaceae	X	
<i>Linanthus jonesii</i>	Jones' linanthus	Polemoniaceae	X	X
<i>Loeseliastrum matthewsii</i>	desert calico	Polemoniaceae	X	X
<i>Logfia depressa</i>	dwarf cottonrose	Asteraceae	X	X
<i>Lupinus sp.</i>	lupine	Fabaceae	X	
<i>Lupinus arizonicus</i>	Arizona lupine	Fabaceae	X	X
<i>Lycium andersonii</i>	Anderson's desert thorn	Solanaceae	X	
<i>Malacothrix coulteri</i>	snake's head	Asteraceae		X
<i>Malacothrix glabrata</i>	desert dandelion	Asteraceae	X	X
* <i>Malva parviflora</i>	cheese weed	Malvaceae		X
<i>Mammillaria tetrancistra</i>	fishhook cactus	Cactaceae	X	
<i>Marina parryi</i>	Parry's false prairie clover	Fabaceae	X	
<i>Mirabilis laevis</i>	desert wishbone bush	Nyctaginaceae	X	
<i>Mentzelia albicaulis</i>	white stemmed stickleaf	Loasaceae	X	
<i>Mentzelia involucrata</i>	whitebract blazingstar	Loasaceae	X	
<i>Mohavea breviflora</i>	golden desert snapdragon	Plantaginaceae	X	X
<i>Mohavea confertiflora</i>	Mojave flower	Plantaginaceae	X	X
<i>Monoptilon bellioides</i>	Mojave desert star	Asteraceae	X	X
<i>Nama demissum</i>	purple mat	Boraginaceae	X	X
<i>Nama pusillum</i>	eggleaf fiddleleaf	Boraginaceae		X

SCIENTIFIC NAME	COMMON NAME	GENUS	SOLAR FARM	GEN-TIE
<i>Nemacladus orientalis</i>	eastern glandular nemacladus	Campanulaceae	X	X
<i>Nemacladus sp.</i>	nemacladus	Campanulaceae	X	X
<i>Nemacladus tenui</i>	desert nemacladus	Campanulaceae		X
<i>Nicotiana obtusifolia</i>	desert tobacco	Solanaceae	X	
<i>Oenothera caespitosa</i>	fragrant evening primrose	Onagraceae	X	X
<i>Oenothera deltoides</i>	desert lantern	Onagraceae		X
<i>Oenothera deltoides</i> ssp. <i>deltoides</i>	birdcage desert primrose	Onagraceae	X	
<i>Oenothera primiveris</i>	yellow desert evening primrose	Onagraceae		X
<i>Oligomeris linifolia</i>	leaved cambess	Resedaceae	X	X
<i>Olneya tesota</i>	desert ironwood	Fabaceae	X	X
<i>Opuntia basilaris</i>	prickly pear cactus	Cactaceae	X	
<i>Orobanche cooperi</i>	desert broomrape	Orobanchaceae	X	X
<i>Palafoxia arida</i>	Spanish needle	Asteraceae	X	X
<i>Palafoxia arida</i> var. <i>arida</i>	desert needle	Asteraceae	X	X
<i>Parkinsonia florida</i>	blue palo verde	Fabaceae	X	X
<i>Pectis papposa</i> var. <i>papposa</i>	chinch weed	Asteraceae	X	
<i>Peritoma arborea</i>	bladderpod	Cleomaceae		X
<i>Perityle emoryi</i>	Emory's rockdaisy	Asteraceae	X	X
<i>Petalonyx thurberi</i>	sandpaper plant	Loasaceae	X	
<i>Pectocarya heterocarpa</i>	Chuckwalla pectocarya	Boraginaceae	X	X
<i>Pectocarya platycarpa</i>	broad nut comb bur	Boraginaceae	X	X
<i>Pectocarya recurvata</i>	arch-nut comb bur	Boraginaceae		X
<i>Petunia axillaris</i>	large white petunia	Solanaceae	X	
<i>Phacelia crenulata</i> var. <i>ambigua</i>	purplestem phacelia	Boraginaceae	X	X
<i>Phacelia crenulata</i>	notch leaved phacelia	Boraginaceae	X	X
<i>Phacelia crenulata</i> var. <i>crenulata</i>	heliotrope phacelia	Boraginaceae	X	X
<i>Phacelia crenulata</i> var. <i>minutiflora</i>	little flowered heliotrope phacelia	Boraginaceae	X	X
<i>Phacelia distans</i>	common phacelia	Boraginaceae	X	X
<i>Phacelia ivesiana</i>	ives' phacelia	Boraginaceae		X
<i>Phacelia neglecta</i>	alkali phacelia	Boraginaceae	X	X
<i>Phacelia sp.</i>	annual phacelia	Boraginaceae	X	

SCIENTIFIC NAME	COMMON NAME	GENUS	SOLAR FARM	GEN-TIE
<i>*Phoenix dactylifera</i>	date palm	Areaceae	X	
<i>Physalis crassifolia</i>	ground cherry	Solanaceae	X	
<i>Physaria tenella</i>	little bladderpod	Brassicaceae		X
<i>Plantago ovata</i>	wooly plantain	Plantaginaceae	X	X
<i>Plagiobothrys jonesii</i>	Jones' popcorn flower	Boraginaceae	X	X
<b><i>Proboscidea althaeifolia</i></b>	<b>Desert Unicorn plant</b>	<b>Martyniaceae</b>	<b>X</b>	<b>X</b>
<i>Peucephyllum schottii</i>	desert pine	Asteraceae	X	
<i>Prosopis glandulosa</i>	honey mesquite	Fabaceae	x	X
<i>Psathyrotes ramosissima</i>	turtleback	Asteraceae	X	X
<i>Psorothamnus emoryi</i>	indigo bush	Fabaceae	X	X
<i>Psorothamnus schottii</i>	Schott's indigo bush	Fabaceae	X	X
<i>Psorothamnus spinosus</i>	smoke tree	Fabaceae	X	X
<i>Rafinesquia neomexicana</i>	desert chickory	Asteraceae	X	X
<i>*Saccharum</i> sp.	sugar cane	Poaceae	X	
<i>*Salsola tragus</i>	Russian thistle	Chenopodiaceae	X	X
<i>Salvia columbariae</i>	chia	Lamiaceae	X	X
<i>*Schismus barbatus</i>	common Mediterranean grass	Poaceae		
<i>*Schismus arabicus</i>	Mediterranean grass	Poaceae	X	
<i>Senecio mohavensis</i>	Mojave ragwort	Asteraceae	X	X
<i>Senegalia greggii</i>	catclaw acacia	Fabaceae	X	
<i>Simmondsia chinensis</i>	jojoba	Simmondsiaceae	X	
<i>*Sisymbrium irio</i>	London rocket	Brassicaceae	X	X
<i>*Sonchus asper</i>	spiny sowthistle	Asteraceae		X
<i>Sphaeralcea ambigua</i>	desert globemallow	Malvaceae	X	
<i>Stephanomeria exigua</i>	small wirelettuce	Asteraceae	X	X
<i>Stephanomeria pauciflora</i>	wire lettuce	Asteraceae	X	X
<i>Stillingia spinulosa</i>	broad leaved stillingia	Euphorbaceae	X	X
<i>Stillingia</i> sp.	Mojave toothleaf	Euphorbaceae	X	
<i>*Tamarix</i> sp.	tamarisk	Tamariaceae	X	
<i>*Tamarix aphylla</i>	athel	Tamariaceae		X
<i>Tidestromia suffruticosa</i> var. <i>oblongifolia</i>	honeysweet	Amaranthaceae	X	X
<i>Tiquilia plicata</i>	fanleaf crinklemat	Boraginaceae	X	
<i>Trichoptilium incisum</i>	yellow head	Asteraceae		X
<i>Washingtonia filifera</i>	California fan palm	Arecaceae	X	X
<i>*Washingtonia robusta</i>	Mexican fan palm	Arecaceae	X	

**BOLD** = sensitive plant species

**BLUE** = 2019 new plant observation

\* = non-native plant

#### 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)

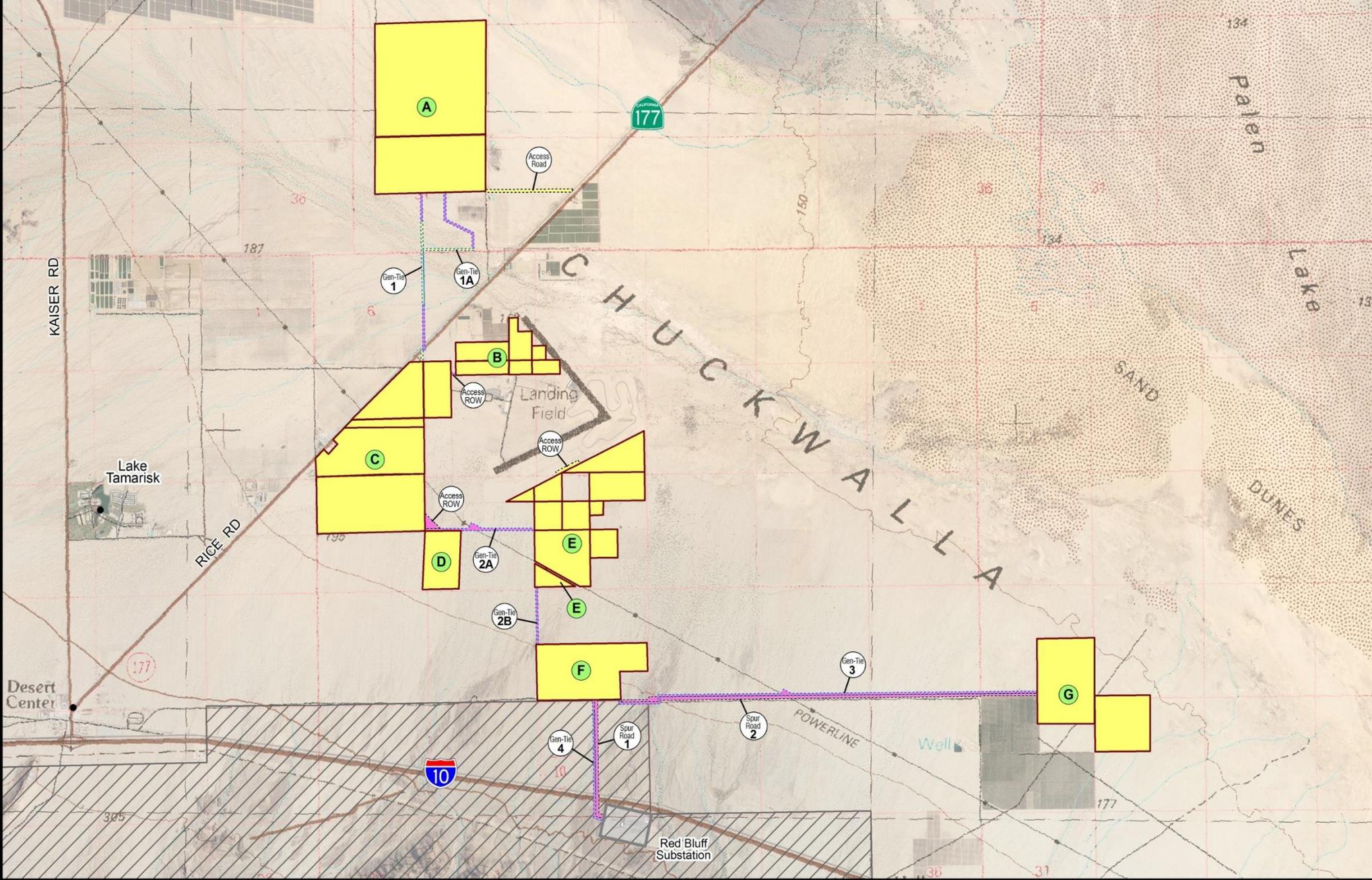
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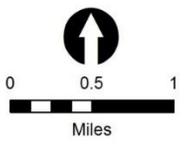
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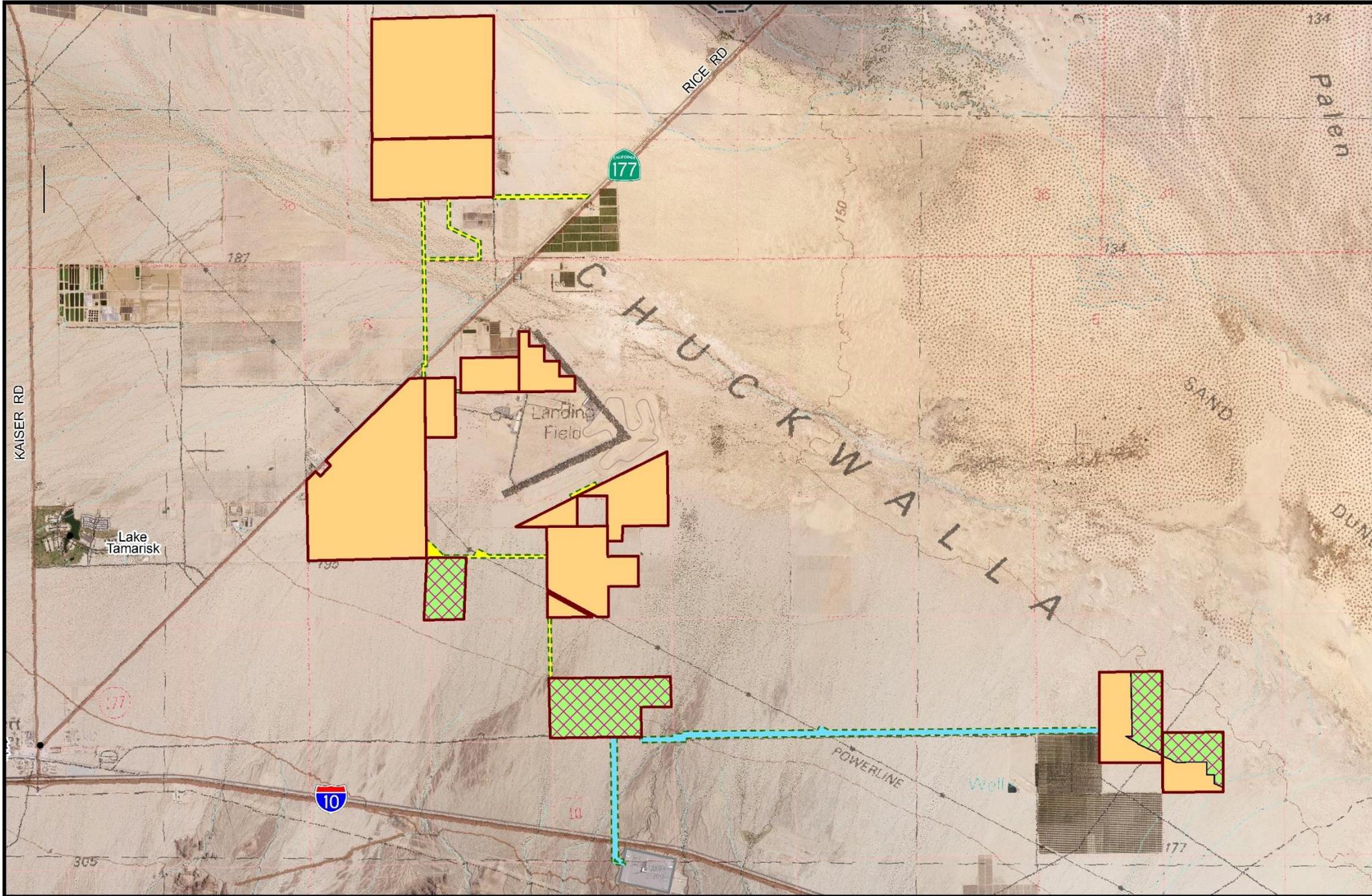


- Solar Farm Parcel
- Gen-Tie Corridor
- Access Road/Easement
- BLM Administered Land
- Private Land
- Desert Tortoise Critical Habitat

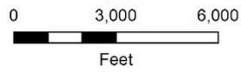
**FIGURE 1**

**Project Site Parcel Groups and Gen-Tie Segments**

**Athos Solar**

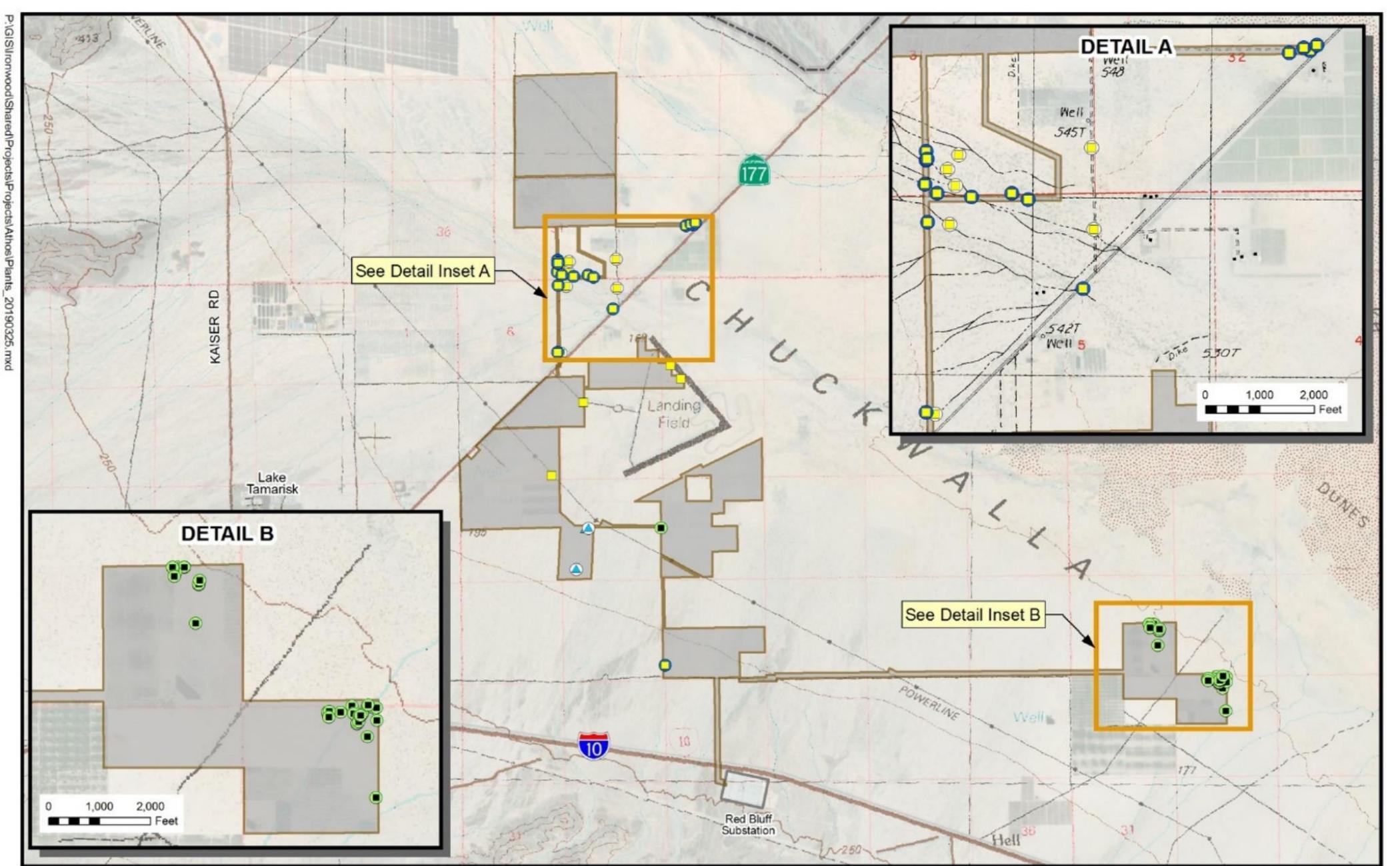


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Consulting



- |   |   |
|---|---|
|  Solar Farm Parcel                 |  160-meter Survey Corridor |
|  Gen-Tie / Access Road / Spur Road |  220-meter Survey Corridor |
|  Red Bluff Substation              |  10-meter Transects        |
|   |  Not Surveyed              |

**FIGURE 2**  
**Study Area**  
**Athos Solar**



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Athos Solar Project  
 Red Bluff Substation

**Fall 2017**

- ▲ *Castella emoryi*, Crucifixion Thorn
- *Proboscidea altheafolla*, Desert Unicorn Plant

**Spring 2018**

- ▲ *Castella emoryi*, Crucifixion Thorn
- *Proboscidea altheafolla*, Desert Unicorn Plant

**Fall 2018**

- *Proboscidea altheafolla*, Desert Unicorn Plant

**Spring 2019**

- *Astragalus insularis* var. *harwoodii*, Harwood's milkvetch

**Ironwood Consulting**



0 3,000 6,000  
Feet

**FIGURE 3**

**Special Status Plant Species Observations**

**Athos Solar**

## Appendix C.5

### Multi-Species Relocation and Management Plan

**MULTI-SPECIES RELOCATION AND MANAGEMENT PLAN**  
**ATHOS RENEWABLE ENERGY PROJECT**  
**RIVERSIDE COUNTY, CALIFORNIA**



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*April 2019*

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## List of Acronyms

ACEC	Area of Critical Environmental Concern
BRTR	Biological Resources Technical Report
BLM	Bureau of Land Management
BMP	Best Management Practices
CA-177	California Highway 177
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CNDDDB	California Natural Diversity Database
CRPR	California Rare Plant Rank
DB	Designated Biologist
DFA	Development Focus Area
DRECP	Desert Renewable Energy Conservation Plan
FEIS	Final Environmental Impact Statement
FESA	Federal Endangered Species Act
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
RSABG	Rancho Santa Ana Botanical Garden
SEZ	Solar Energy Zone
USFWS	US Fish and Wildlife Service
WEAP	Worker Environmental Awareness Program

## **1.0 INTRODUCTION**

### **1.1 Background**

In 2017, Intersect Power, LLC proposed the Athos Renewable Energy Project (proposed Project) within the Chuckwalla Valley of unincorporated Riverside County, California. The proposed Project would consist of solar facilities located on seven non-contiguous groups of private parcels and approximately 11 miles of generation interconnection (gen-tie) transmission line crossing a mixture of privately owned and Bureau of Land Management (BLM) managed lands, connecting to the existing Southern California Edison (SCE) Red Bluff substation. The Athos Renewable Energy Project is expected to generate 500 megawatts (MW) of renewable energy using photovoltaic (PV) panels. The solar facilities and gen-tie are collectively referred to as the Athos Renewable Energy Project (the Project) throughout this report.

### **1.2 Site Location**

The Project site is located in unincorporated Riverside County, California. It is approximately 3,456.7 acres, including 3,262.8 acres of privately-owned land and 193.9 acres of BLM-managed land. The site is situated within Chuckwalla Valley near the community of Desert Center, about halfway between the cities of Indio and Blythe (see Figure 1).

The Project site is on three 7.5-Minute U.S. Geological Survey topographic quadrangles: East of Victory Pass, Corn Springs, and Sidewinder Well. The BLM-managed lands of the Project site are 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. Two wildlife habitat management areas are located within close proximity to the proposed Project: The Chuckwalla Area of Critical Environmental Concern (ACEC) is located just south of I-10 (south of the proposed solar facilities), and the Joshua Tree National Park ACEC is located approximately two miles north of the northernmost portion of the Project site.

The BLM-managed lands included within the Project site are 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). The DRECP identifies the BLM-managed 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.

The portions of the Project site proposed for PV and storage components consist of seven non-contiguous groups of privately-owned parcels. For the purposes of this report, the seven groups of parcels are identified as parcel groups A-G. The gen-tie routes are identified as six segments (gen-tie 1,1A, 2A, 2B, 3, and 4) and are located on a combination of privately owned and BLM managed lands (see Figures 2 and 3), which will be referred to as public land components for the remainder of the report. A summary of these components is found in Table 1.

Private Land Components

All seven non-contiguous parcel groups for proposed PV and storage are located on privately owned parcels. The northernmost parcel group (A) is just northwest of California Highway 177 (CA-177) while the remaining parcel groups (C-G) are located southeast of CA-177 and north of Interstate 10 (I-10). These lands include a combination of former and active agricultural lands (parcel groups A-E, and G) and native undisturbed habitat (parcel groups D and F).

The proposed gen-tie routes connect each of these groups of parcels and connect group F to Southern California Edison’s existing Red Bluff substation. The gen-tie routes that cross privately owned land include gen-tie 1,1A, gen-tie 1B, gen-tie 3, and the access road (see Figures 2 and 3). The habitat on these routes include some previously disturbed habitat.

All private land components within the Project (parcel groups A-G, gen-tie segments 1A, 1B, 3, and the access road) are located outside boundaries of Areas of Critical Environmental Concern (ACECs), BLM wilderness areas, or USFWS designated critical habitat units for desert tortoise.

Public Land Components

The proposed gen-tie routes located on public land include gen-tie segments 1A, 2A, 2B, and 4. Habitat on these gen-tie segments consists of mostly undisturbed habitat (see Figures 2 and 3). The entirety of gen-tie segment 4 is located within USFWS designated critical habitat for desert tortoise and the southernmost portion of that segment (portion south of I-10) is located within the Chuckwalla ACEC.

This plan specifies methods and scheduling of wildlife exclusion fence installation, pre-construction clearance surveys, active or passive relocation methods for special-status species, to ensure compliance with state and federal laws, and outline best management practices to protect biological resources. Due to the differing nature of Project construction and long-term land use, the approach to multiple-species relocation differ on the solar facility sites and gen-tie lines. For the purposes of implementing this Plan effectively, public and private segments of the gen-tie will be treated the same, except a cactus inventory will occur on BLM lands, but not on private lands.

**Table 1.** Summary of Project Components.

Solar Facility	Component	Private	Public
	A	X	-
	B	X	-
	C	X	-
	D	X	-
	E	X	-
	F	X	-
	G	X	-
Gen-tie	Component	Private	Public
	Gen-tie 1	X	X
	Gen-tie 1A	X	X
	Gen-tie 2A	-	X
	Gen-tie 2B	X	-
	Gen-tie 3	X	X
Gen-tie 4	-	X	
Additional Access	Component	Private	Public
	Access Road	X	-
	ROW Access	X	X
	Spur Road 1	-	X
Spur Road 2	-	X	

### 1.3 Project Description

The Project solar facility will consist of PV panels that would be minimally reflective, dark in color, and highly absorptive. Panels would be arranged on the site in solar arrays with spacing between each row at a minimum of 4 feet. Structures supporting the PV modules would consist of steel piles which would be driven into the soil using pneumatic techniques. Piles would typically be spaced 10 feet apart. The total height of the panel system measured from ground surface would be up to 12 feet. Inverter-transfer stations, underground collection cables, up to four substations, and an operations and maintenance (O&M) facility will also be part of the solar facility.

The Project gen-tie lines would be located within a 100-foot-wide right-of-way and consist of either mono poles, lattice steel structures, or wooden H-frame poles. A total of up to 120 gen-tie structures would be built. Each gen-tie structure would include a 3-phase 220 kV conductor, a ground wire, and a telecommunications fiber-optic cable.

Access to the majority of the Project sites would be via State Route 177 and Corn Springs Road would be used to access the easternmost group of parcels. Seven new access road segments, totaling approximately ten miles in length, would be constructed for primary and secondary access to the seven groups of parcel groups (A-G). In some cases, access would be via improved existing BLM open routes and agricultural roads, rather than requiring new route construction.

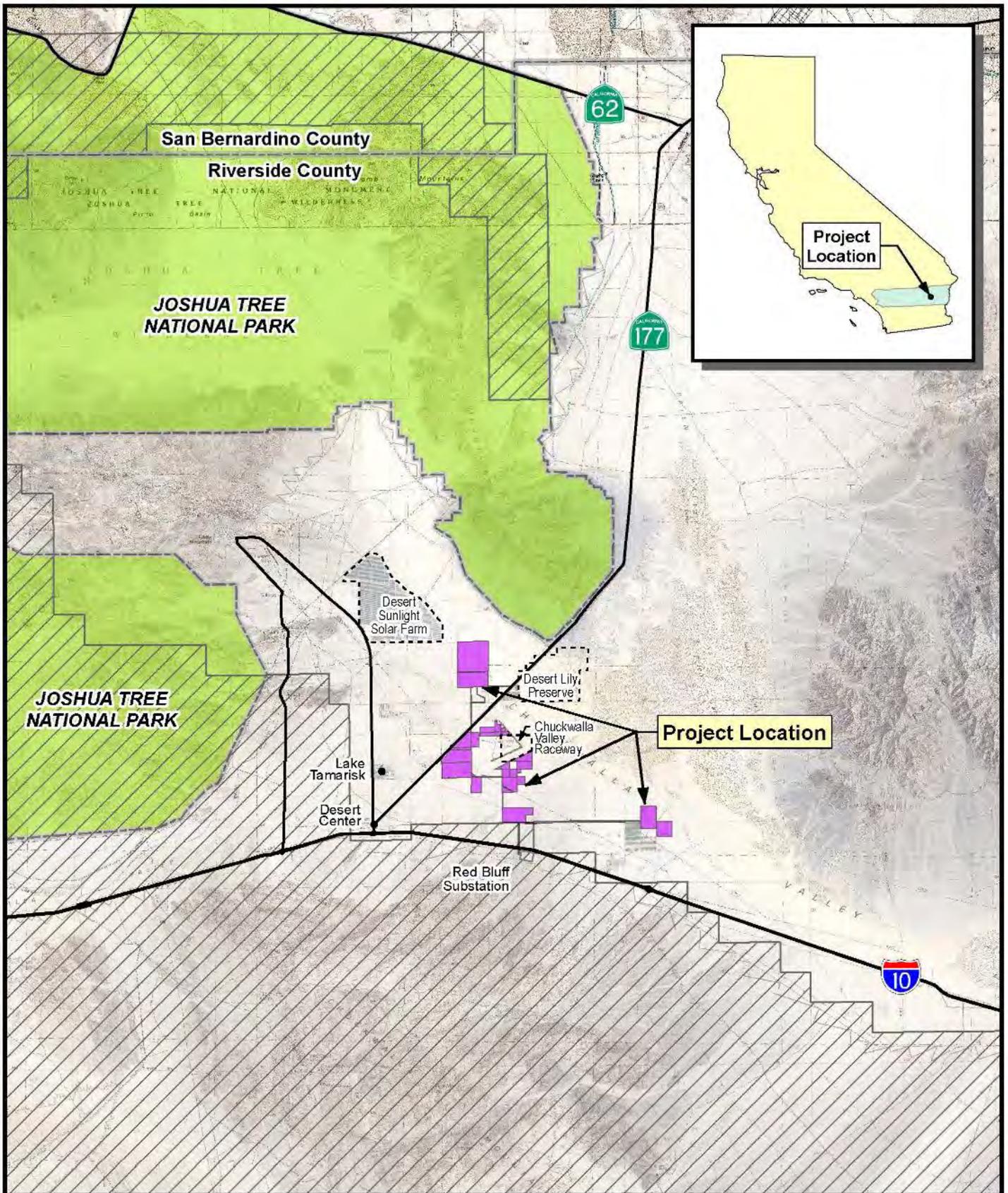
Construction is anticipated to occur over a 30-month period with multiple construction activities occurring simultaneously and may happen in different phases.

### 1.4 Purpose

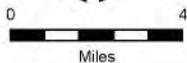
The primary purpose of this Plan is to provide a framework for management approach, monitoring, and relocation of multiple sensitive species that may occur within the Project site. These sensitive species include:

- Desert tortoise (*Gopherus agassizii*)
- Mojave fringe-toed lizard (*Uma scoparia*)
- Desert kit fox (*Vulpes macrotis*)
- American badger (*Taxidea taxus*)
- Western Burrowing Owl (*Athene cunicularia*)
- Emory's crucifixion thorn (*Castella emoryi*)
- Cacti (BLM lands only; all cacti with the exception of cholla [*Cylindropuntia* sp.]

Implementation of the Plan will be during all phases of development and use of the Project, including construction, operation and maintenance, and decommissioning. Procedures will be established to avoid and minimize any negative impacts on these species during Project activities. This Plan was created in accordance to the applicant measure APM-BIO-1 Wildlife Relocation in the Plan of Development. Additional mitigation measures applicable to this Plan are summarized in Appendix A.



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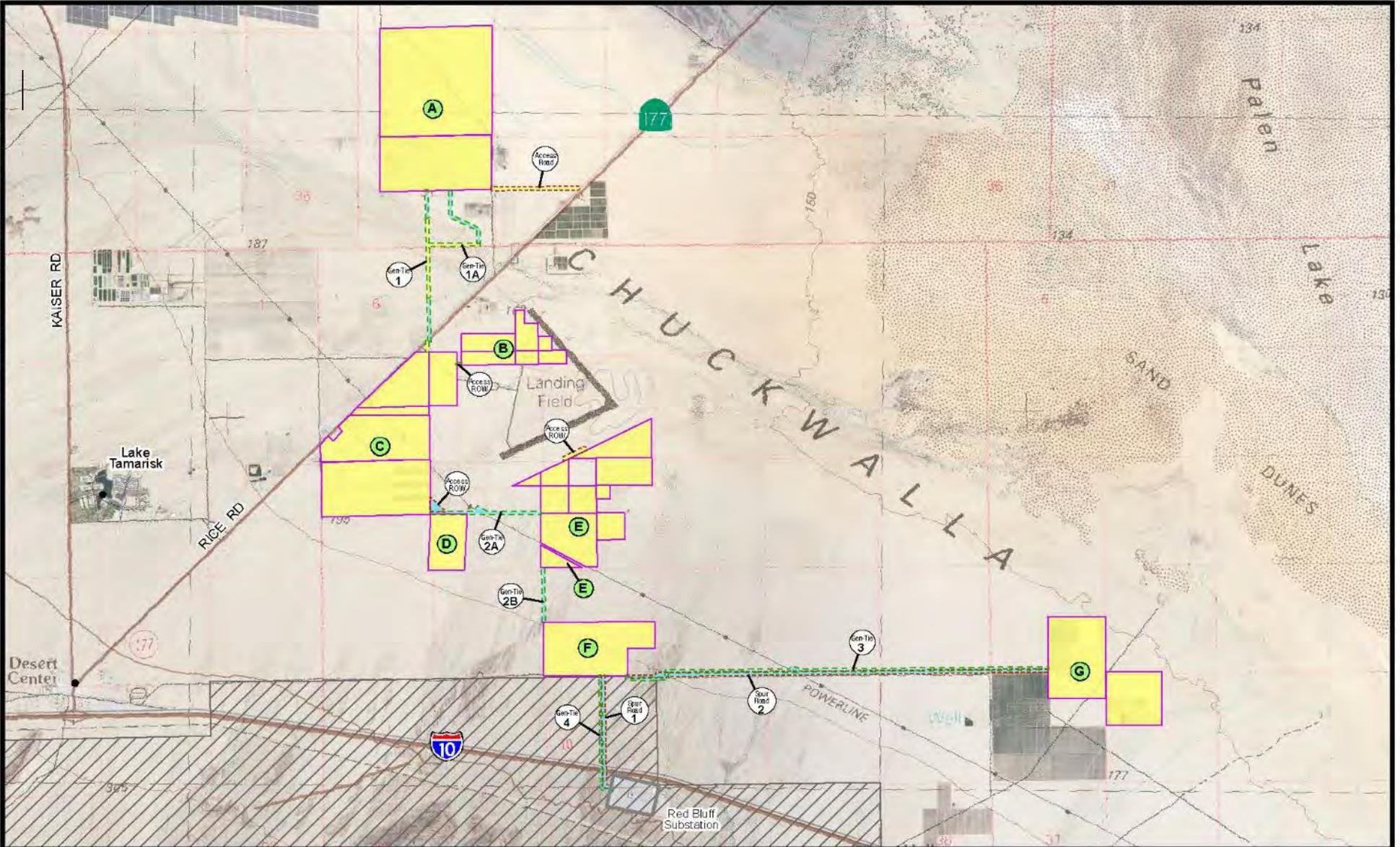


-  Athos Solar Project
-  Joshua Tree National Park
-  Desert Tortoise Critical Habitat

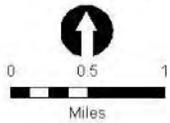
**FIGURE 1**

**Regional Location**

**Athos Solar**



Ironwood Consulting



- Solar Farm Parcel
- Gen-Tie Corridor
- Access Road/Easement
- BLM Administered Land
- Private Land

- Desert Tortoise Critical Habitat

FIGURE 2

Project Site Parcel Groups and Gen-Tie Segments

Athos Solar

## 2.0 BASELINE CONDITIONS

### 2.1 Surveys to date

All surveys were conducted per DRECP DFA Biological Conservation Management Action (CMA) requirements for each species within the timing recommended. Methodology and any modifications are discussed in detail within the Biological Resources Technical Report (BRTR) for the Project. Observations from these surveys are discussed within the subsequent sections.

Full coverage wildlife surveys included:

- Fall Surveys October 21 - 26, 2017 (parcels containing native habitat, some of which have since been removed from the Project footprint)
- Spring Surveys May 9 - 27, 2018 (disturbed parcels and the gen-tie)
- Fall Surveys October 30 - 31, 2018 (new gen-tie adjustments and access roads)

Focused plant surveys included:

- April 16 - May 27, 2018 (all disturbed parcels)
- May 5 - 9, 2018 (all parcels containing native habitat, gen-tie, and access roads)
- November 19 - 21, 2018 (reconnaissance-level survey – all parcels, gen-tie, and access roads in washes, and areas where water may accumulate)
- Spring 2019 (ongoing all parcels containing native habitat, gen-tie, and access roads)

## 2.2 Sensitive Species Observations

### 2.2.1 Desert Tortoise: *ST*, *FT*\*\*

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. Without considering anthropogenic disturbances, parcel groups A and B and gen-tie 1A within the Project site have predicted occupancy values for desert tortoise of less than 0.3 (Nussear et al. 2009). The remainder of the parcel groups and gen-tie segments range between 0.4 and 0.6. Only parcel groups, D and F, are undisturbed native habitat reflective of their actual predicted occupancy values (Figure 3).

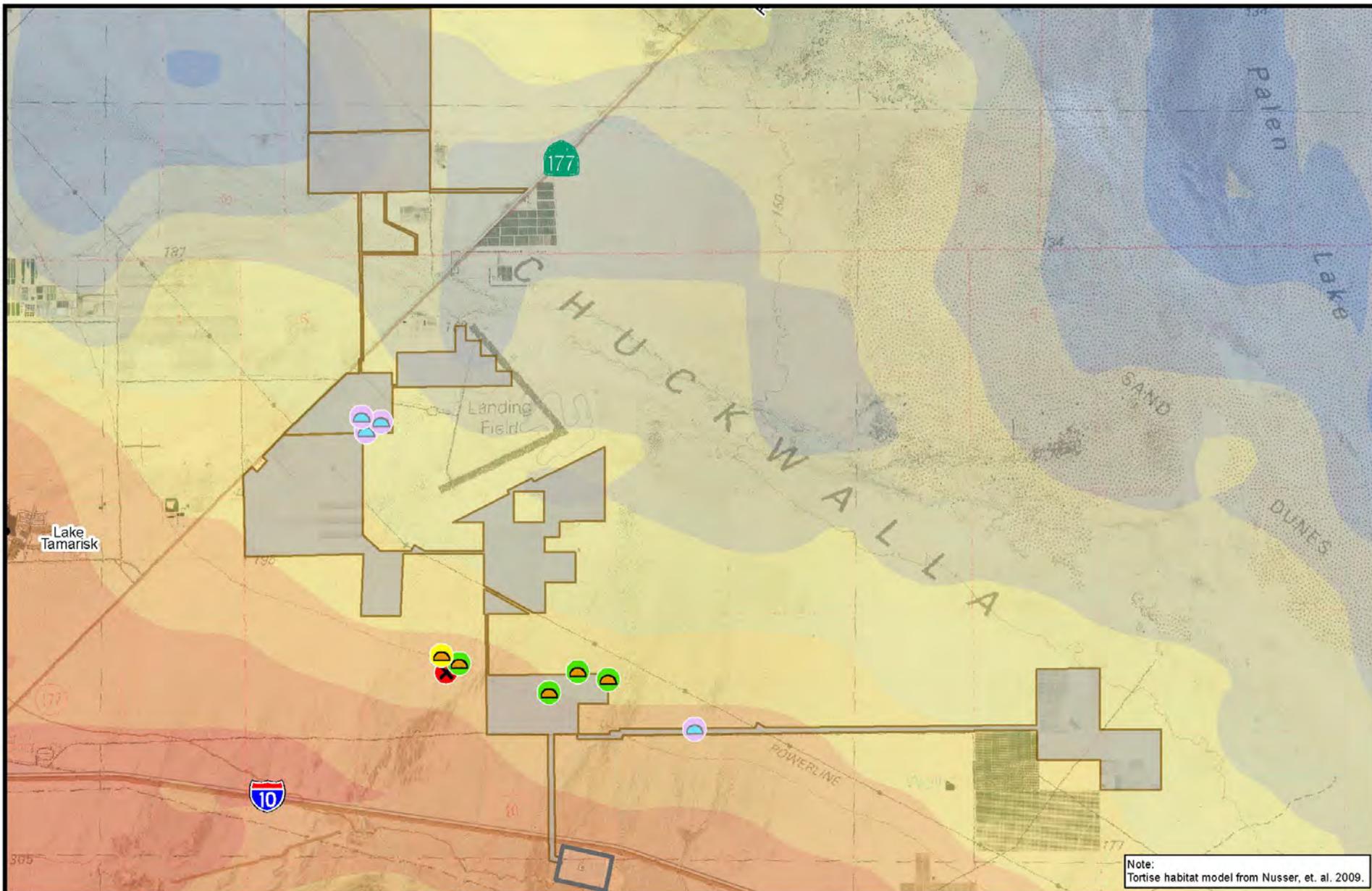
Surveys to date have detected no live desert tortoises. Within Project boundaries, desert tortoise sign detected was inactive. Within parcel group C, three burrows were detected that were of poor quality and not definitively tortoise. Although parcel group F has undisturbed, native vegetation, only three tortoise burrows of deteriorated condition were detected. Active tortoise sign was observed outside Project boundaries west of gen-tie 2B with tracks, scat, and a burrow in good condition. Survey results for desert tortoise are summarized in Table 2 and Figure 3.

\*\*Listing Acronyms: *ST* = State-listed threatened; *FT* = federally-listed threatened; *SSC* = State species of special concern; *BLMS* = BLM sensitive; *CPF* = California protected furbearer; *BCC* = USFWS Bird species of conservation concern; *WL* = CDFW watch list; *CPGS* = California Protected Game Species, *CRPR* = California Rarity Plant Rank

Desert tortoise sign observed during wildlife surveys were consistent with the predicted occupancy of the species within the Project vicinity. Desert tortoise occupancy within the Project area is expected to be low. A range of 0-5 tortoises may potentially occur within the Project site. It is unlikely that a tortoise will occur on a majority of the parcel groups due to their disturbed nature but may occur in areas where native vegetation is present. Survey results, however, indicate that the presence of live tortoises in those areas will be low.

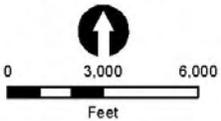
**Table 2.** Desert Tortoise Sign Observations.

Project Component	Sign Type	Classification	Location	Habitat	Date Observed
<b>Solar Facilities</b>	burrow	class 4	parcel group C	recovering Sonoran creosote bush scrub	5/9/2018
	burrow	class 4	parcel group C	recovering Sonoran creosote bush scrub	5/9/2018
	burrow	class 4	parcel group C	recovering Sonoran creosote bush scrub	5/9/2018
	burrow	class 3	parcel group F	Sonoran creosote bush scrub	10/23/2017
	burrow	class 3	parcel group F	Sonoran creosote bush scrub	10/24/2017
	burrow	class 3	parcel group F	desert dry wash woodland	10/23/2017
<b>Gen-tie</b>	tracks, scat	class 1	west of gen-tie segment 2B	Sonoran creosote bush scrub	10/22/2017
	burrow	class 2	west of gen-tie segment 2B	Sonoran creosote bush scrub	10/22/2017
	burrow	class 3	west of gen-tie segment 2B	Sonoran creosote bush scrub	10/22/2017
	burrow	class 4	gen-tie segment 3	desert dry wash woodland	5/11/2018



Note:  
Tortoise habitat model from Nusser, et. al. 2009.

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- Athos Solar Project
- Red Bluff Substation
- Desert Tortoise Burrow, Fall Survey
- Desert Tortoise Burrow, Spring Survey
- Tortoise Tracks and Scat

**Tortoise Sign Condition**

- Class 1** - Currently active; with desert tortoise or recent desert tortoise sign
- Class 2** - Good condition, definitely desert tortoise, no evidence of recent use
- Class 3** - Deteriorated condition which includes collapsed burrows, definitely desert tortoise
- Class 4** - Good condition; possibly desert tortoise

**Tortoise Habitat Quality**

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 3**  
**Desert Tortoise**  
**Sign Observations**  
**Athos Solar**

### 2.2.2 Mojave Fringe-Toed Lizard: SSC, BLMS

The Mojave fringe-toed lizard is found in arid, sandy, sparsely vegetated habitats. It is found within and around aeolian sand habitats in the deserts. Its distribution is consistent with the presence of suitable soil conditions. All detections for Mojave fringe-toed lizard were concentrated on the easternmost parcel group (G) of the Project site, with eight observations where the sand transport system and the DRECP modelling for Mojave fringe-toed lizard overlap. It is noted that the DRECP habitat model (Figure 12) also includes or surrounds parcel groups A, B, and E in the northwestern part of the Project site, but a combination of former agricultural land use on-site as well as upwind land use conversion off-site has altered sand availability and aeolian sand transport, so these parcel groups no longer provide suitable habitat for Mojave fringe-toed lizard. Results for Mojave fringe-toed lizard observations are summarized in Table 3 and Figure 4.

**Table 3.** Mojave Fringe-toed Lizard Observations.

Project Component	# individuals	Location (parcel group)	Vegetation Community	Date Observed
Solar Facilities	3	G	recovering salt bush scrub	5/22/2018
	1	G	recovering salt bush scrub	5/22/2018
	1	G	recovering salt bush scrub	5/22/2018
	5	G	recovering salt bush scrub	5/22/2018
	4	G	recovering salt bush scrub	5/22/2018
	1	G	recovering salt bush scrub	5/23/2018
	2	G	recovering salt bush scrub	5/23/2018
Gen-tie	-	-	-	-

### 2.2.3 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. One active burrow and two digs with claw marks or tracks were observed in parcel groups A and C. One carcass was also observed, within parcel group D – evidence of a struggle was detected near the carcass, indicating its potential cause of death.

### 2.2.4 Desert Kit Fox: CPF

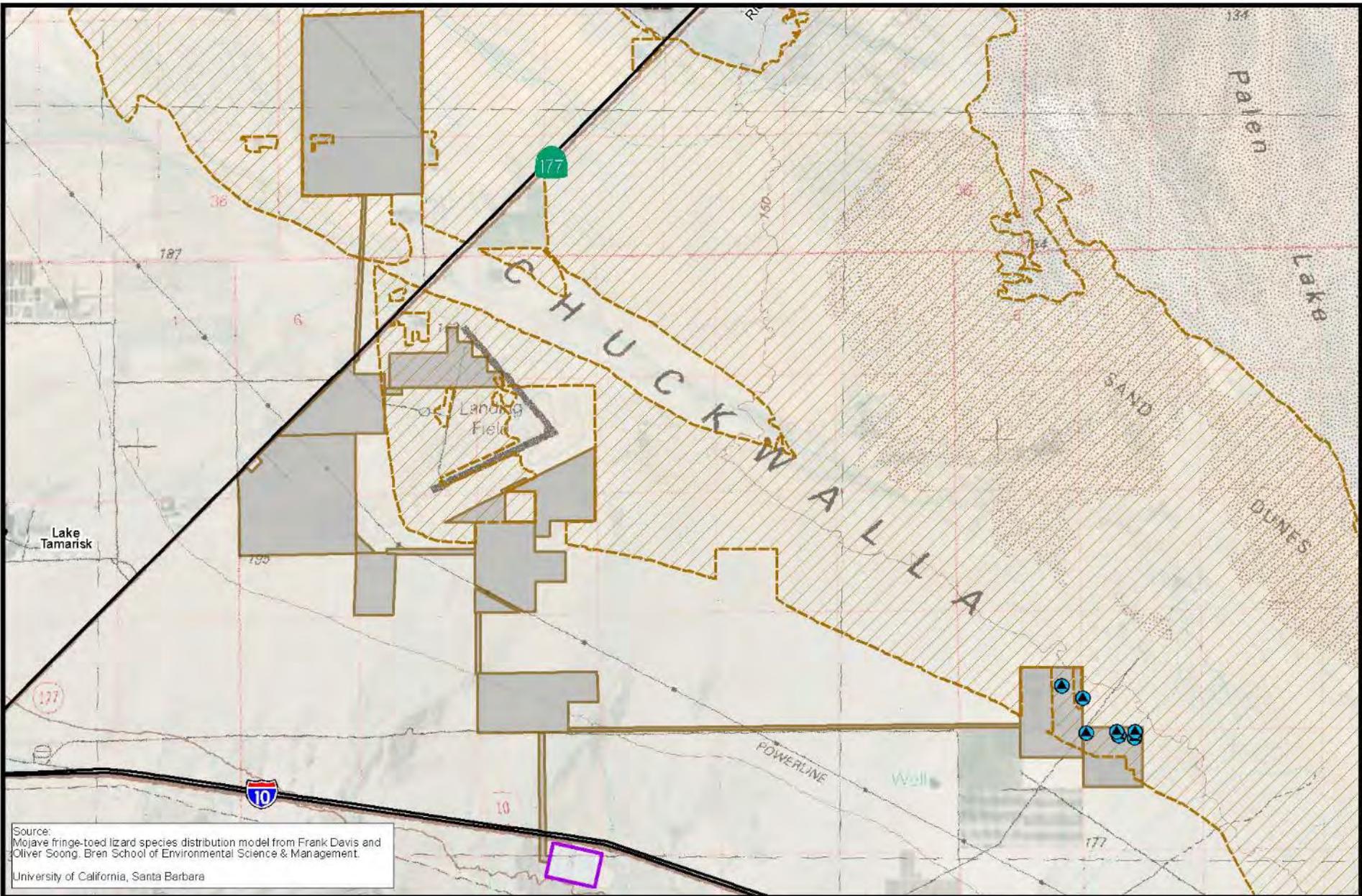
Desert kit fox is a fossorial mammal that occurs in arid open areas, shrub grassland, and desert ecosystems within the Mojave Desert in association with its prey base – typically small rodents and lizards. Desert kit fox burrows, burrow complexes, and scat were observed in parcel groups A, B, C, D, E, and F of the Project site. A total of twenty-six burrows and seven complexes were detected. Of these detections, sixteen burrows and five complexes were considered active. A summary of kit fox, coyote, and badger observations can be found in Table 4 and Figure 5.

**Table 4.** Summary of Kit Fox, Coyote, and Badger Sign Observations.

Project Components	Species	Location	SIGN TYPE				Vegetation Community	Date
			Hole Type	Scat	Tracks	Activity		
Solar Facilities	Kit Fox	A	Burrow	-	X	active	fallow ag.	5/26/2018
	Kit Fox	A	Burrow	-	X	active	fallow ag.	5/26/2018
	Kit Fox	A	Burrow	X	X	active	fallow ag.	5/26/2018
	Kit Fox	A	Burrow	-	X	active	fallow ag.	5/26/2018
	Kit Fox	A	Burrow	-	X	active	fallow ag.	5/27/2018
	Kit Fox	A	Burrow	X	X	active	fallow ag.	5/27/2018
	Kit Fox	A	Burrow	-	X	active	fallow ag.	5/27/2018
	Kit Fox	A	Burrow	X	X	active	fallow ag.	5/27/2018
	Kit Fox	A	Burrow	-	X	active	fallow ag.	5/27/2018
	Kit Fox	A	Burrow	-	-	inactive	fallow ag.	5/26/2018
	Kit Fox	south of A	Burrow	-	-	inactive	fallow ag.	5/23/2018
	Kit Fox	C	Burrow	-	-	active	fallow ag.	5/19/2018
	Kit Fox	C	Burrow	-	-	active	fallow ag.	5/24/2018
	Kit Fox	C	Burrow	X	X	active	fallow ag.	5/25/2018
	Kit Fox	C	Burrow Complex	X	X	active	fallow ag.	5/24/2018
	Kit Fox	C	Burrow Complex	X	X	active	fallow ag.	5/24/2018
	Kit Fox	C	Burrow complex	X	X	active	fallow ag.	5/25/2018
	Kit Fox	C	Burrow	X	-	inactive	fallow ag.	5/25/2018
	Kit Fox	C	Burrow	-	-	inactive	fallow ag.	5/25/2018
	Kit Fox	D	Burrow	X	-	inactive	creosote scrub	5/14/2018
	Kit Fox	D	Burrow	-	-	inactive	creosote scrub	5/14/2018
	Kit Fox	D	Burrow	-	-	inactive	creosote scrub	5/14/2018
	Kit Fox	E	Burrow	-	-	active	fallow ag.	5/17/2018
	Kit Fox	E	Burrow	-	-	active	fallow ag.	5/19/2018
	Kit Fox	E	Burrow Complex	-	-	active	fallow ag.	5/17/2018
	Kit Fox	E	Burrow Complex	-	-	inactive	fallow ag.	5/17/2018
	Kit Fox	E	Burrow	-	-	inactive	fallow ag.	5/19/2018
	Kit Fox	F	Burrow	X	X	active	creosote scrub	10/25/2017
	Kit Fox	F	Burrow complex	X	X	active	creosote scrub	10/25/2017
	Kit Fox	F	Dig	X	X	inactive	creosote scrub	10/24/2017
	Badger	A	Burrow	-	X	active	fallow ag.	5/27/2018
	Badger	C	Carcass	-	-	sign of fight	recovering creosote scrub	5/25/2018

**Table 4.** Summary of Kit Fox, Coyote, and Badger Sign Observations.

Project Components	Species	Location	SIGN TYPE				Vegetation Community	Date
			Hole Type	Scat	Tracks	Activity		
	Badger	D	Dig	-	X, fresh, claw marks	active	creosote scrub	10/27/2017
	Badger	F	Burrow	-	-	inactive	creosote scrub	10/24/2017
	Coyote	A	Burrow	-	X	active	fallow ag.	5/26/2018
	Coyote	D	Burrow	-	-	inactive	creosote scrub	5/21/2018
	Coyote	D	Burrow	-	-	inactive	creosote scrub	5/13/2018
	Coyote	D	Burrow	-	-	inactive	creosote scrub	5/14/2018
	Coyote	D	Burrow	-	-	inactive	creosote scrub	5/14/2018
	Coyote	D	Burrow	-	-	inactive	creosote scrub	5/14/2018
	Coyote	G	Burrow	-	X	active	recovering salt bush scrub	5/22/2018
	Canid	E	Burrow	-	-	inactive	recovering creosote scrub	5/17/2018
	Canid	E	Burrow	-	-	inactive	recovering creosote scrub	5/17/2018
Gen-tie	Kit Fox	gen-tie 1A	Burrow	X	-	inactive	creosote scrub	5/9/2018
	Kit Fox	gen-tie 1A	Burrow	-	-	inactive	creosote scrub	5/15/2018
	Kit Fox	gen-tie 1A	Burrow	-	-	inactive	creosote scrub	5/15/2018
	Kit Fox	gen-tie 2A	Burrow	-	-	active	creosote scrub	5/15/2018



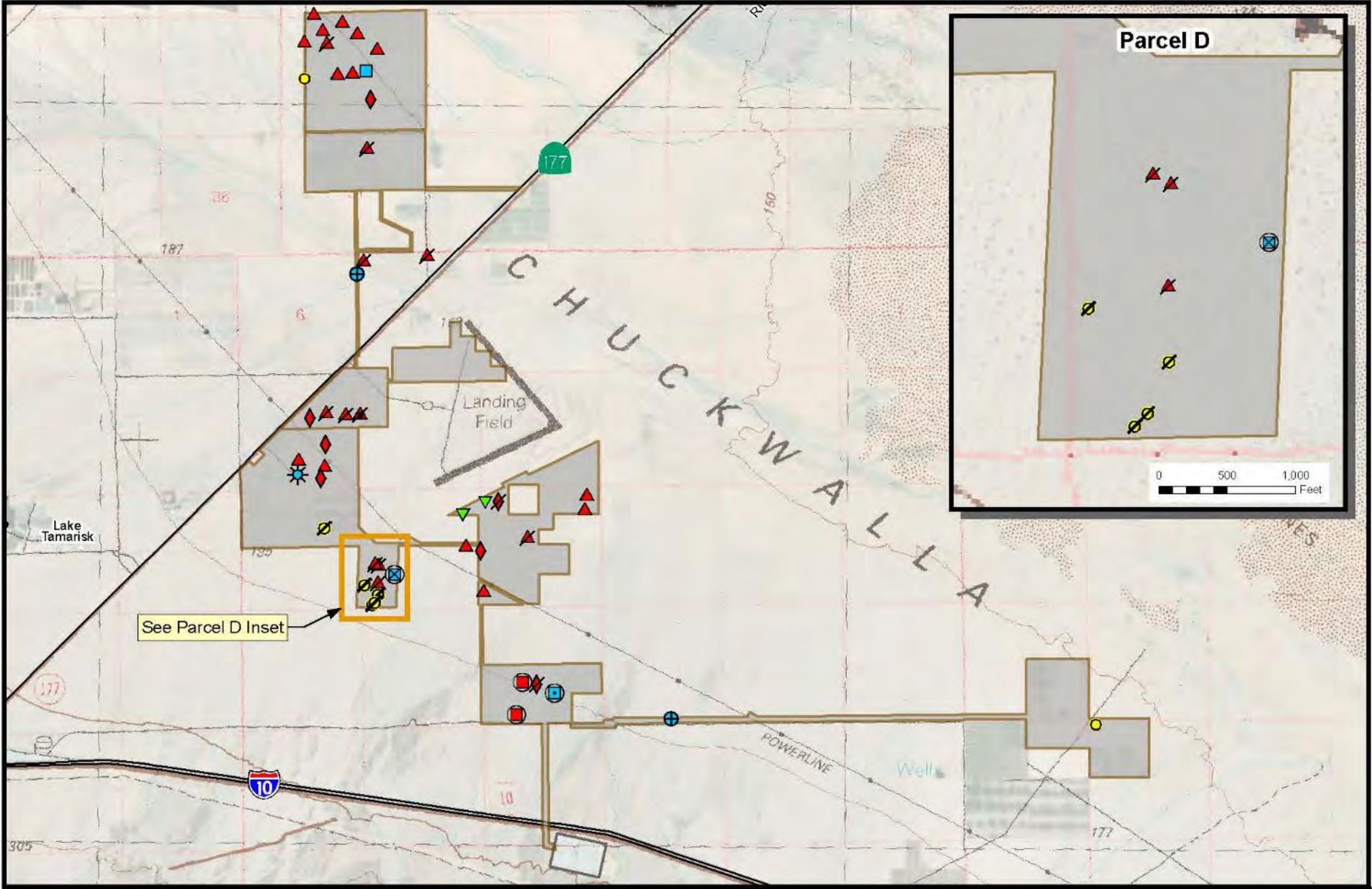
Source:  
 Mojave fringe-toed lizard species distribution model from Frank Davis and  
 Oliver Soong, Bren School of Environmental Science & Management,  
 University of California, Santa Barbara

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0 3,000 6,000  
 Feet

-  Mojave Fringe-toed Lizard
-  Mojave Fringe-toed Lizard Species Distribution Model
-  Athos Solar Project
-  Red Bluff Substation

**FIGURE 4**  
**Mojave Fringe-toed Lizard Observations**  
 Athos Solar

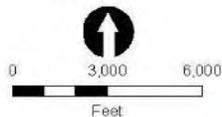


See Parcel D Inset

Parcel D

0 500 1,000 Feet

Ironwood Consulting



Athos Solar Project

Red Bluff Substation

Fall 2017

- American Badger, dig
- American Badger, tracks, fresh dig with claw marks
- Kit Fox, active burrow

Spring 2018

- American Badger, active burrow
- American Badger, carcass
- Canid, inactive burrow
- Coyote, active burrow
- Coyote, inactive burrow

- Kit Fox, active burrow
- Kit Fox, inactive burrow
- Kit Fox, inactive burrow, scat
- Kit Fox, active complex
- Kit Fox, inactive complex

Fall 2018

- American Badger, inactive dig

FIGURE 5

Kit Fox, Badger, and Coyote Sign Observations

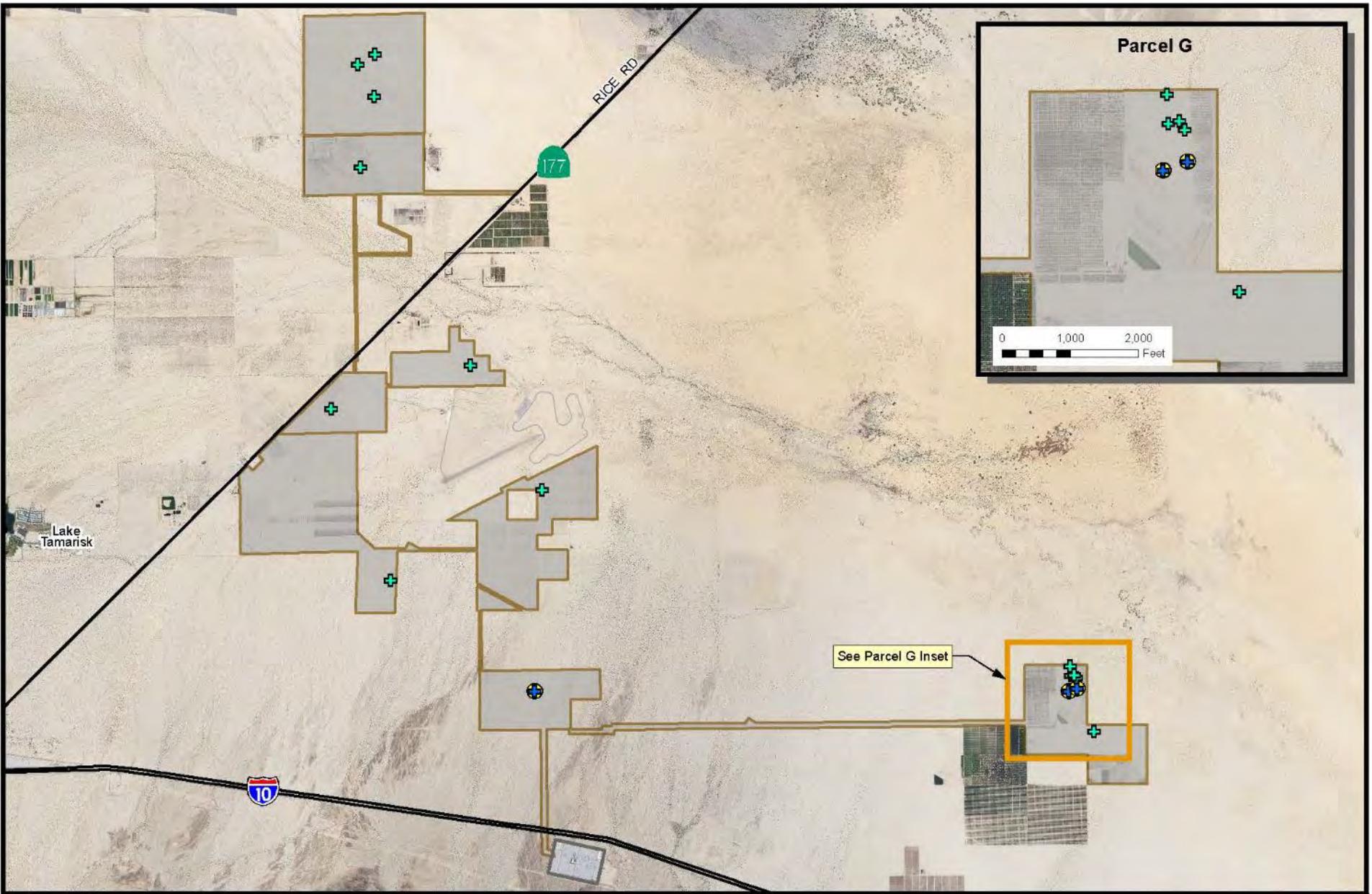
Athos Solar

### 2.2.5 Western Burrowing Owl: SSC, BCC, BLMS

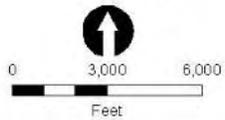
The western burrowing owl inhabits arid, open habitat with available burrowing opportunities, including agricultural fields (active and fallow), creosote scrub, desert saltbush, ephemeral washes, and ruderal areas. Burrowing owls depend on other species to dig suitable burrows for use. If those species do not return to an area to dig new burrows or repair collapsed burrows, then burrowing owls would not be able to use those collapsed burrows. A total of seventeen burrows were observed with burrowing owl sign consisting of white wash, feathers, or pellets. Four live individuals were observed at burrows during the spring 2018 surveys (parcel group G) and one live individual was observed at a burrow during the fall 2017 surveys (parcel group F). No burrowing owl sign was found on the public land components of the gen-tie. Table 5 and Figure 6 summarizes all burrowing owl observations from wildlife surveys.

**Table 5.** Burrowing Owl and Sign Observations.

Project Component	Location	SIGN TYPES					Vegetation Community	Date Observed
		burrow	whitewash	pellets	feather	live individual		
Solar Facilities	A	X	X	X	-	-	fallow agriculture	5/26/2018
	A	X	X	X	-	-	fallow agriculture	5/27/2018
	A	X	X	-	-	-	fallow agriculture	5/27/2018
	A	X	X	-	-	-	fallow agriculture	5/27/2018
	B	X	X	-	-	-	fallow agriculture	5/16/2018
	B	X	X	X	-	-	fallow agriculture	5/16/2018
	C	X	X	-	-	-	fallow agriculture	5/25/2018
	D	X	X	X	-	-	desert dry wash woodland	10/27/2017
	E	X	X	X	-	-	fallow agriculture	5/19/2018
	F	X	X	X	-	X	creosote bush scrub	10/24/2017
	G	X	X	X	-	-	fallow agriculture	5/22/2018
	G	X	X	X	X	X	fallow agriculture	5/23/2018
	G	X	X	X	-	X	fallow agriculture	5/23/2018
	G	X	X	X	X	X	fallow agriculture	5/23/2018
	G	X	X	X	-	X	fallow agriculture	5/23/2018
	G	X	X	X	-	-	fallow agriculture	5/23/2018
G	X	X	X	-	-	recovering salt bush scrub	5/23/2018	
Gen-tie	-	-	-	-	-	-	-	



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-  Burrowing Owl Burrow with Sign
-  Live Burrowing Owl at Burrow with Sign
-  Athos Solar Project
-  Red Bluff Substation

FIGURE 6

Burrowing Owl Sign

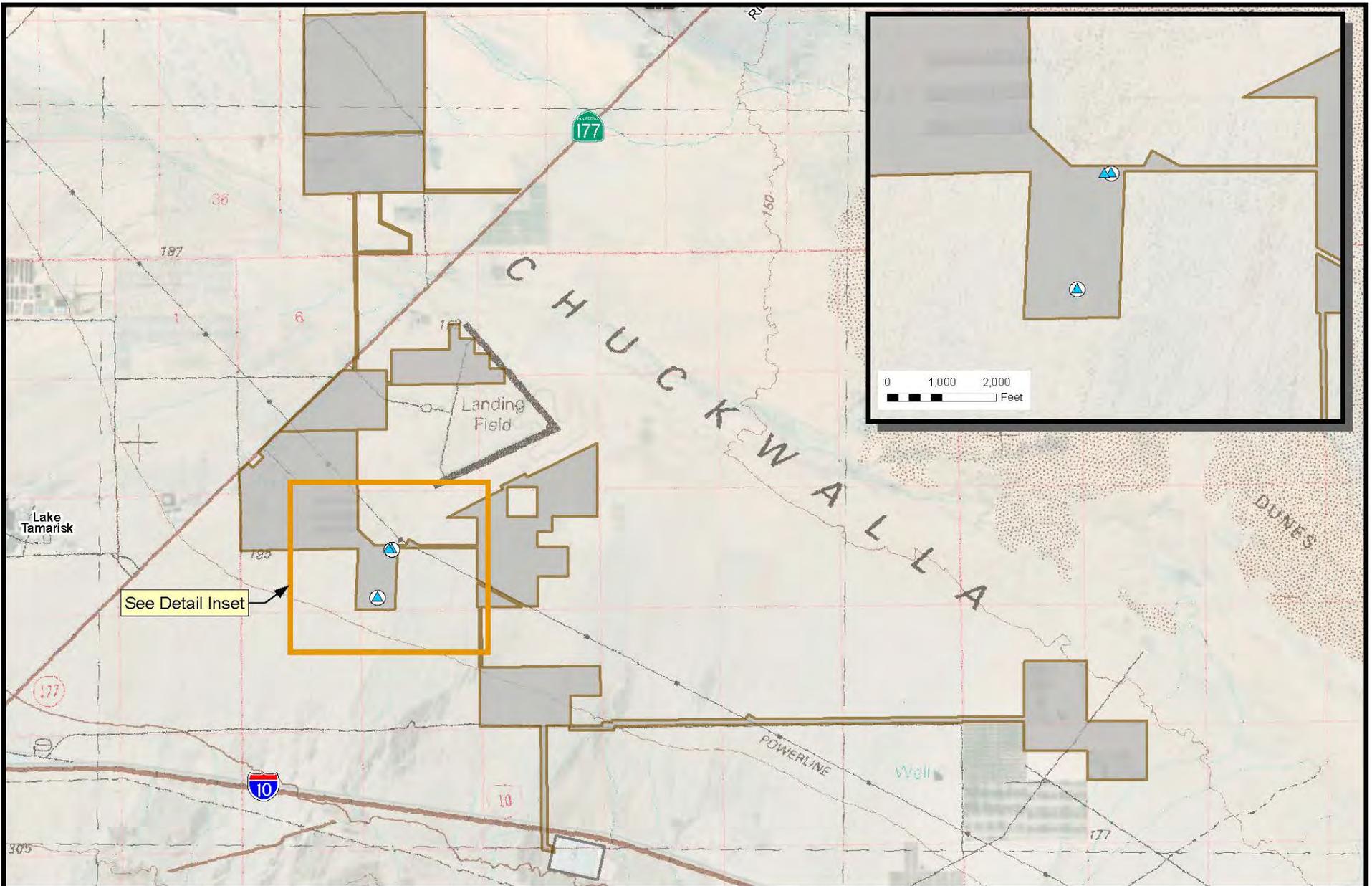
Observations  
Athos Solar

### 2.2.6 Crucifixion Thorn: CRPR 2B.2

Crucifixion thorn has 177 records occurring within California. In Riverside County, several records are near or within Desert Center, including Desert Sunlight Solar Farm just northwest of the Project (CCH 2018). It was observed at two locations in Parcel Group F where a total of six live individuals were recorded (Figure 7, Table 6). 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 elsewhere on the Project site, and no additional occurrences are expected.

**Table 6.** Summary of Special Status Plant Observations.

Project Components	Species	Sign Type	Location	Vegetation Community	Date
Solar Facility	Crucifixion Thorn	live shrubs (4)	D	creosote bush scrub	10/29/2017
Gen-tie	Crucifixion Thorn	live shrubs with seeds (2)	gen-tie 2A	creosote bush scrub	10/27/2017

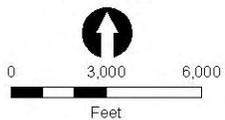


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-  Athos Solar Project
-  Red Bluff Substation

**Fall 2017**  
 *Castella emoryi*, Crucifixion Thorn

**Spring 2018**  
 *Castella emoryi*, Crucifixion Thorn



**FIGURE 7**  
**Crucifixion Thorn**  
**Observations**  
**Athos Solar**

## 3.0 MANAGEMENT APPROACH

**Overview of the Relocation Strategy** includes the following components:

- Assign a Designated Biologist and a qualified team of biologists with clear communication and reporting responsibilities to lead agencies and wildlife agencies.
- Survey for special status species along planned fence routes.
- Identify, avoid and/or relocate all target plants and animals within construction areas where necessary.
- Monitor fence construction (security fencing, desert tortoise exclusion fencing, or both) for solar facility sites.
- Conduct full-coverage surveys to identify special-status wildlife within all disturbance areas (fenced solar fields and gen-tie disturbance sites).
- Exclude special-status wildlife, according to details described below for each species as needed
- Conduct compliance monitoring and impact avoidance as needed throughout construction on the solar facility and gen-tie.

### 3.1 Key Roles

An Environmental Compliance Manager (ECM) and a separate Designated Biologist (DB), appointed by the Project Owner, and approved by BLM, USFWS, and the County of Riverside, will be responsible for the implementation of this Plan. The ECM will be responsible for other environmental resources that are not stated within this plan and will coordinate with the DB if there are potential conflicts.

The DB will coordinate directly and regularly with permitting agency representatives regarding biological resource issues, including biological resource compliance, species relocation efforts, and best management practices (BMP) implementation. The DB will supervise field biologists and biological monitors to complete pre-construction clearance surveys, burrow/den monitoring, and other measures during the construction phase of the Project. The DB can halt construction activities in an area if it is deemed necessary to protect a sensitive species.

The DB will also work with the Project Owner to prepare the Worker Environmental Awareness Program (WEAP), specified in Mitigation Measure BIO-2, to be approved by the County of Riverside, CDFW, and USFWS that addresses the sensitive species mentioned in this plan and avoidance measures that must be taken during the Project to avoid adverse impacts to the species (see Appendix A). WEAP training for all new workers to the Project site will be executed by the DB. The DB will also review, approve, and supervise biologists working as desert tortoise monitors on site.

### 3.2 Exclusion Fencing

#### 3.2.1 Solar Facility Components

At the discretion of the Project Owner and in consultation with resource agencies, security fencing can be installed simultaneously and co-located with permanent desert tortoise exclusion fencing for all parcels that will have permanent desert tortoise fence. For parcels that will not have permanent tortoise fencing installed, the Project Owner will prepare and implement a separate monitoring and avoidance program to ensure that no take of desert tortoise will occur during operations and maintenance and allow wildlife that may enter through the security fence to move through the facilities uninjured.

Prior to construction of solar facilities, temporary or permanent desert tortoise exclusion fencing will be installed around the entirety of parcel groups that have native, or recovering native habitat (parcel groups B, C, D, E, F and G). Parcel groups that have disturbed or active/fallow agriculture (parcel groups A, B and C) will be fenced with temporary or permanent desert tortoise exclusion fencing only on the sides of the parcels that are adjacent to native vegetation. These three parcels are orientated such that there are anthropogenic or landscape barriers that effectively function as exclusion fencing (e.g. CA-177, Chuckwalla race track, and highly disturbed agricultural lands).

No more than ten days prior to the initiation of fence construction, a pre-activity multi-species survey will be conducted using techniques that provide 100-percent visual coverage of the disturbance area. Qualified biologists will walk along linear transects throughout the potential fencing disturbance area, spaced 5 meters apart and 20 meters from the fence centerline (total = 40 meters, 130 ft) with an additional buffer area of 30 meters (100 ft), spaced at 10 meters. All burrows and burrow complexes that may be used by any sensitive species will be examined to determine occupancy. If any burrow within the potential disturbance area for fence construction or inside the planned fence line is determined to be unoccupied, it will be carefully collapsed per guidelines from the Desert Tortoise Field Manual (USFWS 2009). If a burrow is potentially occupied by a sensitive species, then further actions will be required (see sections 3.4-3.7).

A biological monitor will be present during all fencing installation activities. The biological monitor will inspect the work area prior to ground disturbance or vehicle access for biological resources to ensure that no special status species have moved into the work area. All parked vehicles and equipment, and the ground beneath them, will be inspected for wildlife prior to being moved. If at any time a special-status species (e.g., desert tortoise) moves into the work area, activities will halt until the animal moves out of the work site on its own accord or moved from harm's way under state and federal authorization and according to any conditions identified in applicable authorizations. Desert tortoises will not be handled at any time, except under state and federal authorizations; any potential handling of a desert tortoise will be in accordance with all qualifications and conditions identified in the authorizations.

Fencing around each parcel group will include a desert tortoise exclusion gate and/or grating. This gate will remain closed at all times, except when vehicles are entering or leaving the Project area. If it is deemed necessary to leave the gate open for extended periods of time (e.g., during high traffic periods), a biological monitor will be present to monitor for tortoise activity in the vicinity.

### **3.2.2 Gen-tie Line Components**

The linear components of the Project will have no exclusion fencing installed prior to construction activities. Biological monitors will be present for any ground disturbing activities that may occur on the linear components. Biological monitors will escort construction vehicles and inspect work areas prior to crews beginning any ground disturbance. All parked vehicles and equipment, and the ground beneath them, will be inspected for wildlife prior to being moved. Work activities will be stopped by the biological monitor if any special-status species, such as desert tortoise, enters the work area. Work activities will only proceed at the site after the tortoise has either moved away of its own accord or, moved from harm's way under state and federal authorization and according to any conditions identified in applicable authorizations. Any potential hazards to wildlife (e.g., auger holes, steep-sided depressions) will be covered and will have temporary exclusionary fencing installed at the end of the work day per standard temporary fencing (USFWS 2009) or will not be left unfilled overnight.

### **3.2.3 Fencing Requirements**

Specifications for exclusion fencing material and installation techniques will follow that which is outlined in the Desert Tortoise Field Manual (USFWS 2009). Standard desert tortoise fencing may be inadequate for Mojave fringe-toed lizard exclusion and potentially entrap the species. Therefore, in areas where Mojave fringe-toed lizard may occur (parcel group G), an alternative fencing material that has a smaller gauge or no gaps at all (e.g., Animex™ fencing), will be used but will still adhere to the installation techniques identified in the Desert Tortoise Field Manual.

Fence inspection for the parcels with native vegetation (parcel groups D and F) will occur daily for two weeks following fence installation. If no desert tortoises are observed fence-walking, inspections will occur weekly during desert tortoise active seasons (April 1 to May 31 and September 1 to October 31) and monthly during non-active seasons (June to September, November – March). The other parcels groups (A, B, C, E, and G) will have inspections twice a month during the desert tortoise active season and once a month during non-active seasons. Inspections will occur at this frequency throughout the construction phase. Fence inspection will also occur immediately following all substantial rain or storm events. Any damage to the fence shall be temporarily repaired immediately upon identification and permanently repaired within 48 hours.

Shade structures will be installed along the exterior of the desert tortoise exclusion fence per USFWS guidance (USFWS 2018) only along parcel boundaries adjacent to native vegetation and near desert tortoise critical habitat (parcel groups D and F only). Structures would be spaced minimally 305m (1000 ft) and placed directly against the exclusion fence. The shade structures will be PVC pipe, approximately 5 to 6 feet in length and 12 to 15 inches interior diameter, to allow tortoises to move around inside them. For temporary structures, a schedule 40 PVC pipe can be used and for permanent structures, a thicker 80 PVC pipe will be used. These structures will be covered with 3-4 inches of soil or rocks for insulation. The integrity of shade structures will be inspected during fence inspections and will be repaired, as necessary.

## **3.3 Pre-Construction Multi-Species Clearance Survey**

### **3.3.1 Solar Facility Components**

After exclusion fencing is installed, a multi-species preconstruction clearance survey will be conducted within each of the fenced areas. Surveys will be led by biologists experienced with the Chuckwalla Valley and/or the special-status species listed below. Surveys will occur no more than 30 days prior to initiation of construction activities and will occur within the desert tortoise active season (April through May or September through October). In addition to detecting any special-status species that may be present within the fenced area, the surveys will also inform the need for potential exclusion buffers and monitoring for individual species. Surveys will consist of 100 percent visual coverage using pedestrian belt transects spaced at 5-meter intervals. An additional 500-foot (150 meter) buffer outside the Project boundary will also be surveyed with pedestrian belt transects spaced at 10 meters apart, where possible (access may not be available on adjacent private parcels), to identify any potentially active burrows or complexes that may be indirectly affected by construction activities.

The type of sign that will be searched for during the clearance survey will include the following:

- Desert tortoise: live individuals, potential burrows, scat, and carcasses
- Mojave fringe-toed lizards: locations of suitable habitat and live individuals (parcel group G only)

- Desert kit fox and American badger: live individuals, complexes/dens (marked as either inactive, potentially active, active), and scat
- Burrowing owl: live individuals, burrows (marked as inactive, potentially active, active), white wash, pellets, and feathers
- Special-status plants: locations of live crucifixion thorn

Any burrows or den complexes identified during this survey will be classified as inactive, possibly active, or active. A burrow/den complex within the Project site that is classified as inactive (no sign of special-status species) and confirmed to be unoccupied will be excavated. Inactive burrows within the buffer zone will only be excavated if they will be directly impacted by construction activities, such as burrows or den complexes just outside Project boundaries that may become occupied later. Excavation and backfilling techniques will be conducted in accordance with standard desert tortoise burrow excavation protocols (USFWS 2009). Burrows or den complexes that are potentially active or active with live individuals inside will be further observed per the requirements of individual species as outlined in sections 3.4-3.8.

After the first pass of the multi-species pre-construction clearance survey is complete, at least one additional 100 percent visual coverage pass on transects perpendicular to the first, will occur. If no live tortoises or active tortoise sign is observed on these two passes, the clearance survey will be complete. If active desert tortoise sign is observed during the survey, a third pass may be required after consultation with the agencies.

Focused clearance surveys for Mojave fringe-toed lizard will occur only within parcel group G, after the first pass of the multi-species clearance survey identifies specific target areas for the species, based on habitat conditions. There is no survey protocol for the species, but surveys will follow survey protocol to detect a similar species, Coachella Valley fringe-toed lizard (University of California Riverside Center for Conservation 2007). Transects will be spaced at 5-meter intervals with minimally two to four biologists working together tapping vegetation to flush lizards and capture them manually to place on the other side of the exclusion fence outside the Project site. Surveys will occur during the active season (April-October) when temperatures 1 cm above the open (unshaded) sand surface is greater than 95 degrees Fahrenheit and less than 110 degrees Fahrenheit (35-43 degrees Celsius). Winds must be 10 mph or less with no rain. Because it is extremely difficult to remove the species entirely, due to their low detection rate, a minimum of 6 perpendicular passes (which includes the initial first multi-species clearance pass) will occur in these targeted areas within parcel group G. The pedestrian transect survey and capture method may be supplemented or partially replaced with pit traps in coordination with BLM and CDFW.

### **3.3.2 Gen-tie Line Components**

Preconstruction clearance surveys on the gen-tie routes will be conducted by walking one pass of 5-meter transects within the proposed disturbance areas (including roads, pads, and pull areas) no more than 30 days prior to construction. An additional 500-foot (150 meter) buffer will be surveyed with 10 meter transects as possible (access may not be available on adjacent private parcels) to identify any active burrows for special-status species that may be indirectly affected by construction activities. The survey results will also inform the need for potential exclusion buffers and additional monitoring for individual species. Clearance of gen-tie components will not include successive passes, but on-site construction monitoring will be implemented as described below for each species.

Sign of desert tortoise, Mojave fringe-toed lizard, desert kit fox, American badger, burrowing owl and sensitive plants will be recorded, as listed above for solar facility sites. In addition, locations of any cacti

(excluding cholla species, genus *Cylindropuntia*) on public lands will be recorded. Inactive and unoccupied burrows and dens will only be excavated if they will be directly affected by construction activities. Determination of active or inactive burrows will follow the procedure described below for each species.

### **3.4 Desert Tortoise**

#### **3.4.1 Relocation and Monitoring on Solar Facility Components**

The likelihood of desert tortoise occurrence is low throughout most of the private land components due to poorly suitable habitat and low density of desert tortoises in the surrounding area. Full avoidance of desert tortoise will be prioritized for the Project. The Athos Project does not anticipate translocation of any desert tortoises.

If a tortoise is identified within the Project site, it will be monitored (visually or using remote cameras) with the aim to passively exclude it from the site, into adjacent, suitable habitat. If no suitable habitat or shelter is immediately apparent (e.g. a tortoise using the site as a transit corridor), the tortoise will be monitored until it finds suitable habitat and shelter. Tortoises will not be excluded or relocated into areas of poor habitat. If any tortoise cannot be passively excluded, it will be relocated as close to the capture location as possible given the proposed construction activities, but no greater than 300 meters from the work area (generally within its existing home range) in BLM-managed land. Relocated tortoises will be released in the shade of a large shrub or a suitable burrow.

If a burrow identified during clearance surveys within the Project footprint is suspected to be actively occupied by a desert tortoise, the apron of the burrow will be swept of any tracks and the mouth of the burrow will be loosely gated with dried sticks. The burrow will be inspected for 3 consecutive days and if no activity occurs (no tracks and stick gate intact), then it will be deemed unoccupied and carefully excavated per desert tortoise protocol (USFWS 2009). Motion-activated game cameras may also be placed in front of the burrow mouth for 3 consecutive days to confirm occupancy.

A qualified biological monitor will be present during all initial ground disturbance and any vegetation removal activities to ensure that activities avoid any desert tortoise that may have been missed during clearance surveys. Any excavations with steep walls must either have a wildlife escape ramp or be fully covered at the end of the work day to prevent entrapment of any wildlife species. After vegetation is fully removed within fenced areas, weekly spot checks will be conducted to ensure that there are no desert tortoises or other sensitive species within the construction area for the duration of the construction phase.

If, at any time, a live desert tortoise is observed or in imminent danger during construction, all activities within the vicinity will stop, and the DB will implement avoidance measures or direct an authorized biologist to remove the tortoise from harm's way. No tortoises will be handled or relocated without prior authorization from USFWS and CDFW. The tortoise occurrence will be reported to the County of Riverside, USFWS, and CDFW according to terms of their respective authorizations. Other activities that will cause the cessation of construction activities include the operation of construction equipment or vehicles outside a Project area cleared of desert tortoise (except on designated roads) and conducting any construction activity without a biological monitor where one is required.

### **3.4.2 Relocation and Monitoring on Gen-tie Components**

Full avoidance will be prioritized on the gen-tie components and the Project does not anticipate relocating any desert tortoise. Burrows will be inspected for occupancy as described above and will only be excavated if they will be directly impacted by construction. If a burrow is occupied, the desert tortoise will be monitored until it leaves the area on its own accord, at which time construction will resume in the area.

A full-time biological monitor will be present for any ground disturbing activities that may occur during construction. The biological monitor will escort construction crews and inspect work areas prior to access and will be present throughout any ground disturbing activities and any construction activities that require equipment access to the gen-tie (e.g., tower construction, cable pulling, crane operations). Any excavations with steep walls must either have a wildlife escape ramp or be fully covered at the end of the work day to prevent entrapment of any wildlife species. All construction or maintenance activities will cease if a desert is detected within the work area or is in imminent danger. Work within that vicinity will not continue until the tortoise moves a safe distance out of the work area on its own accord. The ground beneath parked vehicles and equipment must be inspected for presence desert tortoise prior to moving. All other cessation of work causes is similar to those described in the private land components.

No tortoises will be handled or relocated without prior authorization from CDFW and USFWS.

## **3.5 Mojave Fringe-toed Lizard**

### **3.5.1 Relocation and Monitoring on Solar Facility Components**

Mojave fringe-toed lizard relocation will be combined with pre-construction clearance surveys described in Section 3.3. A biological monitor will be present for any initial ground disturbance and vegetation removal to look for the species and remove it from harm's way. After vegetation removal is complete, but ground disturbance continues, a biological monitor may conduct weekly spot checks to relocate any Mojave fringe-toed lizard or other sensitive species found within the work area.

### **3.5.2 Relocation and Monitoring on Gen-tie Components**

Mojave fringe-toed lizards were not observed on the gen-tie line, and the likelihood of detection during preconstruction clearance surveys is low. A biological monitor will be present during all ground disturbing activities on the gen-tie line and search for the species to remove from harm's way as much as possible prior to ground disturbing activities occurring.

### **3.5.3 Exclusion Buffer**

There are no exclusion buffers for Mojave fringe-toed lizards. A full-time biological monitor will be present for any initial ground disturbance and vegetation removal during construction.

### **3.5.4 Temporary Relocation**

Temporary relocation techniques are described in section 3.3. If additional individuals are detected during monitoring of construction activities, the biological monitor can temporarily relocate individuals outside the immediate work area by manually capturing the individuals and moving them to a safe place off-site, or outside any exclusion fencing.

## 3.6 Desert Kit Fox and American Badger

### 3.6.1 Den Monitoring and Excavation

All desert kit fox or badger den complexes within the Project footprint area (solar facilities and gen-tie work sites) identified as potentially active or active will be monitored for a minimum of 3 consecutive nights checking for tracks in loose dirt at den entrances or using a tracking medium (e.g., diatomaceous earth) and infra-red cameras at the den entrance(s). Using both methods (monitoring tracks and cameras) will help to ascertain whether or not desert kit fox or badger in photos are actively using den sites or are merely visiting other dens within their range. Steps for den monitoring are outlined below:

#### Setup for Monitoring

- The apron of the den entrances and the start of the tunnel will be swept clean of all tracks and all visible scat will be removed. Any brush used at multiple den locations must be sprayed with a 10% bleach solution after each use to prevent dispersing pathogenic microorganisms. Alternatively, each den/complex can have its own brush for sweeping.
- Tracking media (i.e. diatomaceous earth) will be sifted and spread around den entrances with hard soils, due to low detectability of tracks on that soil type. This technique would not be used during prohibitive weather conditions (i.e. high wind or rain) and at dens located outside Project boundaries within buffer areas.
- An infrared camera will be positioned on a secured stake, away from the den (within 10 meters) so that the field of view captures all den entrances. If it is not possible to capture the entire field of view with one camera, additional cameras will be used as needed to determine activity status. Monitoring dens outside of the Project disturbance area, when required, will be accomplished with infra-red cameras only. Cameras will be disinfected by spraying with a 10% bleach solution prior to moving them to another den location.

#### Initial Visits

- Cameras and dens will be monitored daily for confirmation of den occupancy for a minimum of 3 consecutive nights. Where required, cameras offsite within buffer areas will be minimally monitored once per week for offsite desert kit fox/badger.
- Following each monitoring visit to a den (after tracking information is collected) the same sweeping or sifting procedures will be used to prepare all entrances for the next monitoring period to prevent re-identification of tracks or other activity from prior visits.
- Biologists visiting dens will disinfect their shoes between visits to each den complex with 10% bleach solution prior to moving to another den site.
- Each active or potentially active den will be further classified as active, non-natal or natal (pups are present) based on tracks or photos observed after the initial 3 consecutive nights.

#### Monitoring Classified Dens

- Potential natal dens will be monitored for a minimum of 3 additional consecutive nights using infra-red beam cameras and/or tracking medium to determine their status. If a den or complex is determined to be natal, CDFW, Riverside County, and BLM will be notified via email within 24 hours of the discovery.
- Natal dens will continue to be monitored by cameras and/or weekly visits until it has been determined that the young are independent enough to travel with the parents off-site and hunt on their own. CDFW approval will be required prior to passive relocation.
- Active, non-natal dens can be passively relocated per techniques described in section 3.6.3

- If after 3 nights of den monitoring, no desert kit fox/badger tracks are found at the burrow entrance and no photos of the target species using the den are observed, it will be determined that the desert kit fox/badger den or complex is inactive and will be excavated.

#### Den Excavation

- Dens and complexes that will not be directly impacted by construction will not be excavated.
- After confirmation that a burrow located within a proposed disturbance area is inactive or unoccupied, excavation and backfilling will be conducted in accordance with standard approved desert tortoise burrow excavation and protocols with hand tools or a small driver-operated backhoe under close supervision of a qualified biologist, since there are no excavation standards and protocols for desert kit fox or badger.
- At any time if a desert kit fox or badger emerges from a burrow during excavation, activities will cease, and monitoring will be reinitiated.
- Confirmed active dens may be excavated only after successful passive relocation of the animals (Section 3.6.3). Potentially active natal dens will not be passively relocated or excavated until monitoring confirms that the dens are no longer in active use as natal dens. Active dens identified early in the pupping season, from February 1 to April 30, will not be passively relocated or excavated without prior approval from CDFW.

#### **3.6.2 Exclusion Buffer**

If an active, non-natal den is detected within the Project footprint area, then a 30 to 90-meter (100 to 300-foot) construction exclusion zone will be established, and passive relocation techniques will be used. The buffer area will be maintained until passive relocation is successfully completed. If an active natal den is detected within the Project footprint area a 150-meter (500-foot) construction exclusion zone will be established, and passive relocation will not be implemented until monitoring confirms that the den is no longer in active use as a natal den.

#### **3.6.3 Passive Relocation**

Passive relocation will occur after all dens determined to be inactive have been excavated to avoid need for multiple passive relocation events if a kit fox or badger simply moves to a previously inactive den within the Project footprint. When an active den is determined to be non-natal, passive relocation methods may be used and are outlined below:

##### Initial Relocation Efforts

- Spray deterrents, transistor radios, and ultrasonic emitters may be used for 3 nights to discourage use of dens.
- If deterrents are unsuccessful in discouraging use of dens, the DB will coordinate with CDFW to prepare an alternative relocation method, such as the two methods below.

##### Alternative Options

- The den will be progressively blocked with natural materials (i.e., rocks, dirt, sticks, and vegetation piled in front of the entrance) for the next 3 to 5 nights to discourage the kit fox from continued use.
- Bag barriers consisting of plastic grocery bags stuffed loosely with newspaper will be placed at each individual den entrance. Bag barriers will be secured to a nearby shrub, if possible, and loosely placed in the den opening so that a fox can safely emerge without difficulty.

- Either option will be implemented for 3 to 5 nights to discourage continued use of den. If alternative options are insufficient for successful passive relocation, installation of one-way doors will proceed.

#### One-Way Doors

- Installation of one-way doors will proceed when all other passive relocation options are unsuccessful.
- Installation of one-way doors will take place at all entrances within a den complex and will occur in the afternoon while desert kit fox or badger are inactive and deep within the den complex.
- If any desert kit fox or badger leave the den complex during one-way door installation, installation will cease until after the desert kit fox or badger have voluntarily left the vicinity of the den complex.
- Following one-way door installation, daily den monitoring with a tracking medium and cameras will continue. On the third day following one-way door installation, all den entrances will be inspected to ensure they are clear of sign and desert kit fox or badger have vacated.

After passive relocation is confirmed successful, and the den is confirmed to be unoccupied, it will be excavated according to the techniques described in section 3.6.1. Weekly visits to the location of passive relocation will occur to ensure that desert kit fox or badger do not re-excavate and reoccupy the location if no active ground disturbing construction is occurring within the vicinity. Monitoring will continue during ground disturbing activities according to monitoring measures in the EIR or EA.

#### **3.6.4 Canine Distemper Virus**

In 2011, mortalities attributed to Canine Distemper Virus (CDV) occurred in desert kit fox populations in the Sonoran Desert near Blythe, California, and the Chuckwalla Valley. CDV is transmitted by contact with body fluids of infected animals (e.g., nose-to-nose contact), and can be transmitted among multiple carnivore species including domestic dogs and desert kit foxes.

Riverside County, BLM, and CDFW will be notified of the results of ongoing den monitoring and survey results. If these efforts suggest that CDV may be present in the population (through observations and camera images of sick, emaciated individuals), then Riverside County, BLM and CDFW will be notified immediately.

### **3.7 Burrowing Owl**

#### **3.7.1 Burrow Monitoring**

Potentially occupied burrows or occupied burrows will be monitored further prior to relocation efforts, Methods for monitoring these potentially occupied burrows will be as follows:

- Any sign of burrowing owl (feathers, white wash, pellets) will be noted and removed prior to burrow monitoring at any potentially occupied burrows.
- Burrows will be visited twice daily for two days (48 hours) for surveillance purposes, to look for any new sign of burrowing owl.
- The use of motion-activated game cameras can assist monitoring efforts and will be used in combination with burrow visits to determine burrow occupancy. If game cameras are used, they will be placed within 10 meters of occupied burrows for a minimum of 48 hours before any occupancy determination is made.

- If a burrow is determined to be occupied, the appropriate exclusion buffer will be delineated and marked (see section 3.7.2) and passive relocation efforts will be employed if timing is suitable (see section 3.7.3).
- If a burrow is determined to be unoccupied, then excavation will occur using standard tortoise burrow excavation techniques since there are no standard excavation techniques for burrowing owl.

Only burrowing owl burrows (unoccupied and occupied) that will be directly impacted by construction activities will be excavated. Any unoccupied burrows located outside the construction activity zones will be left in their current condition. If there is an occupied burrow outside the Project footprint area but within the buffer distance, monitoring and avoidance of the burrow will be managed on a case-by-case basis in coordination with CDFW depending on the season, nature of nearby construction activities, and whether the construction site is fenced. If monitoring determines that the burrowing owl has left the site, then the burrow will be excavated and collapsed.

### 3.7.2 Exclusion Buffer

If an active burrowing owl burrow is detected within any Project disturbance area, or within a 150 m buffer of the disturbance area, a 150 m (500 ft) exclusion buffer will be maintained while the burrow remains active or occupied. The buffer may be reduced to 50 m (160 ft) during the non-breeding season (September 1 – January 31). The size of the buffer may be adjusted based on the time-of-year, and level of disturbance in the area, after consultation with CDFW. Table 7 provides exclusion buffer guidelines for nesting sites (CDFW 2012), which may be adjusted in the field by the DB, in consultation with agency personnel. 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).

**Table 7.** Buffer distance (m) for occupied burrowing owl burrows, based on time of year and level of disturbance (based on CDFW 2012, Scobie and Faminow 2000).

Time of Year	Buffer Distance (m) and Level of Disturbance*		
	Low	Medium	High
April 1 – Aug 15	200	500	500
Aug 16 – Oct 15	200	200	500
Oct 16 – Mar 31	50	100	500

\*Levels of disturbance: low = drive by, low use, once per week; medium = 15 minutes to 2 hours of activity, less than 49 decibels, one or two passes per day; high = more than 2 hours of activity, more than 49 decibels

### 3.7.3 Passive Relocation

Passive relocation will occur only during the non-breeding season, generally September 1 to February 1, but will be adjusted during the late summer months (August and September) if breeding activities are not observed at any occupied burrows. Passive relocation is a technique to exclude burrowing owls from a Project site by first, providing replacement burrows off-site (if needed); collapsing all unoccupied burrows within the construction site; and finally installing a one-way door on the occupied burrow to evict the burrowing owl without handling it. The methods involved to relocate burrowing owls are outlined below:

### Artificial Burrows

Artificial burrows may be constructed off-site to replace on-site burrows that may be removed for Project construction. The number of artificial burrows (if any) will be dependent on the availability of suitable unoccupied burrows in the surrounding area and on the number of burrowing owls evicted from the site. Prior to initiating passive relocation, biologists will survey nearby public lands to identify and inventory suitable unoccupied natural burrows that may be available. If two or more natural burrows are available, for each burrowing owl to be evicted, no artificial burrows will be constructed. If fewer suitable natural burrows are available, then new artificial burrows will be constructed to provide a total of two suitable burrows for each burrowing owl to be evicted.

- Artificial burrows will be placed 110 m to 300 m from suitable natural burrows or from other artificial burrows to minimize territorial conflicts and nest abandonment by neighboring burrowing owl pairs (if any are present).
- Artificial burrows will be located at least 50 meters outside any temporary or permanent Project impact areas, but as close as possible to the Project site and no more than one mile from the original burrow location if possible. Artificial burrows will be located in coordination with CDFW and BLM on public land.
- Artificial burrows will be designed, constructed, and installed following guidelines provided in CDFW (2012), Barclay (2008), Barclay et. al. (2011), and Johnson et al. (2010 unpublished report). Design will include a large nest chamber (approximately 1,750 cm<sup>2</sup> to 1,960 cm<sup>2</sup> interior floor space) and small diameter (approximately 7.5 cm – 10 cm) entrance tunnel. The tunnel will slope gently downward (15-20°) towards the nest chamber, with a 60° bend in the tunnel approximately midway along its length. The floor of the main chamber will be located 91 cm (36 in.) below ground level. Perching locations such as low mounds (e.g., 17-20 cm) or short perches (<60 cm) will be added outside (in front of) the burrow. Rocks will be placed at the entrance to prevent trampling and deter predator digging.
- The locations of all natural and artificial burrows will be recorded, and the burrows will be photographed. Distances to the nearest construction activity, road, drainage, and any other natural and artificial burrows will also be recorded. A comparison of vegetation, habitat types, fossorial species usage and other features will be made between the occupied and artificial burrow sites will be recorded. All data will be included in progress reports (Section 6.0).

### Artificial Burrow Inspections

- Artificial burrows shall be left in place throughout all phases of the Project.
- All artificial burrows and mapped natural burrows will be monitored for burrowing owl use at least once per quarter throughout the construction phase of the Project. During monitoring visits, the burrows will also be inspected to ensure they are still suitable for burrowing owls.
- As needed, artificial burrows may be cleaned and maintained to ensure suitability for burrowing owl use during the construction phase.
- If natural burrows are no longer suitable for burrowing owl use (e.g., due to mammal digging) new artificial burrows may be constructed as replacements, or additional inventories of natural burrows may be needed to ensure sufficient availability.
- After the construction phase of the Project ends, monitoring and maintenance of artificial burrows will be discontinued.

### Burrowing Owl Exclusion

- Following the elimination of all suitable inactive burrows within the construction area and installation of artificial burrows, burrowing owls will be passively excluded from occupied burrows.
- Burrow exclusion will involve the installation of one-way doors in burrow openings during the non-breeding season. One-way trap doors will be installed, completely sealing the entrances to the burrows, and the doors will be left in place for a minimum of 48 hours to ensure owls have left the burrow.
- Documented natural and artificial burrows adjacent to, and outside the Project site, will be monitored twice daily for at least one week following the installation of the trap doors during exclusion to confirm burrowing owl use of habitat and burrows outside of the impact area.
- If burrowing owls are not detected outside the active burrows after the 48-hour exclusion period, scoping and/or remote cameras may be used to confirm the absence of burrowing owls prior to burrow excavation.

### Burrow Excavation

- Following confirmation that passive exclusion burrows are unoccupied, the burrows will be carefully excavated using hand- tools, or small tracked equipment, and backfilled to ensure that they are no longer suitable for burrowing owl use.
- If at any time, a burrowing owl emerges during excavation, all activities will halt, and burrow monitoring and passive relocation will begin again.
- The excavation and closure of burrows, including entrance exposure, will be documented and photographed.

## **3.8 Plants**

### **3.8.1 Solar Facility Component**

During the pre-construction multi-species surveys (Section 3.3), all Emory's crucifixion thorn (*Castela emoryi*) located within the solar facility will be marked and inventoried, with their locations recorded using hand-held GPS units. Based on the number and locations of Emory's crucifixion thorn within the solar facility sites, mitigation as specified in the EIR will be implemented. Potential mitigation includes salvage and relocation; off-site horticultural propagation and reintroduction to an off-site location; or off-site habitat compensation.

### **3.8.2 Gen-tie Component**

On public parcels, all Emory's crucifixion thorn (*Castela emoryi*) and all cacti (except cholla, genus *Cylindropuntia*) located within Project disturbance areas will be marked and inventoried during the pre-construction multi-species surveys (Section 3.3), with their locations recorded using hand-held GPS units. To the extent feasible, disturbance sites will be adjusted to avoid the plants and provide a 100-foot buffer area around them. Where avoidance of crucifixion thorn is not feasible, based on the number and locations within the gen-tie disturbance sites, mitigation as specified in the EIR and Vegetation Resources Management Plan will be implemented. Potential mitigation includes salvage and relocation; off-site horticultural propagation and reintroduction to an off-site location; or off-site habitat compensation.

Cactus specimens located within disturbance areas on BLM lands will be salvaged and relocated elsewhere on BLM lands as specified in the EA and Vegetation Resources Management Plan. Cactus located on private lands will not be inventoried, salvaged, or relocated.

#### **4.0 DISPOSITION OF SICK, INJURED, OR DEAD WILDLIFE**

If an injured, sick, or dead special-status wildlife species is detected within the Project site (or buffer) during construction, operation, or decommissioning, the DB or Project Owner will immediately notify the appropriate resource agencies (CDFW for all special-status wildlife; USFWS for migratory birds or federally listed species; BLM for special-status species located on BLM lands) by phone. Written follow-up notification via email will be submitted within 24 hours of the incident that will include, at a minimum, the location (GPS record) of the animal, photographs (if available), and any relevant observations made at the time of detection. The animal will only be handled on direction by the wildlife agencies. Health and safety precautions such as gloves will be used at all times when handling the animal.

Sick or injured animals will be transported by the resource agency or under CDFW direction to a CDFW-approved wildlife rehabilitation or veterinarian clinic. CDFW will determine the final disposition of the injured animal. The Athos Project DB will maintain communication with the rehabilitation clinic or veterinarian to monitor the animal's progress or demise and include the outcome in compliance reports (Section 6.0).

Dead special-status animals will be collected with gloves and immediately frozen (dry ice will not be used). A mortality incidence form will be completed with relevant information and photographs. Appropriate transport methods and final disposition of the carcass will be completed as directed by wildlife agencies. Prior to transport, the carcass will be double-bagged and placed on ice or with ice packs into a cooler or Styrofoam container, contained by a cardboard box. If directed to do so, the carcass will be submitted to CDFW or a CDFW-approved lab for necropsy as soon as possible. The Project will be responsible for the expenses incurred as a result of injured, sick, or dead animals.

#### **5.0 ADAPTIVE MANAGEMENT**

Adaptive management may be employed whenever unexpected issues or sensitive species not previously identified occur and could happen at any time during construction. Generally, adaptive management measures would be implemented if there is evidence of project-related disturbance or increased risk to desert tortoises or other special status species, where initial protection methods have been deemed ineffective. Monitoring, management, and reporting appropriate to this unexpected issue or species will be developed in coordination with the appropriate resource agencies.

#### **6.0 REPORTING**

During the construction phase, reporting of all other information regarding implementation of this Plan will be provided in weekly, monthly, quarterly, and annual compliance reports to Riverside County, the wildlife agencies, and BLM as required. These reports will provide a summary of activities performed through implementing this Plan and will describe the results of Plan-related activities for each species. Any data taken will be submitted as appendices to each report or as separate electronic files. Prompt reporting or notification requirements for specific incidents or circumstances (e.g., dead or injured special-status wildlife) are identified above.

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## APPENDIX A

### Applicable Mitigation Measures\*

Mitigation Measure Name	Mitigation Measure Summary	Mitigation Measure Key Points	Applicability to Multispecies Relocation Management Plan
<b>MM BIO-1</b> Biological Monitoring	The Project Owner will assign a Lead Biologist as the primary point of contact for the lead agencies and resource agencies regarding biological resources mitigation and compliance. For desert tortoise protection measures (BIO-9, below), the Lead Biologist will serve as the Field Contact Representative (FCR).	Maintain regular, direct communication with representatives of Riverside County, and other agencies, as appropriate.	YES - section 3.1, during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.)
		Train and supervise additional Biological Monitors as needed to ensure that all biological monitoring activities are completed properly and according to schedules, to ensure compliance with all mitigation measures for biological resources. And minimize impacts to special-status species and native habitat.	YES - sections 3.1, 3.4 - during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).
		Conduct or oversee Worker Environmental Awareness Program (WEAP) training (Mitigation Measure BIO-2).	Not applicable
		Conduct or oversee clearance surveys and monitoring duties as defined in all adopted mitigation measures.	YES - section 3.1, during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).
		Require a halt to any activities in any area if it is determined that the activity, if continued, would cause an unauthorized adverse impact to biological resources.	YES - section 3.1, during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).
		Clearly mark sensitive biological resource areas during construction inspect areas at appropriate intervals for compliance	YES - section 3.4, during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).
		Conduct or oversee bi-weekly compliance inspections during ground disturbing construction activities.	YES - section 3.4, during during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).
		Inspect or oversee daily inspection of active construction or O&M activity areas where animals may have become trapped, prevent entrapment or allow escape during periods of construction inactivity.	YES - section 3.4, during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).
		During the operations phase of the project, conduct quarterly compliance inspections; conduct weed monitoring and control (according to the Integrated Weed Management Plan).	Not applicable.
		Immediately notify the Project Owner, County, and Resource Agencies (as applicable) in writing of dead or injured special-status species, or of any non-compliance with biological mitigation measures or permit conditions.	YES - section 5.0, during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).
		During construction, provide weekly verbal or written updates to Riverside County, and, for any information pertinent to state or federal permits, to the BLM or Resource Agencies.	YES - section 7.0, during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).
During construction and O&M, prepare and submit monthly and annual compliance reports.	YES - section 7.0, during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).		

Mitigation Measure Name	Mitigation Measure Summary	Mitigation Measure Key Points	Applicability to Multispecies Relocation Management Plan
<b>MM BIO-2 Worker Environmental Awareness Training</b>	The Lead Biologist will prepare and Implement a Worker Environmental Awareness Program (WEAP). The Project Owner will be responsible for ensuring that all workers at the site receive WEAP training prior to beginning work on the project and throughout construction and operations.	Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media, including photographs of protected species, is made available to all participants.	YES - section 3.1 – WEAP will be implemented for field personnel including biologists during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.)
		Provide an explanation of the function of flagging that designates authorized work areas; specify the prohibition of soil disturbance or vehicle travel outside designated areas.	YES
		Discuss general safety protocols such as vehicle speed limits, hazardous substance spill prevention and containment measures, and fire prevention and protection measures.	YES
		Provide a review of mitigation and biological permit requirements.	YES
		Provide an explanation of the sensitivity of the vegetation and habitat within and adjacent to work areas, and proper identification of these resources.	YES
		Provide a discussion of the federal and State Endangered Species Acts, Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act and the consequences of non-compliance with these acts.	YES
		Discuss the locations and types of sensitive biological resources on the project site and adjacent areas and the reasons for protecting these resources.	YES
		Inform participants that no snakes, other reptiles, birds, bats, or any other wildlife will be harmed or harassed.	YES
		Place special emphasis on species that may occur on the project site and/or gen-tie alignment, including special-status plants, desert tortoise, Mojave fringe-toed lizard, burrowing owl, golden eagle, nesting birds, desert kit fox, American badger, and burro deer.	YES
		Specify guidelines for avoiding rattlesnakes and reporting rattlesnake observations to ensure worker safety and avoid killing or injuring rattlesnakes. Wherever feasible, rattlesnakes will be safely removed from the work area using appropriate snake handling equipment	YES
		Describe workers' responsibilities for avoiding the introduction of invasive weeds onto the project site and surrounding areas, describe the Integrated Weed Management Plan.	YES
		Provide contact information for the Lead Biologist and instructions for notification of any vehicle-wildlife collisions or dead or injured wildlife species encountered during project-related activities;	YES
Include a training acknowledgment form to be signed by each worker indicating that they received training and will abide by the guidelines.	YES		

Mitigation Measure Name	Mitigation Measure Summary	Mitigation Measure Key Points	Applicability to Multispecies Relocation Management Plan
<b>MM BIO-3</b> Minimization of Vegetation and Habitat Impacts	Vegetation and habitat impacts will be minimized during all phases of the Project.	Prior to the start of construction, work areas will be delineated to clearly identify the limits of work. Spoils will be stockpiled in disturbed areas. All disturbances, vehicles, and equipment will be confined to the fenced/flagged areas.	Not applicable
		When feasible, construction activities will minimize soil and vegetation disturbance to minimize impacts. Upon completion of construction activities in any given area, all unused materials, equipment, staking and flagging, and refuse shall be removed and properly disposed.	Not applicable
		Hazardous materials will be handled, and spills will be cleaned up according to applicable requirements. Hazardous materials will not be allowed to enter drainage channels and any spills or leaks will be promptly corrected and cleaned up.	Not applicable
<b>MM BIO-4</b> Integrated Weed Management Plan	The Project Owner will prepare and implement an integrated weed management plan.	<b>Weed management.</b> The plan will identify weed species occurring or potentially occurring in the Project area, means to prevent their introduction or monitoring methods and timely implementation of manual or chemical (as appropriate) suppression and containment.	Not applicable
<b>MM BIO-5</b> Vegetation Resources Management Plan	The Project Owner will prepare and implement a Vegetation Resources Management Plan to prevent further degradation of areas that may be temporarily disturbed by Project activities, but not to restore pre-disturbance habitat values.	<b>Revegetation of temporarily impacted sites.</b> The Plan will specify methods to prevent or minimize further site degradation; stabilize soils; maximize the likelihood of vegetation recovery over time; and minimize soil erosion, dust generation, and weed invasions.	Not applicable
		<b>Cactus Salvage.</b> Project Owner will include salvaged or nursery stock yuccas (all species), and cacti (excluding cholla species, genus <i>Cylindropuntia</i> ), in revegetation plans and implementation affecting BLM lands and will include methods to salvage, store and replant cacti and yucca, species found on the site as well as monitoring and success criteria for the salvage work.	YES - Section 3. Avoidance prioritized. If salvage necessary, then will be done in accordance to recommendations from RSABG or botanist experienced with cactus salvage
		<b>Operations Phase On-Site Vegetation Management.</b> The Plan will include methods and scheduling for on-site vegetation management throughout the operations phase, including any proposed herbicide usage.	Not applicable (this plan does not address operations & maintenance)
<b>MM BIO-6</b> Habitat Compensation	The Project Owner will acquire and protect compensation habitat to offset loss of natural habitat.	Compensation will be provided for impacts to the resources, at specified ratios.	Not applicable
<b>MM BIO-7</b> Emory's crucifixion thorn mitigation	The Project Owner will mitigate impacts to Emory's crucifixion thorn (CRPR 2) through one or a combination of strategies	<b>Avoidance.</b> Project design will avoid at minimum 75 percent of the Emory's crucifixion thorn occurrences within the project boundaries or other work areas and will provide a minimum 100-foot buffer area surrounding each avoided occurrence, where no project activities will take place.	YES - section 3.8, avoidance prioritized, 100 ft buffer will be implemented
		<b>Off-site compensation.</b> The Project Owner will provide compensation lands consisting of occupied Emory's crucifixion thorn habitat at a 1:1 ratio for any occupied habitat affected by the project,	Not applicable

Mitigation Measure Name	Mitigation Measure Summary	Mitigation Measure Key Points	Applicability to Multispecies Relocation Management Plan
		<p><b>Salvage.</b> The Project Owner will consult with Rancho Santa Ana Botanic Garden (RSABG) regarding the success of salvage efforts for this species at the Desert Sunlight Solar Farm Project site. If feasible, then the Project Owner will prepare and implement an Emory's Crucifixion Thorn Salvage and Relocation Plan, to be reviewed and approved by Riverside County prior to disturbance of any occupied Emory's crucifixion thorn habitat.</p>	YES - section 3.8, will discuss with RSABG if needed.
		<p><b>Horticultural propagation and off-site introduction.</b> If salvage and relocation is not believed to be feasible for Emory's crucifixion thorn, then the Project Owner will consult with RSABG or another qualified entity, to develop and implement an appropriate experimental propagation and relocation</p>	YES - section 3.8, will discuss with RSABG or botanist experienced with salvage, if needed.
<p><b>MM BIO-8</b> Wildlife Protection</p>	<p>The Project Owner shall avoid or minimize impacts to wildlife.</p>	<p><b>Wildlife avoidance.</b> Wherever feasible, project activities will avoid interference with wildlife (include ground-dwelling species, birds, bats) by allowing animals to escape from a work site prior to disturbance; pre-construction surveys and exclusion measures for certain species as specified in other measures; checking existing structures (homes, trailers, etc.) for animals such as bats, barn owls, skunks, or snakes that may be present, and safely excluding them prior to removing the structures.</p>	YES
		<p><b>Minimize traffic impacts.</b> The Project Owner will specify and enforce a maximum vehicle speed limits as specified in the Traffic Control Plan, to minimize risk of wildlife collisions and fugitive dust.</p>	Not applicable
		<p><b>Minimize lighting impacts.</b> Night lighting, when in use, shall be designed, installed, and maintained to prevent side casting of light towards surrounding fish or wildlife habitat.</p>	Not applicable
		<p><b>Avoid use of toxic substances.</b> Soil bonding and weighting agents used for dust suppression on unpaved surfaces shall be non-toxic to wildlife and plants.</p>	Not applicable
		<p><b>Minimize noise and vibration impacts.</b> The Project Owner will conform to noise requirements specified in the noise analysis of this EIR.</p>	Not applicable
		<p><b>Water.</b> Potable and non-potable water sources such as tanks, ponds, and pipes shall be covered or otherwise secured to prevent animals (including birds) from entering. Water sources (e.g., hydrants, tanks, etc.) shall be checked periodically by biological monitors to ensure they do not create puddles.</p>	YES - during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).
		<p><b>Trash.</b> All trash and food-related waste shall be contained in vehicles or covered trash containers inaccessible to ravens, coyotes, or other wildlife and removed from the site regularly.</p>	YES - during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).
		<p><b>Worker conduct.</b> Workers shall not feed wildlife or bring pets to the project site. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons.</p>	YES - during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).

Mitigation Measure Name	Mitigation Measure Summary	Mitigation Measure Key Points	Applicability to Multispecies Relocation Management Plan
		<p><b>Wildlife netting or exclusion fencing.</b> The Project Owner may install temporary or permanent netting or fencing around equipment, work areas, or project facilities to prevent wildlife exposure to hazards such as toxic materials or vehicle strikes, or prevent birds from nesting on equipment or facilities. The biological monitor will inspect exclusion fence (if installed) for any wildlife becoming trapped inside netting.</p>	<p>YES - during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).</p>
		<p><b>Wildlife entrapment.</b> Project-related excavations shall be secured to prevent wildlife entry and entrapment. Holes and trenches shall be backfilled, securely covered, or fenced. Excavations that cannot be fully secured shall incorporate wildlife ramp or other means to allow trapped animals to escape. At the end of each work day, a biological monitor shall ensure the security of excavations for wildlife escape.</p>	<p>YES - during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).</p>
		<p>All pipes or other construction materials or supplies will be covered or capped in storage or laydown areas. No pipes or tubing will be left open either temporarily or permanently, except during use or installation. Any construction pipe, culvert, or other hollow materials will be inspected for wildlife before it is moved, buried, or capped.</p>	<p>YES - during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).</p>
		<p><b>Dead or injured wildlife.</b> Will be reported to CDFW or the local animal control agency, as appropriate (special-status species must be reported to CDFW). A biological monitor shall safely move the carcass out of the road or work area if needed and dispose of the animal as directed by the agency. If an animal is entrapped, a biological monitor shall free the animal if feasible, or work with construction crews to free it, in compliance with safety requirements, or work with animal control or CDFW to resolve the situation.</p>	<p>YES - section 4.0, during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).</p>
<p><b>MM BIO-9</b> Desert Tortoise Protection</p>	<p>No desert tortoise may be handled or relocated without authorization from USFWS and CDFW. If incidental take authorization is obtained, then desert tortoises would only be handled or translocated according to a Wildlife Relocation Plan, to be prepared as specified in APM BIO-1 (Wildlife Relocation), pending approval by both agencies.</p>	<p>The Field Contact Representative (FCR) will be responsible for overseeing compliance with desert tortoise protective measures and for coordination with resource agencies and will have the authority to halt any Project activities that may risk take of a desert tortoise or may be inconsistent with adopted mitigation measures or permit conditions. Neither the FCR nor any other Project employee may bar or limit any communications between any Natural Resource Agency or The County of Riverside Environmental Programs Division and any project biologist, biological monitor or contracted biologist. Corrective actions will be documented by the qualified biologist</p>	<p>YES - section 3.1</p>
		<p>The Project owner will employ a biologist who is qualified to conduct desert tortoise clearance surveys, who will be on-site during all construction. Additionally, the Project Owner will designate the Lead Biologist as the Field Contact Representative (FCR) for purposes of the desert tortoise protection measures. The candidate qualified biologist's qualifications will be subject to review by Riverside County.</p>	<p>YES - responsibility of DB</p>
		<p>The qualified biologist shall conduct pre-construction clearance surveys for each work area, watch for tortoises wandering into the construction areas, check under vehicles, and examine excavations and other potential pitfalls for</p>	<p>YES - section 3.3, pre-construction multispecies clearance survey</p>

Mitigation Measure Name	Mitigation Measure Summary	Mitigation Measure Key Points	Applicability to Multispecies Relocation Management Plan
		<p>entrapped animals. The qualified biologist will be responsible for overseeing compliance with desert tortoise protective measures and any non-compliance will be documented immediately. The qualified biologist shall have the authority to halt all Project activities that are in violation of these measures or that may result in take of a desert tortoise. The qualified biologist will not handle or relocate desert tortoises unless specifically authorized by the USFWS and CDFW.</p>	
		<p><b>Preconstruction Clearance Survey.</b> Transects will be spaced 15 feet apart. Clearance will be considered complete after two successive 100-percent coverage surveys have been conducted without finding any desert tortoises. Clearance surveys must be conducted during the active season for desert tortoises (April through May or September through October). If a tortoise or an occupied tortoise burrow is located during clearance surveys, work activities will only proceed at the site and within a suitable buffer area after the tortoise has either moved away of its own accord, or if it has been translocated off the site under authorization by by the USFWS and CDFW.</p>	<p>YES - section 3.3, pre-construction multispecies clearance survey.</p>
		<p><b>Worker Training:</b> Prior to the onset of construction activities, a desert tortoise education program will be presented by the FCR or qualified biologist to all personnel who will be present on Project work areas. Following the onset of construction, any new employee will be required to formally complete the tortoise education program prior to working on-site.</p>	<p>YES - during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).</p>
		<p><b>Construction phase tortoise exclusion fencing.</b> Prior to construction of solar facilities, temporary or permanent desert tortoise exclusion fencing will be installed around the work areas and adhere to USFWS design guidelines. The qualified biologist will conduct a clearance survey before the tortoise fence is enclosed to ensure no tortoises are in the work area. Once installed, exclusion fencing will be inspected at least monthly and following all rain events, and corrective action taken if needed to maintain it. Fencing around each work area will include a desert tortoise exclusion gate. This gate will remain closed at all times, except when vehicles are entering or leaving the Project area - the gate may be left open as long as a qualified biologist is present to monitor for tortoise activity in the vicinity.</p>	<p>YES - section 3.2.3, 3.2.4, pre-activity survey before installation.</p>
		<p><b>Unfenced work areas.</b> Any work conducted in an area that is not fenced to exclude desert tortoises must be monitored by a qualified biologist who will stop work if a tortoise enters the work area. Work activities will only proceed at the site and within a suitable buffer area after the tortoise has either moved away of its own accord, or if it has been translocated off the site under authorization by the USFWS and CDFW Potential hazards to desert tortoise (e.g., auger holes, steep-sided depressions) that are outside of the desert tortoise exclusion fencing will be fenced by installing exclusionary fencing, or not left unfilled overnight.</p>	<p>YES - section 3.4</p>

Mitigation Measure Name	Mitigation Measure Summary	Mitigation Measure Key Points	Applicability to Multispecies Relocation Management Plan
		<b>Operation phase tortoise monitoring or exclusion.</b> At the Project Owner's discretion, and in consultation with resource agencies, permanent desert tortoise exclusion fencing may be installed around each solar facility site, or the Project Owner may prepare and implement a monitoring and avoidance program to ensure no take of desert tortoise during O&M, while allowing wildlife (possibly including desert tortoise) to move through the facilities uninjured.	Not applicable.
		<b>Tortoises under vehicles.</b> The ground beneath vehicles parked outside of desert tortoise exclusion fencing will be inspected immediately prior to the vehicle being moved. If a tortoise is found beneath a vehicle, the vehicle will not be moved until the desert tortoise leaves of its own accord.	YES - section 3.4
		<b>Tortoises on roads.</b> If a tortoise is observed on or near the road accessing a work area, vehicles will stop to allow the tortoise to move off the road on its own.	YES - section 3.4
		<b>Tortoise Observations.</b> Any time a tortoise is observed within or near a work site, Project work activities will only proceed at the site and within a suitable buffer area after the tortoise has either moved away of its own accord, or if it has been translocated off the site under authorization by the USFWS and CDFW. If a tortoise is observed outside of exclusion fencing, construction will stop and the tortoise shall be allowed to move out of the area on its own. If a tortoise or tortoise burrow is observed within the exclusion fencing, construction in the vicinity will stop, pending translocation of the tortoise or other action as authorized by USFWS and CDFW.	YES - section 3.4
		The following activities will require immediate cessation of the construction activities causing the incident: (1) desert tortoise injury or mortality; (2) imminent threat of injury or death to a desert tortoise; (3) unauthorized handling of a desert tortoise, regardless of intent; (4) operation of construction equipment or vehicles outside a designated project work area; and (5) conducting any construction activity without a biological monitor where one is required.	YES - section 3.4
		<b>Dead or Injured Specimens.</b> Upon locating a dead or injured tortoise, the Project Owner or its agent will immediately notify the Palm Springs Fish and Wildlife Office by telephone within three days of the finding. Written notification must be made within five days of the finding, both to the appropriate USFWS field office and to the USFWS' Division of Law Enforcement.	YES - section 7.0 - written notification will occur within 24 hours of incident

Mitigation Measure Name	Mitigation Measure Summary	Mitigation Measure Key Points	Applicability to Multispecies Relocation Management Plan
<b>MM BIO-10</b> Desert Kit Fox and American Badger Relocation.	This measure supplements APM BIO-1 (Wildlife Relocation) by specifying further detail regarding desert kit fox and American badger.	Under direction of the Lead Biologist, biological monitors shall conduct pre-construction surveys for desert kit fox and American badger no more than 30 days prior to initiation of construction activities. If dens are detected each den shall then be further classified as inactive, potentially active, or definitely active. Inactive dens that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse.	YES - section 3.3 - multispecies pre-construction clearance survey
		Potentially active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for three consecutive nights using a tracking medium such as diatomaceous medium or fire clay and/or infrared camera stations at the entrance. If den does not show active sign, after three nights, the den shall be excavated and backfilled by hand. If tracks are observed, dens shall be fitted with the one-way trap doors to encourage animals to move off-site. After 48 hours post installation, the den shall be excavated and collapsed. These dens shall be collapsed prior to construction of the perimeter fence, to allow animals the opportunity to move off-site without impediment. If an active natal den is detected on the site, the CDFW shall be contacted within 24 hours and the course of action would depend on the age of the pups, location of the den site, status of the perimeter fence, and the pending construction activities proposed near the den. A 500-foot no disturbance buffer shall be maintained around all active dens. Alternatively, a designated biologist authorized by CDFW, shall trap and remove animals from occupied dens and move them off-site into appropriate habitat.	YES - 3.6.1 - 3.6.3
		Additionally, the following measures are required to minimize the likelihood of distemper transmission: (1) Any kit fox hazing activities that include the use of animal repellents such as coyote urine must be cleared through the CDFW prior to use; and (2) Any documented kit fox mortality shall be reported to the CDFW within 24 hours of identification. If a dead kit fox is observed, it shall be retained and protected from scavengers until the CDFW determines if the collection of necropsy samples is justified.	YES - sections 3.6.1 - 3.6.3
<b>MM BIO-11</b> Wildlife Water Source	The Project Owner will offset potential Project impacts to burro deer and other wildlife resulting from loss of existing irrigation water supplies at parcel group G.	In coordination with the agencies, the Project Owner will support replacement, repairs, maintenance, or monitoring of existing wildlife water sources in the Project vicinity; support access improvements to existing sources; support removal of invasive saltcedar from natural water sources (to improve surface flow); or provide an alternative water source as a replacement or supplement to existing sources.	Not applicable

Mitigation Measure Name	Mitigation Measure Summary	Mitigation Measure Key Points	Applicability to Multispecies Relocation Management Plan
<b>MM BIO-12</b> Bird and Bat Conservation Strategy (BBCS)	The Project Owner will prepare and implement a Bird and Bat Conservation Strategy to avoid or minimize take of migratory birds that may nest on the site or may be vulnerable to collision with Project components.	<b>Construction.</b> Pre-construction surveys for active nests will be conducted by one or more qualified biologists at the direction of the Project Lead Biologist.	Not applicable
		<b>Active nests.</b> The qualified biologist will establish and mark a buffer area surrounding the active nest where construction activities that could disrupt nesting behavior will be excluded. The BBCS may identify species-specific buffer distances or variable distances, depending on activity levels and the extent of nest protection will be based on proposed construction activities, species, human activities already underway when the nest is initiated. The avoidance and protection measures will remain in effect until the nest is no longer active.	Not applicable
		<b>Nest removal.</b> If for any reason a bird nest must be removed during the nesting season, the Project Owner or its agent will notify the CDFW and USFWS and retain written documentation of the correspondence. Nests would only be removed if they are inactive, or if an active nest presents a hazard.	Not applicable
		<b>Operation and Maintenance.</b> The BBCS will specify monitoring and conservation measures to be implemented by the Project Owner to document bird mortality that may result from bird injury or mortality caused by collision with Project components.	Not applicable
<b>MM BIO-13</b> Burrowing Owl Avoidance and Relocation	This measure supplements APM BIO-1 (Wildlife Relocation) by specifying further detail regarding burrowing owl. Burrowing owl protection and relocation	Pre-construction surveys for burrowing owls, possible burrows, and sign of owls (e.g., pellets, feathers, white wash) will be conducted throughout each work area no more than 30 days prior to construction.	YES - section 3.3, pre-construction multispecies clearance survey
		Should any of the pre-construction surveys identify burrowing owl or active burrows within the solar facility, the Lead Biologist will coordinate with the Construction Contractor to implement avoidance and set-back distances. Disturbance of owls or occupied burrows during the breeding season (February 1 through August 31) will not be permitted.	YES - section 3.3, pre-construction multispecies clearance survey
		Any unoccupied suitable burrows within the solar facility footprint will be excavated and filled in under the supervision of the Lead Biologist prior to site preparation.	YES - sections 3,3, 3.7.3 - during pre-construction multispecies clearance survey, and after den monitoring
		The Plan will specify detailed methods for passive relocation of burrowing owls if needed.	YES - 3.7.3, artificial burrows and one-way door installation
		The Plan will specify detailed monitoring and management of the passive relocation, including a three-year monitoring program.	YES - 3.7.3, section monitored once/quarter with semi-annual cleaning or maintenance until O&M
<b>MM BIO-14</b> Gen-tie lines	Gen-tie line support structures and other facility structures shall be designed to discourage their use by raptors for perching or nesting.	This design would also reduce the potential for increased predation of special-status species, such as the desert tortoise. Mechanisms to visually warn birds (permanent markers or bird flight diverters) shall be placed on gen-tie lines at regular intervals to prevent birds from colliding with the lines (APLIC 2006; USFWS 2010).	Not applicable

Mitigation Measure Name	Mitigation Measure Summary	Mitigation Measure Key Points	Applicability to Multispecies Relocation Management Plan
<b>MM BIO-15</b> Streambed and Watershed Protection	Prior to ground-disturbing activities in jurisdictional waters of the state, the Project Owner will obtain a Streambed Alteration Agreement from the CDFW and applicable authorization from the Regional Water Quality Control Board. The Project Owner will implement Best Management Practices (BMPs).	Vehicles and equipment will not be operated in ponded or flowing water except as specified by resource agencies.	YES - during applicable phases of Project (clearance surveys, fence construction, relocation activities, etc.).
		The Project Owner will minimize road building, construction activities, and vegetation clearing within ephemeral drainages to the extent feasible.	Not applicable.
		The Project Owner will prevent water containing mud, silt, or other pollutants from grading or other activities from entering ephemeral drainages or being placed in locations that may be subjected to high storm flows.	Not applicable.
		Spoil sites will not be located within 30 feet from the boundaries of drainages or in locations that may be subjected to high storm flows, where spoils might be washed back into drainages.	Not applicable.
		Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, resulting from Project-related activities, will be prevented from contaminating the soil and/or entering waters of the state.	Not applicable.
		When operations are completed, any excess materials or debris will be removed from the work area. No rubbish will be deposited within 150 feet of the high-water mark of any drainage during construction, operation, and decommissioning the Project.	Not applicable.
		No equipment maintenance will occur within 150 feet of any category 3, 4, or 5 streambed or any streambed greater than 10 feet wide and no petroleum products or other pollutants from the equipment will be allowed to enter these areas or enter any off-site state-jurisdictional waters under any flow.	Not applicable.
		With the exception of the drainage control system installed for the project, the installation of bridges, culverts, or other structures will be such that water flow (velocity and low flow channel width) is not impaired. Bottoms of temporary culverts will be placed at or below stream channel grade.	Not applicable.
		No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, or other organic or earthen material from any construction or associated activity of whatever nature will be allowed to enter into, or placed where it may be washed by rainfall or runoff into, off-site state-jurisdictional waters.	Not applicable.
		Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to a drainage, will be positioned over drip pans. Stationary heavy equipment will have suitable containment to handle a catastrophic spill/leak. Clean up equipment such as brooms, absorbent pads, and skimmers will be on site prior to the start of construction.	Not applicable.
		The cleanup of all spills will begin immediately. Riverside County will be notified immediately by the Project Owner of any spills and will be consulted regarding clean-up procedures.	Not applicable.

\*= refer to Environmental Impact Report for full text of mitigation measures (County of Riverside, 2019)