Appendix C

Biological Resources

C.1 Biological Resources Technical Report

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Appendix C.1

Biological Resources Technical Report

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

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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
CNDDB	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 193.9acres 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, 394.6acres 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

	Component	Private	Public
Solar Facility	A	X	-
	B	X	-
	C	X	-
	D	X	-
	E	X	-
	F	X	-
	G	X	-
	Component	**Private**	**Public**
Gen-tie	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
	Component	**Private**	**Public**
Additional Access	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

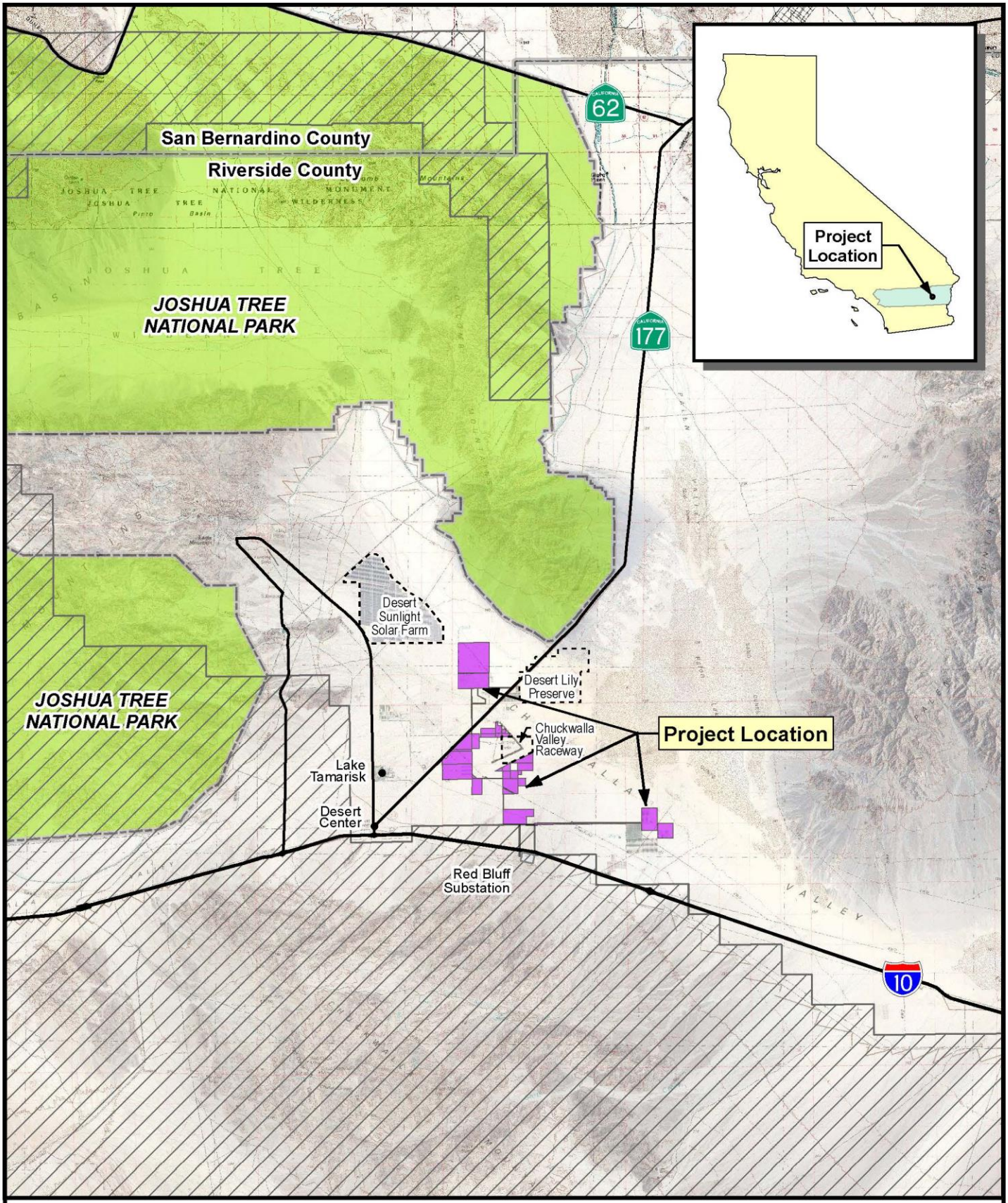
2.1 Regional Setting

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
NORTH	Desert Sunlight Solar Farm, Joshua Tree National Park, fallow agriculture
SOUTH	Chuckwalla ACEC, transmission lines, I-10, Southern California Edison's Red Bluff substation
EAST	Chuckwalla Valley Raceway, Desert Lily Preserve, active/fallow agriculture, rural residences, existing transmission line, CA-177, historical military
WEST	CA-177, Lake Tamarisk Community, active/fallow agriculture, aquaculture farms, Chuckwalla ACEC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San Bernardino County
Riverside County
JOSHUA TREE NATIONAL MONUMENT
WILDERNESS
JOSHUA TREE
JOSHUA TREE NATIONAL PARK
JOSHUA TREE NATIONAL PARK
62
177
10
Project Location
Desert Sunlight Solar Farm
Desert Lily Preserve
Chuckwalla Valley Raceway
Project Location
Lake Tamarisk
Desert Center
Red Bluff Substation
CHUCKWALLA VALLEY
Ironwood Consulting
0
4
Miles
Athos Solar Project
Joshua Tree National Park
Desert Tortoise Critical Habitat
FIGURE 1
Regional Location
Athos Solar

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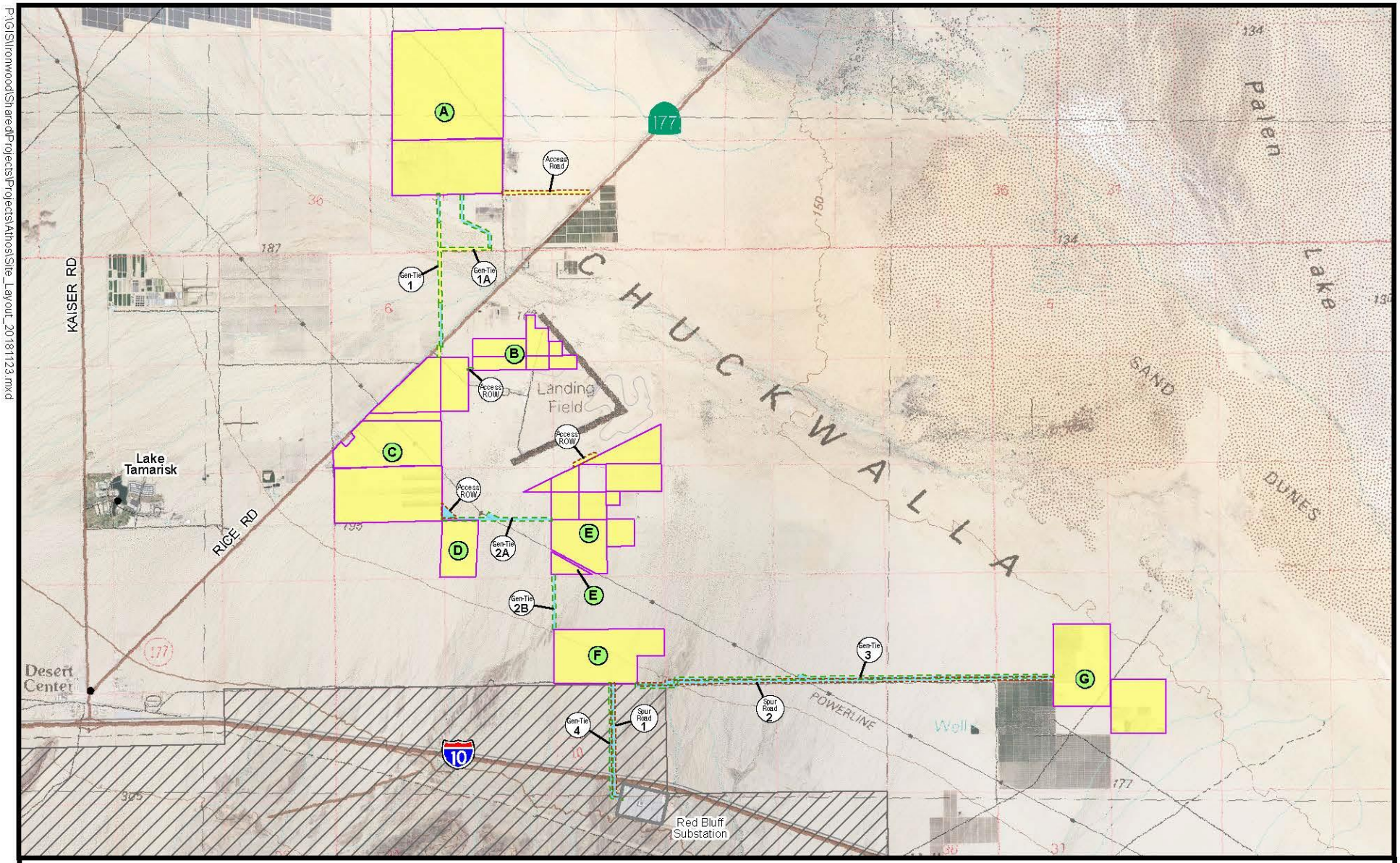

Ironwood
Consulting

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Miles

- 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.

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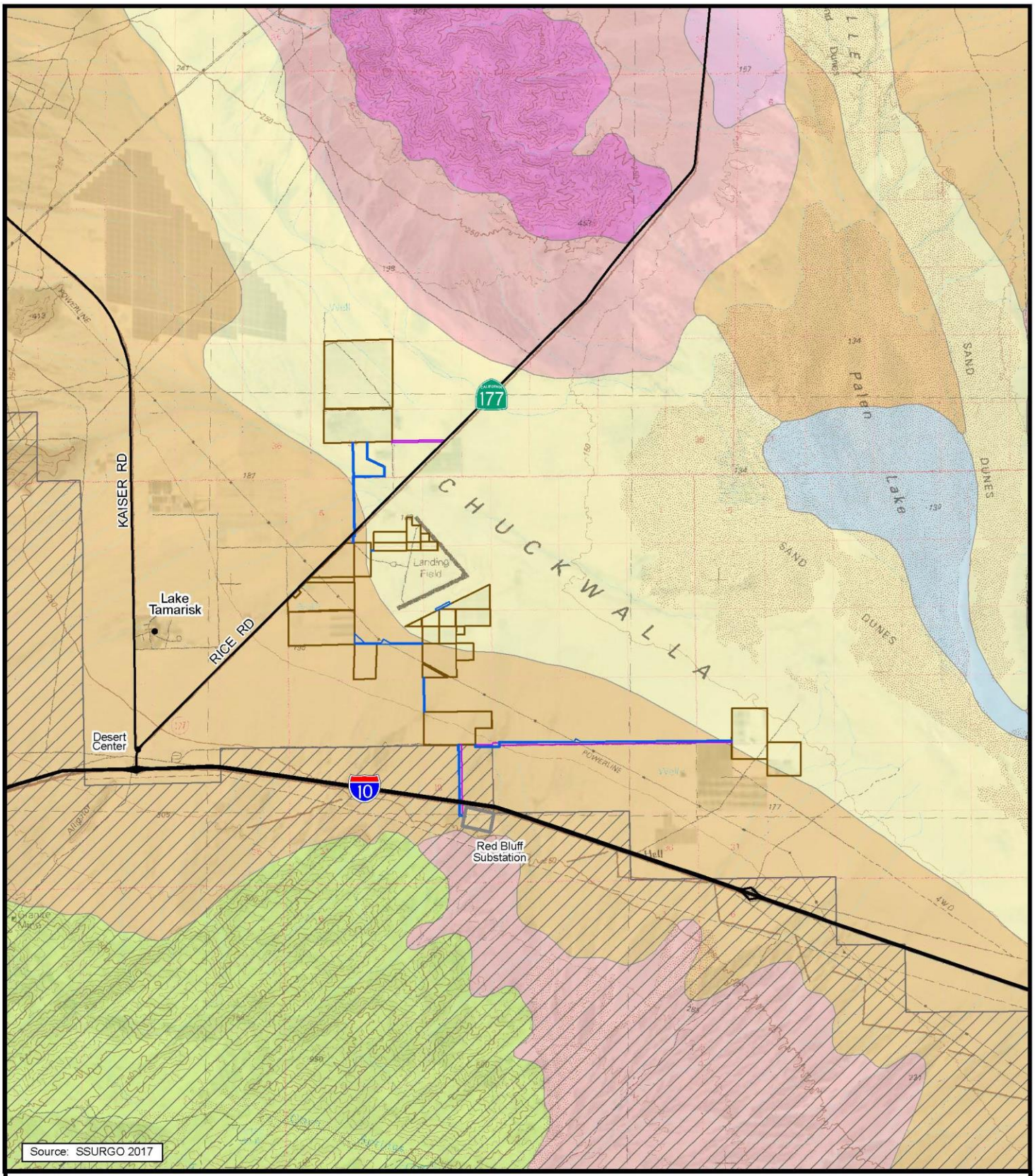

Ironwood Consulting

0 1 2
Miles

- 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 3

Soils

Athos Solar

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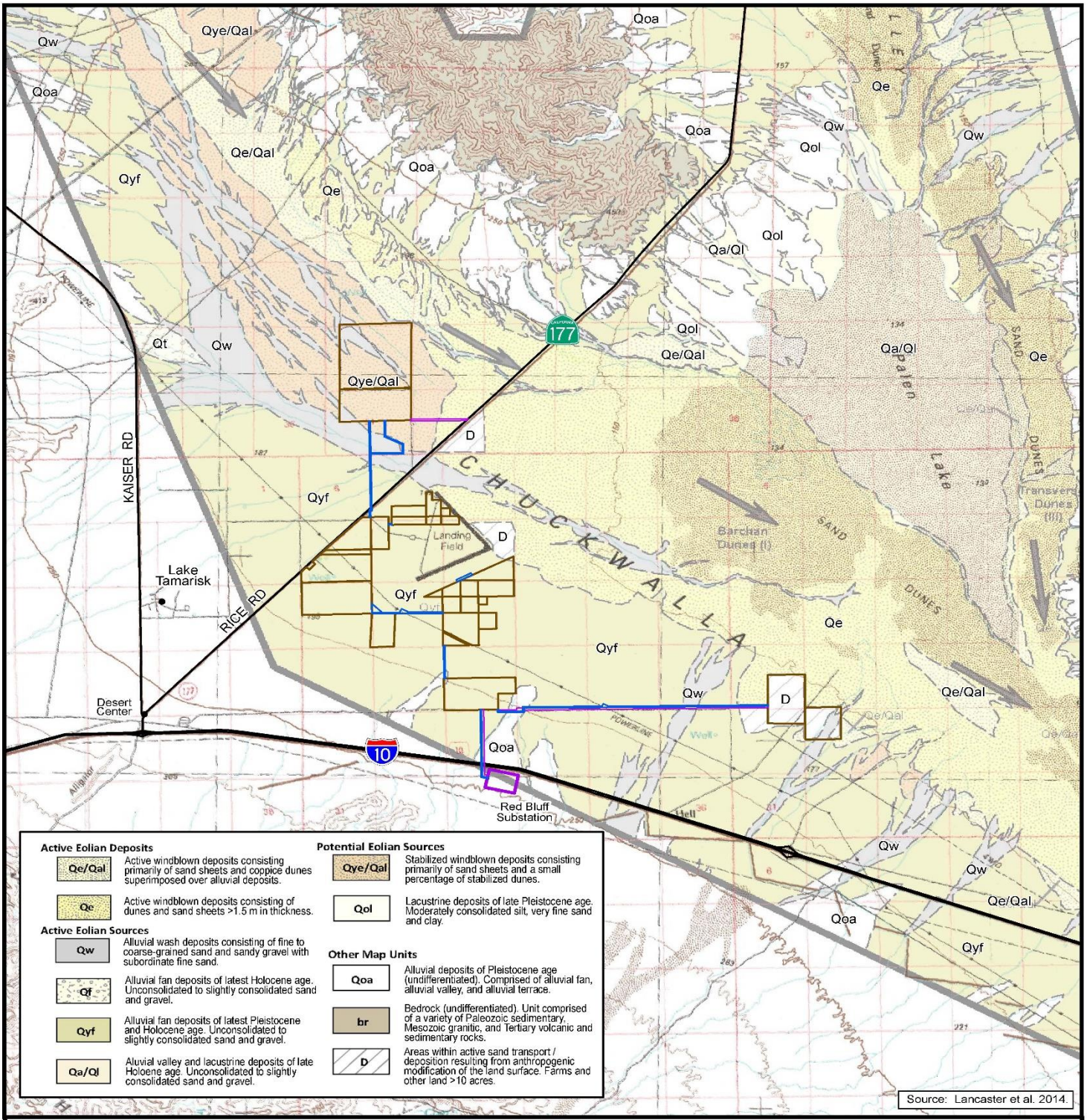


Ironwood Consulting

0 1 2 Miles

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 and1A 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

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[1]
2013	1.5	2.6
2014	0.7	1.2
2015	2.1	1.3
2016	1.5	0.7
2017	3.4	1.1

2018	0.1	0.5

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

**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 (*Psorothamnus emoryi*), 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 (*Psorothamnus spinosus*). 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

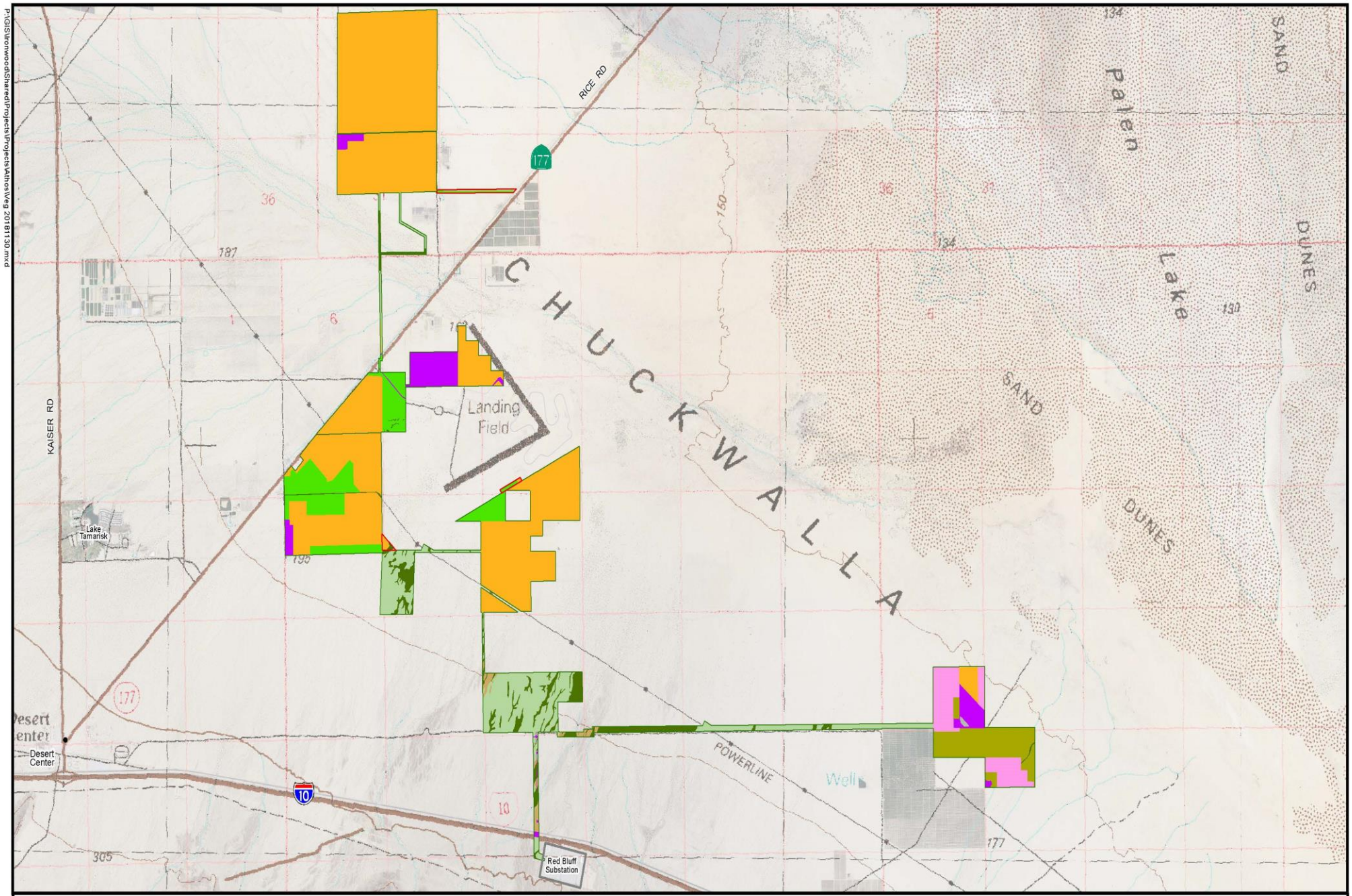
Developed and disturbed areas consist of abandoned homes, buildings, completely denuded sections of old agricultural fields, or unnamed dirt roads that are in regular use.

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	-


P:\GIS\Ironwood\Shared\Projects\Projects\Athos\Veg 20181130.mxd
RICE RD
KAISER RD
CHUCKWALLA
Palen
Lake
SAND
DUNES
Landing Field
Lake Tamarisk
Desert Center
POWERLINE
Well
Red Bluff Substation
177
10
Ironwood
Consulting
0 2,000 4,000
Feet
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
Athos Solar

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 (*Parkisonia florida*)
- honey mesquite (*Prosopis glandulosa*)
- smoke tree (*Psorothamnus spinosus*)
- 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 (CNDDB 2018);
- Plants or animals included in the CDFW lists of Special Plants or Special Animals (CNDDB 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

Personnel	Survey Type	Area Surveyed	Survey Dates
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

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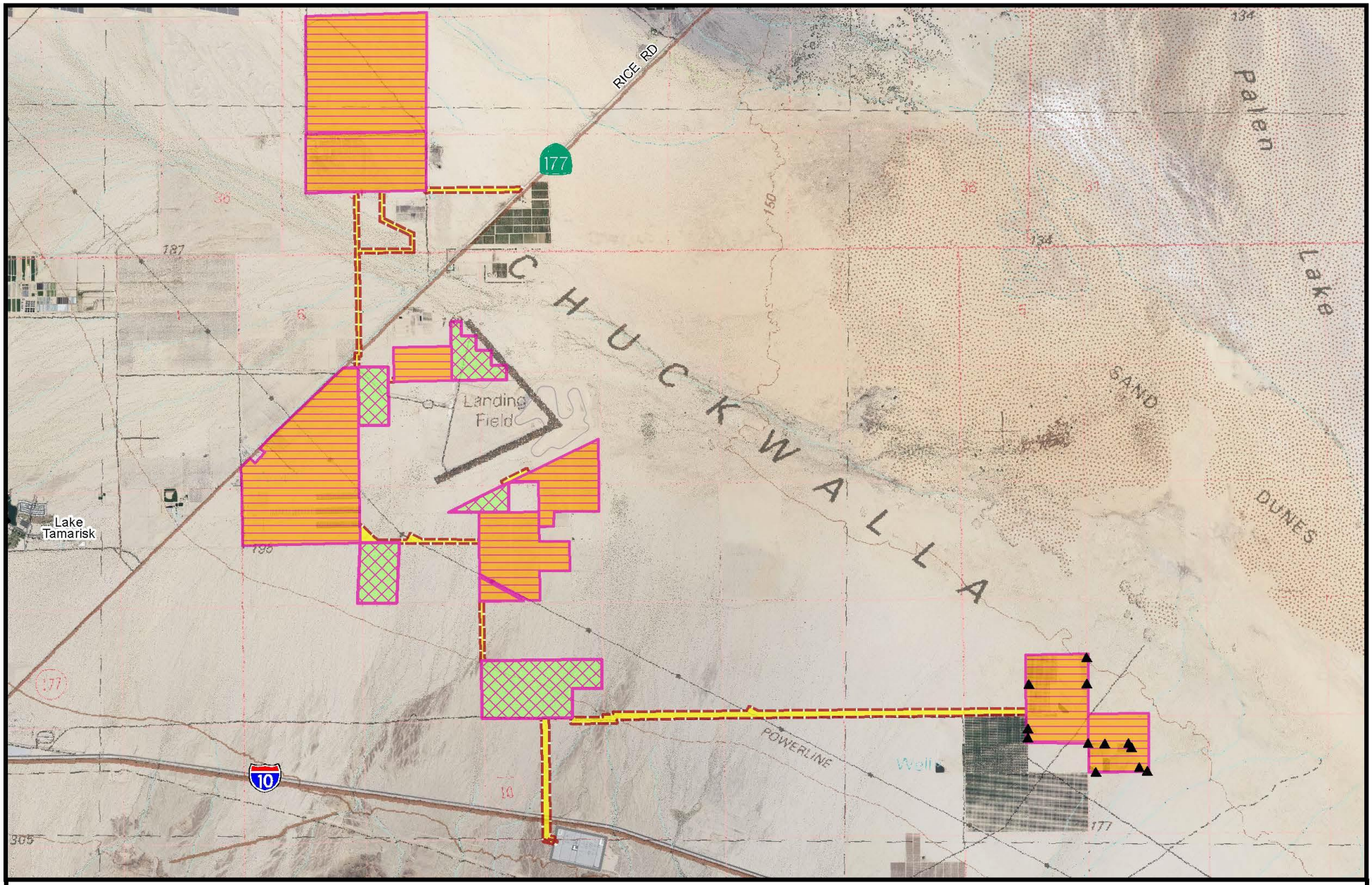

Ironwood Consulting

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 gent-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

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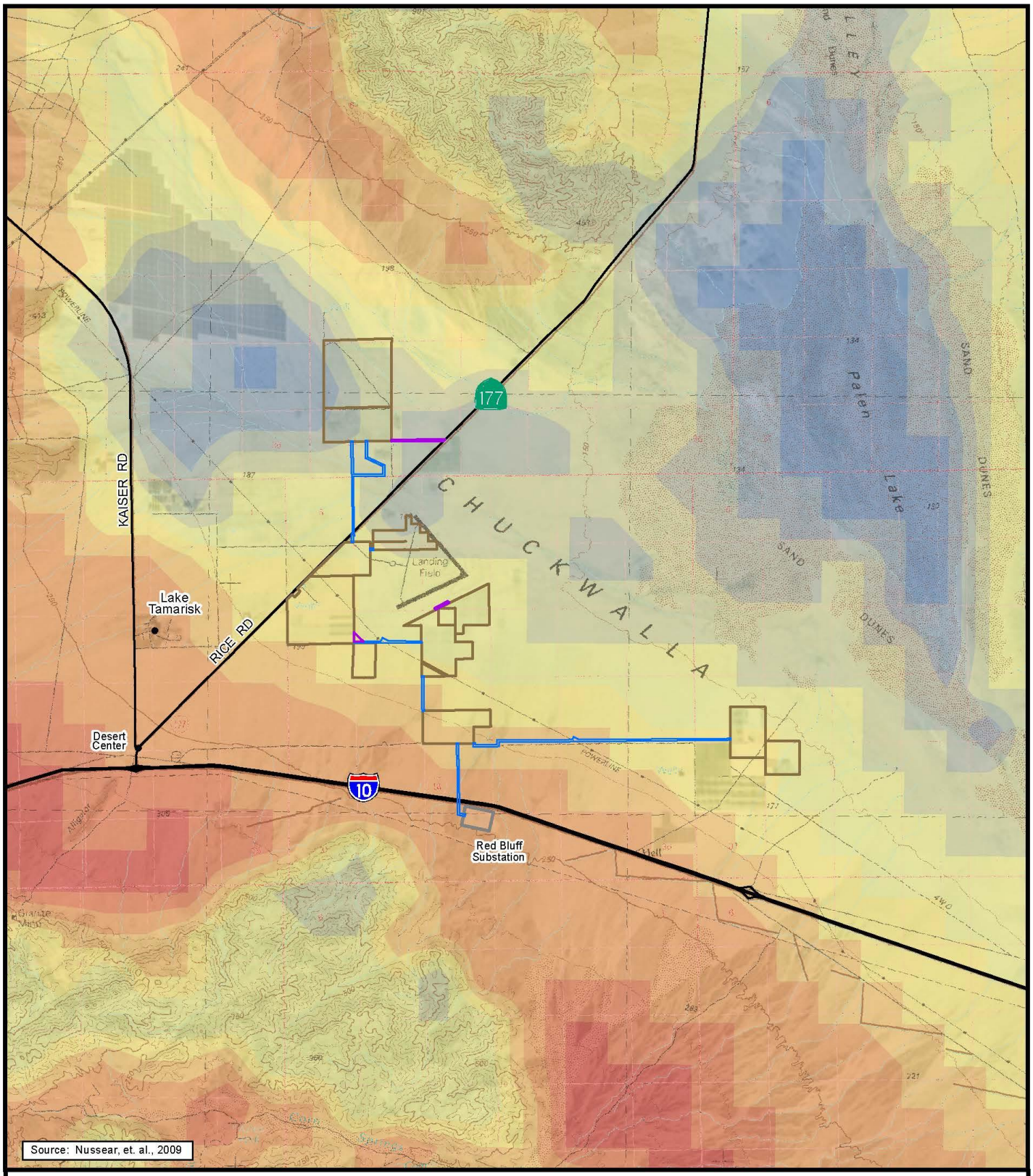

Ironwood Consulting

0 1 2
Miles

- 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

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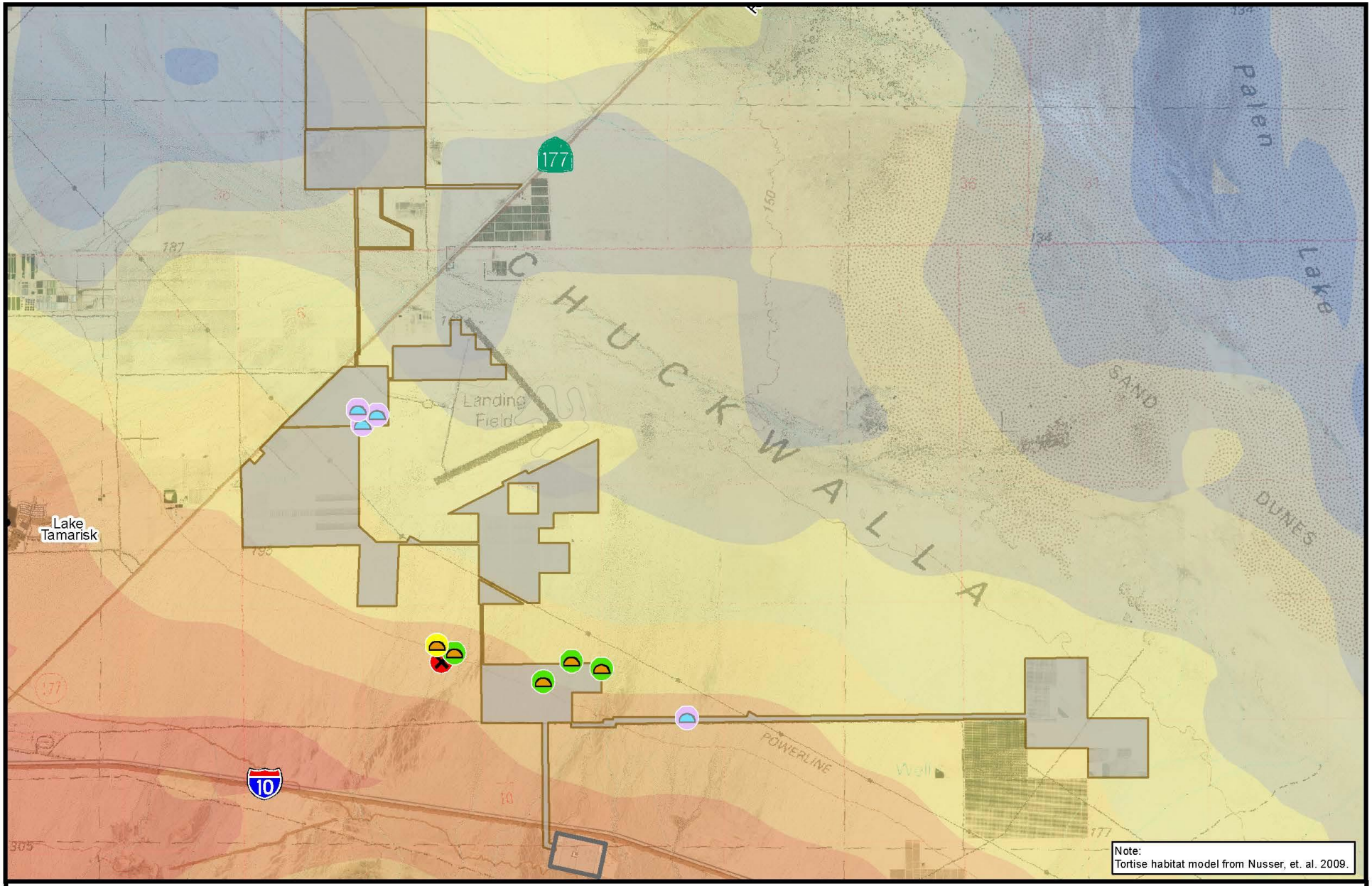

Ironwood Consulting

0 3,000 6,000
Feet

- 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, definiteley 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

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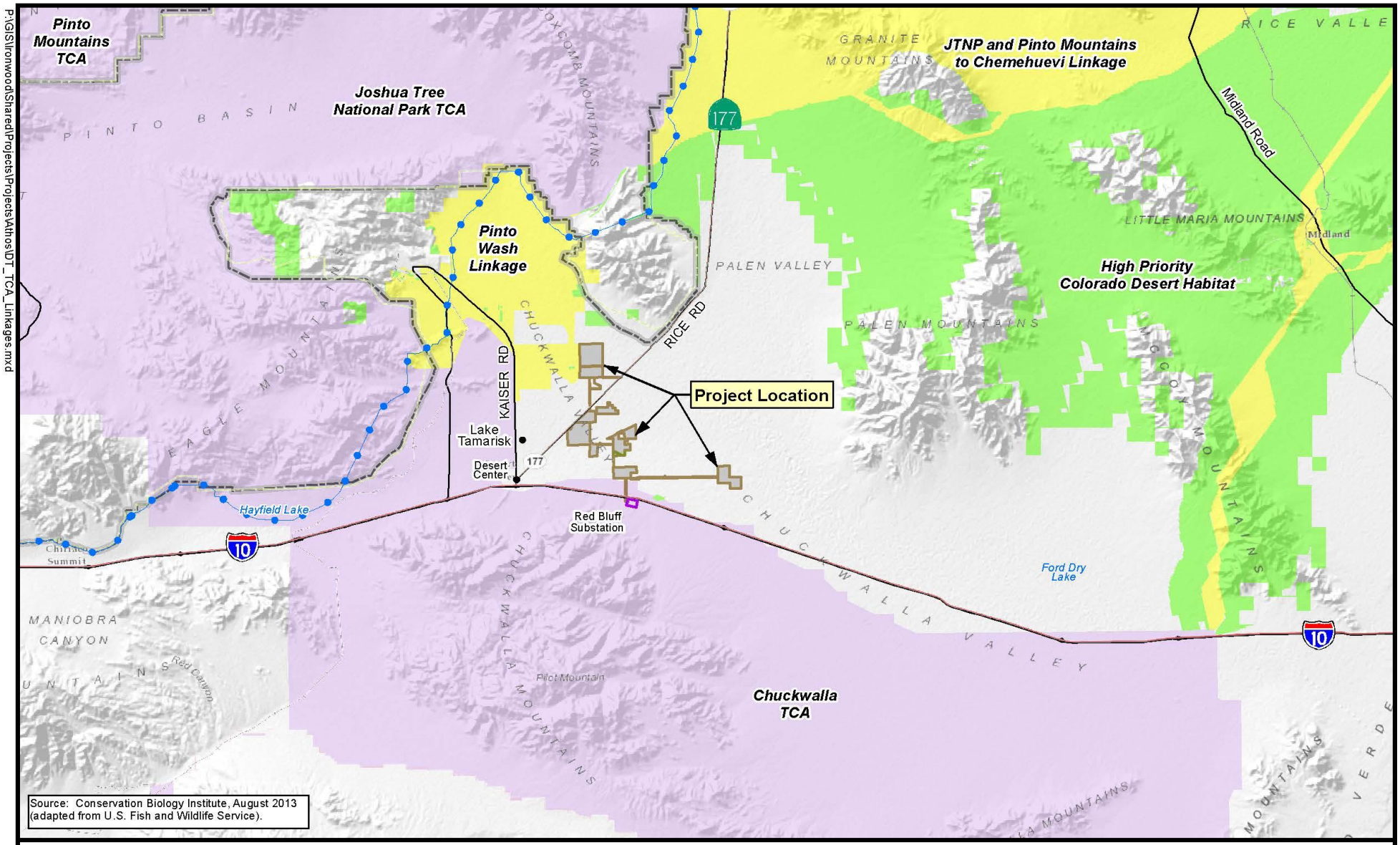

Ironwood Consulting

0 5
Miles

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

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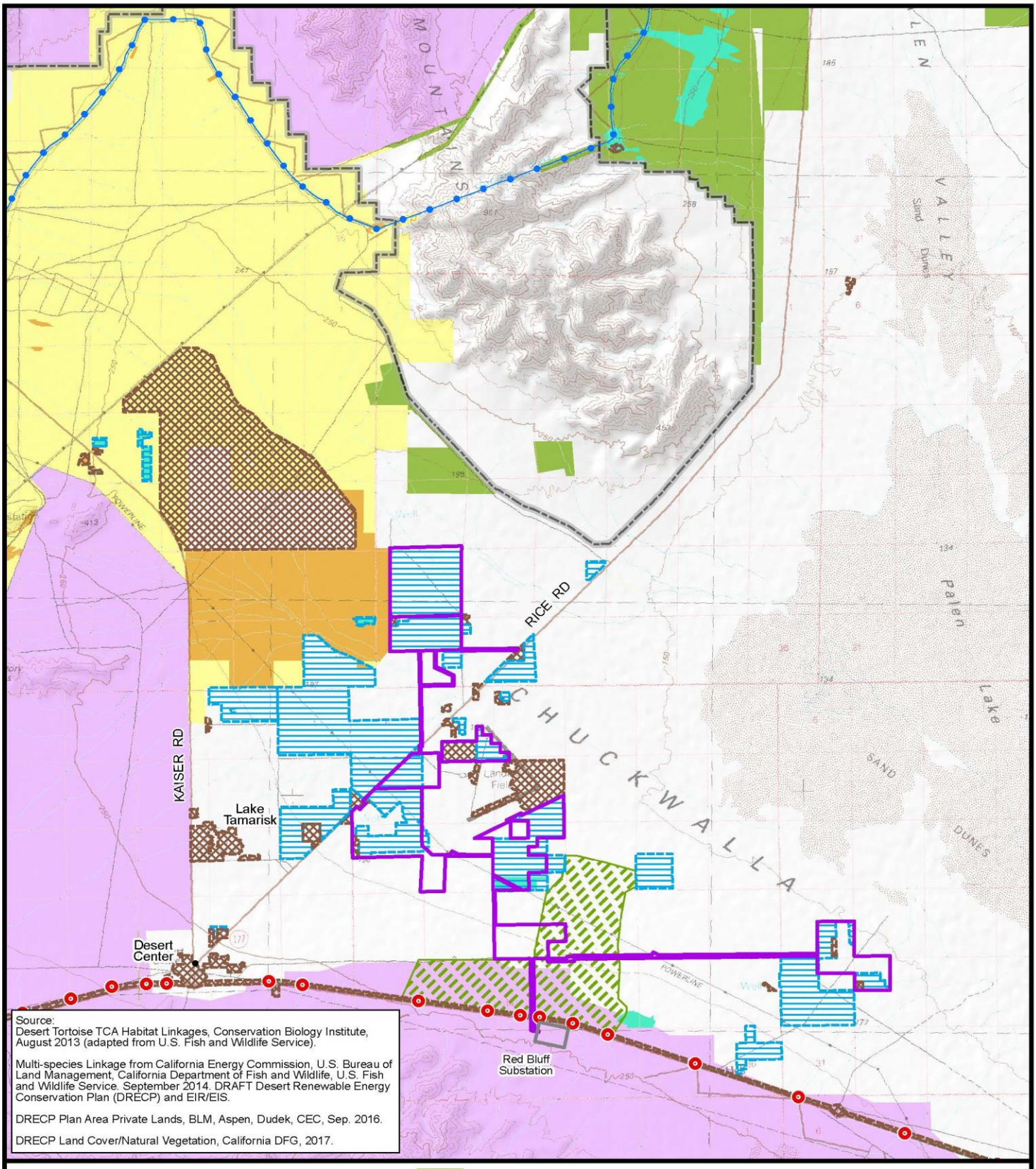

Source:
Desert Tortoise TCA Habitat Linkages, Conservation Biology Institute, August 2013 (adapted from U.S. Fish and Wildlife Service).

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.

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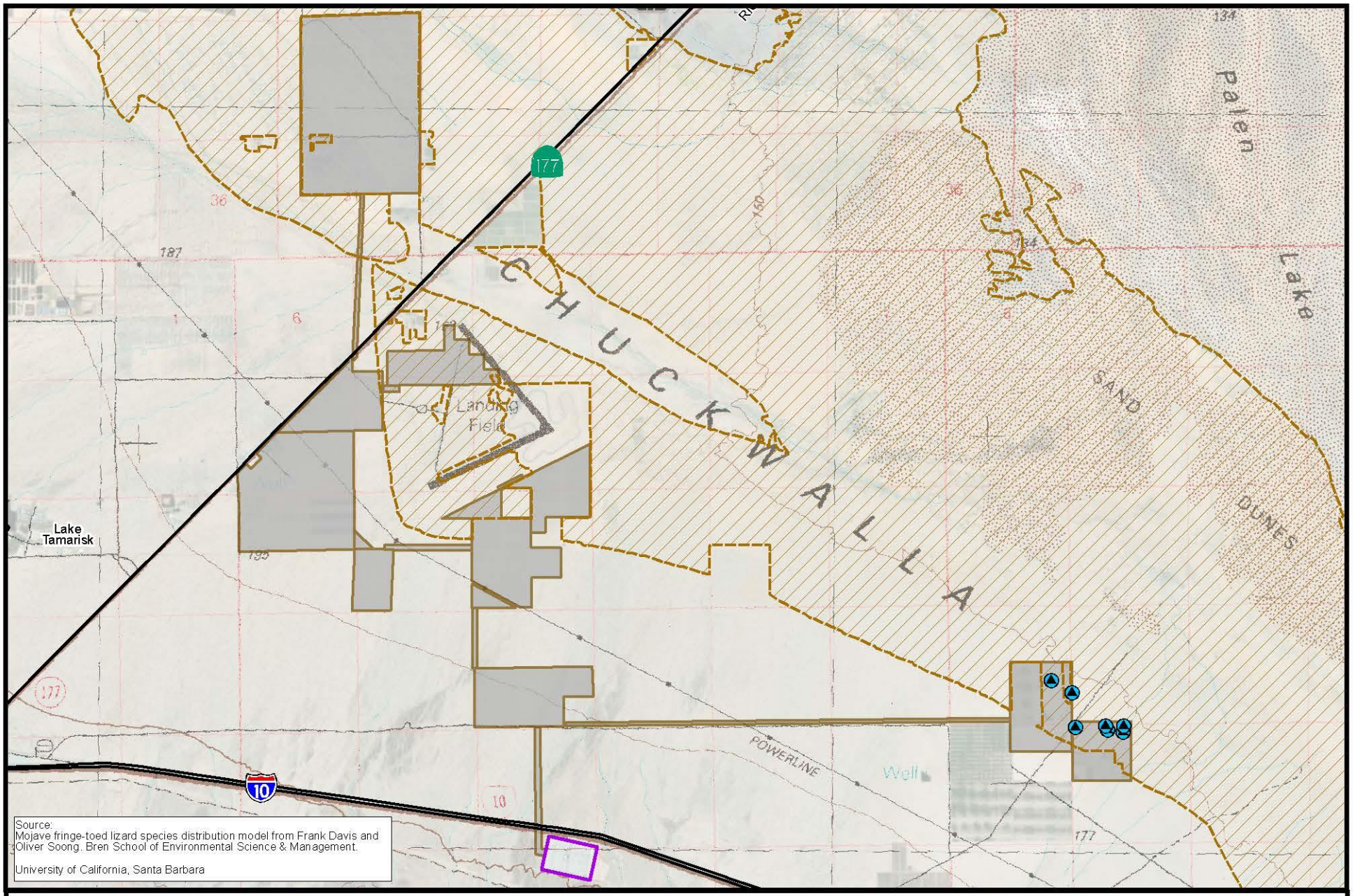

Ironwood Consulting

0 3,000 6,000
Feet

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

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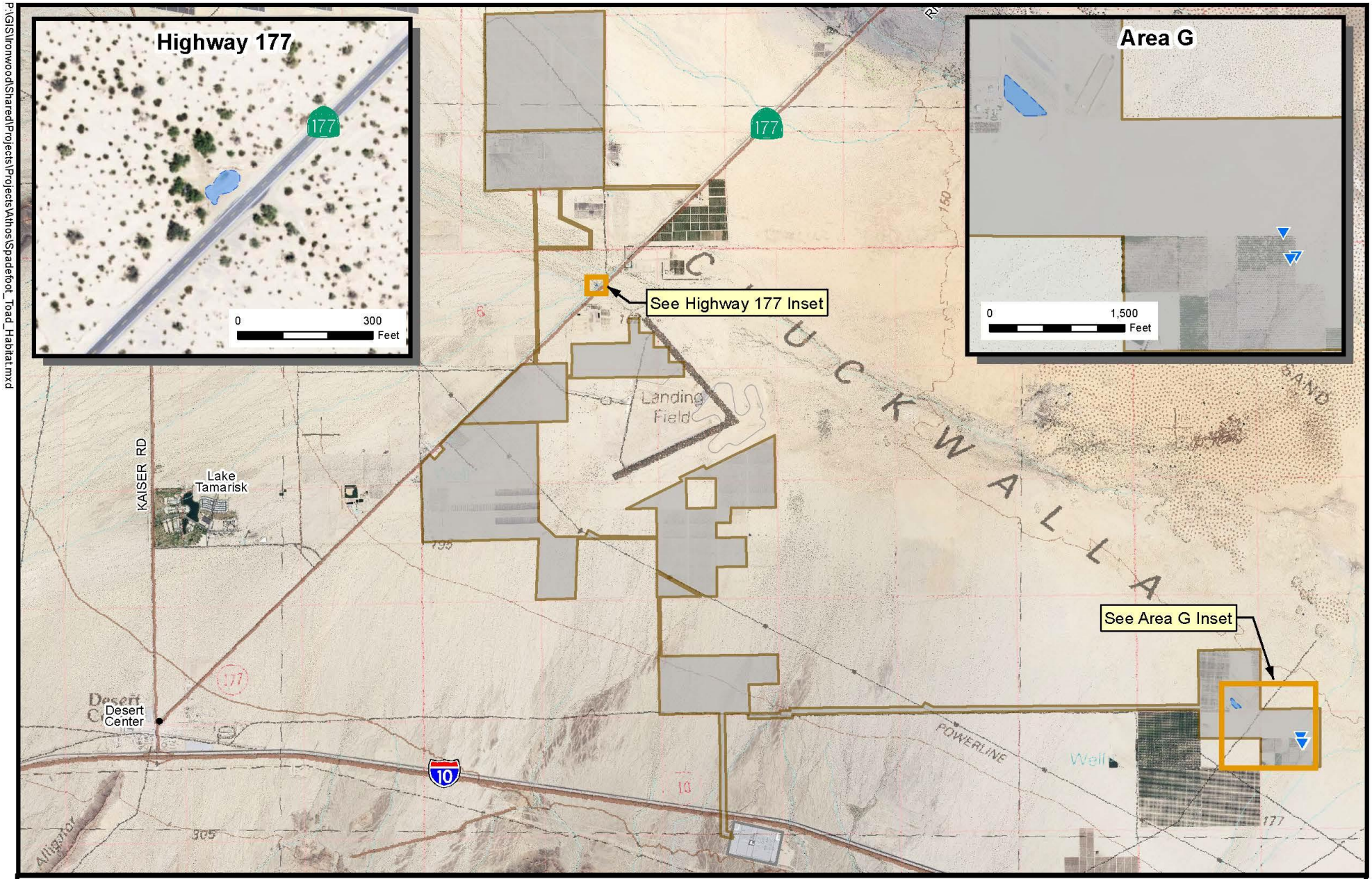


Ironwood Consulting

0 3,000 6,000
Feet

- 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*

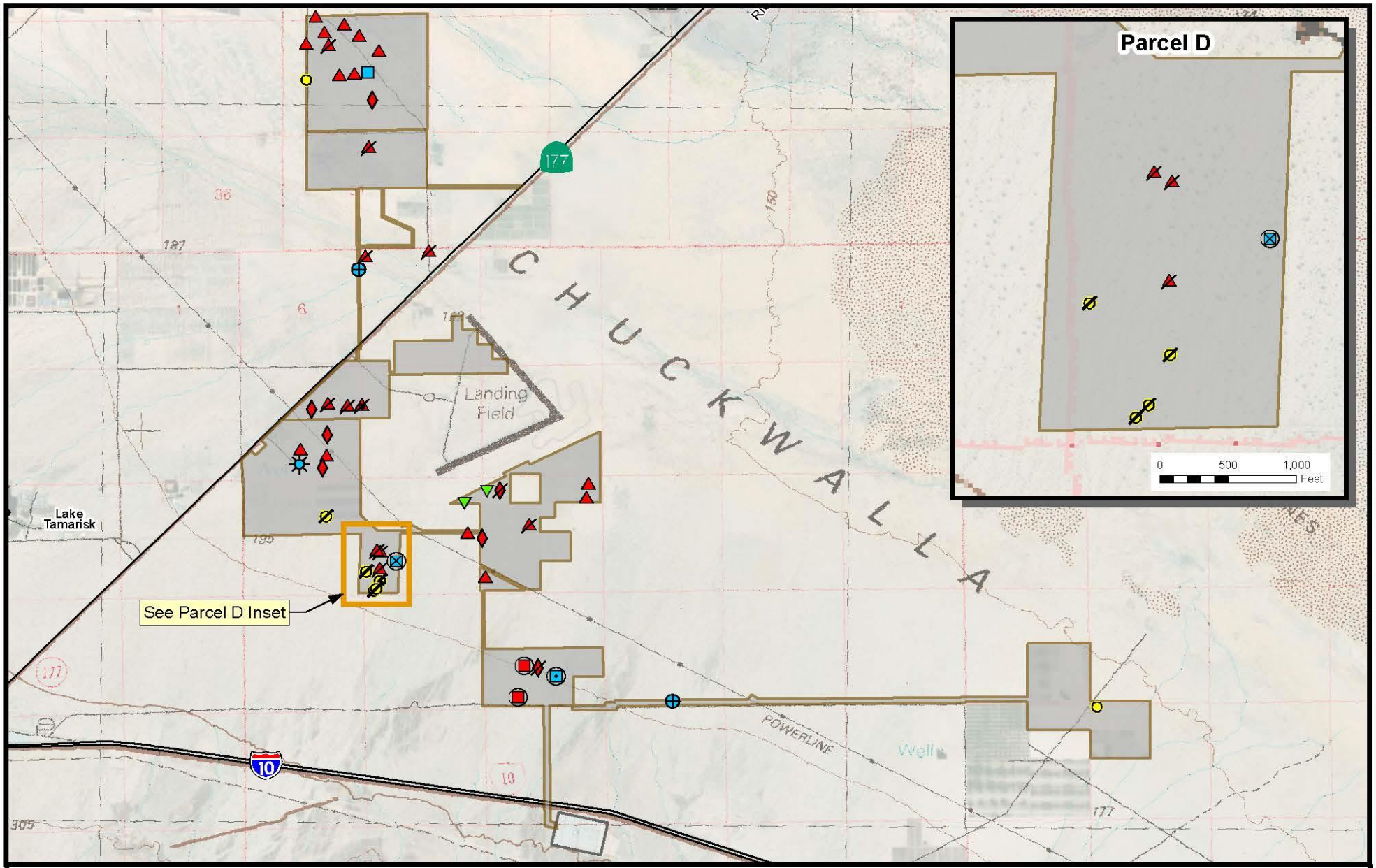
The American badger is associated with dry open forest, shrub, and grassland communities with an adequate burrowing rodent population and friable soils. Badgers generally are associated with treeless regions, prairies, parklands, and cold desert areas (Zeiner et al. 1990). Badgers inhabit burrows and 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.



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Ironwood
Consulting

0 3,000 6,000
Feet

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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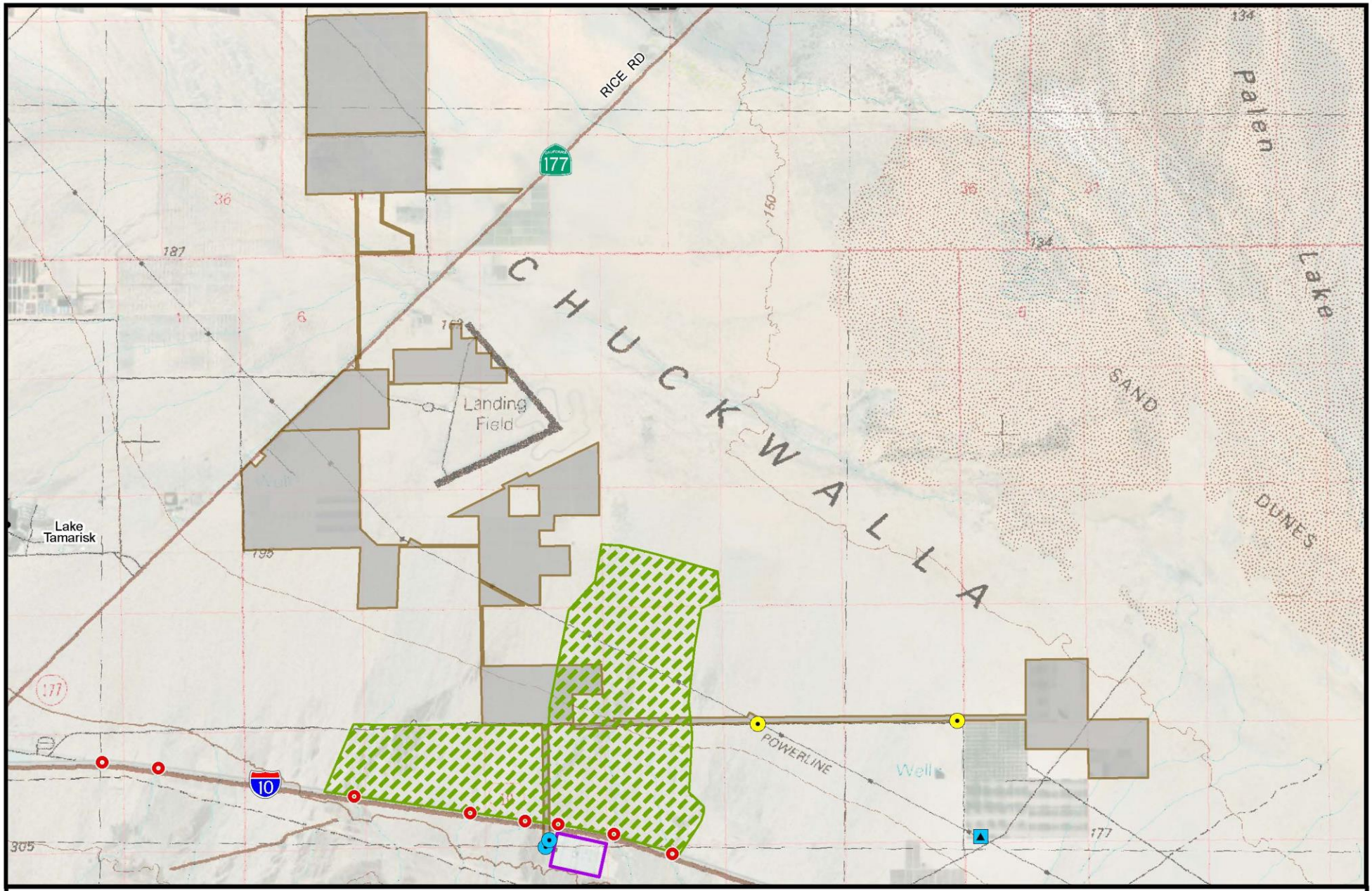


Ironwood
Consulting

0 3,000 6,000
Feet

- I-10 Culvert/Underpass
- Multi-Species Linkage Area
- Athos Solar Project
- Red Bluff Substation

Fall 2017
- Burro Deer, live individual
- Burro Deer, scat and tracks

Fall 2018
- Burro Deer, scat

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 Mnastiff 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 (CNDDB 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.

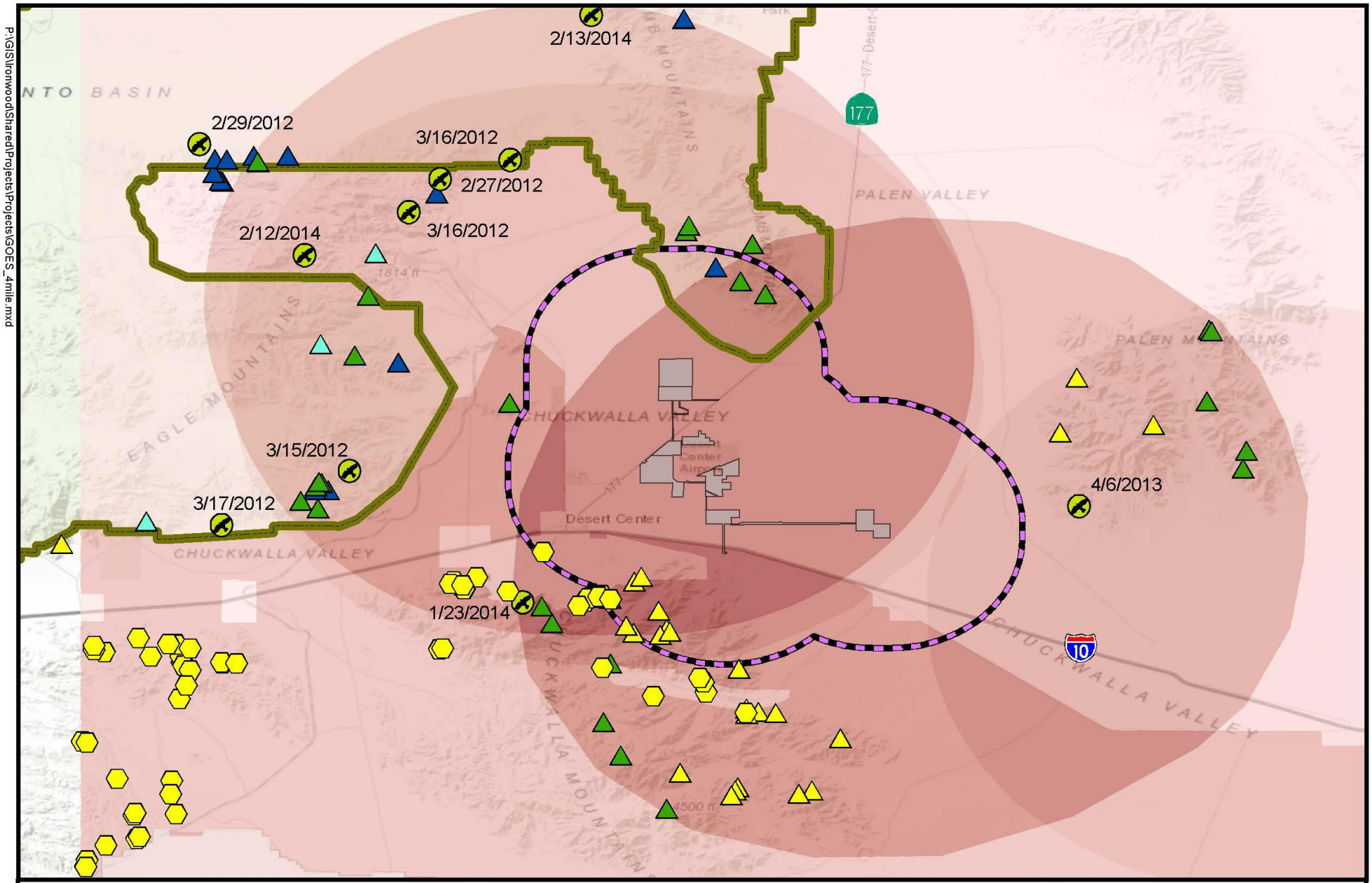
No live golden eagles were observed within 4 miles of the Project during any of these surveys or during the 2017-2018 wildlife surveys for the Project site. The highest concentration of surveys repeated between 2010-2015 occurred within Project area as shown in Figure 15.

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


P:\GIS\Ironwood\Shared\Projects\Projects\GOES_4mile.mxd
2/13/2014
2/29/2012
3/16/2012
2/27/2012
3/16/2012
2/12/2014
3/15/2012
3/17/2012
1/23/2014
4/6/2013
177
10
PALEN VALLEY
CHUCKWALLA VALLEY
Desert Center
EAGLE MOUNTAINS
Ironwood
Consulting
0
4
Miles
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
Adapted from CORVUS, 2018.
FIGURE 15
Regional Golden Eagle Survey Results 2010-2015
Athos Solar

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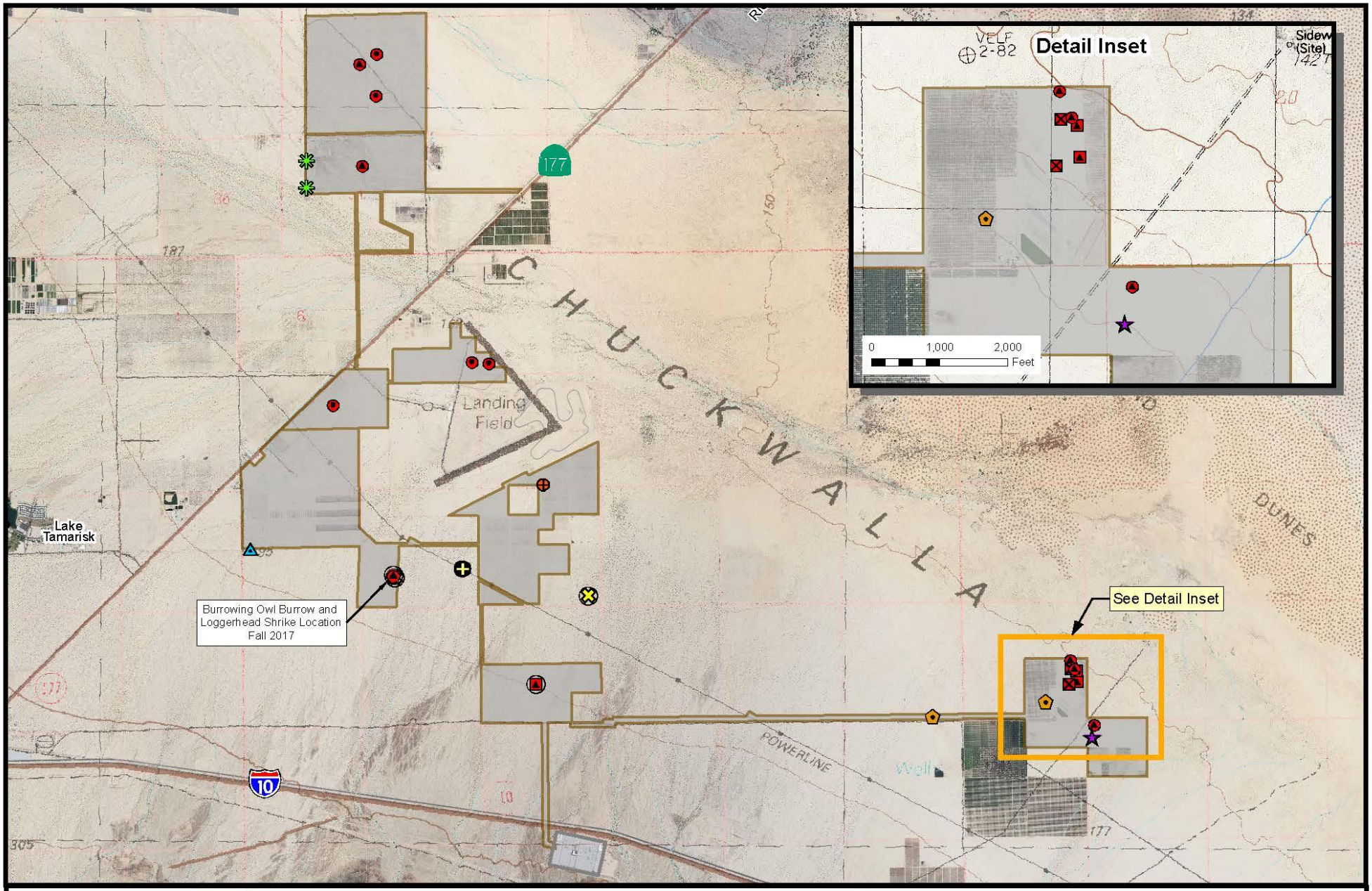

Ironwood Consulting

0 3,000 6,000
Feet

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 (CNDDB 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 (CNDDB 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 (CNDDB 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 (CNDDB 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 pusillis*) breeds in riparian habitats in southern California and portions of northern Baja California, Mexico and winters in southern Baja California, Mexico (USFWS 1998). Its numbers and distribution have probably increased since its listing, although it remains absent from large parts of its former range (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 gen-tie 1	desert dry wash woodland	10/21/2017
	Desert Unicorn Plant	live plant (2)	east of gen-tie 1	desert dry wash woodland	10/21/2017
	Desert Unicorn Plant	live plant in fruit	east of gen-tie 1	creosote bush scrub	10/21/2017

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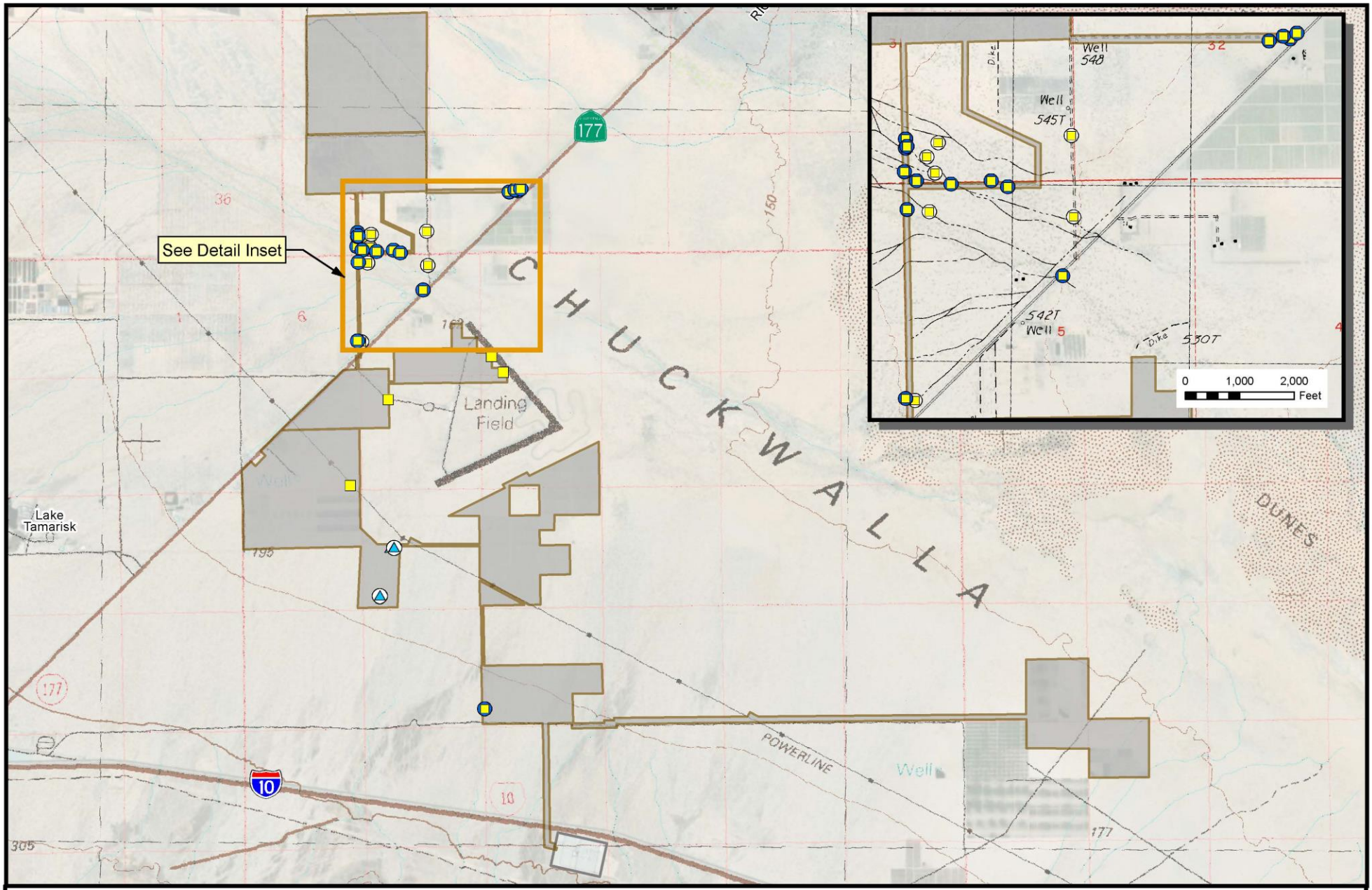

Ironwood Consulting

0 3,000 6,000 Feet

Athos Solar Project

Red Bluff Substation

Fall 2017

Castella emoryi, Crucifixion Thorn

Proboscidea altheafolia, Desert Unicorn Plant

Spring 2018

Castella emoryi, Crucifixion Thorn

Proboscidea altheafolia, Desert Unicorn Plant

Fall 2018

Proboscidea altheafolia 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 CNDDB (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 CNDDB records for this species within the Project vicinity (CNDDB 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 Hardwood'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 (CNDDB 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.

5.0 REFERENCES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Bureau of Land Management (BLM). 2013. Golden Eagle Nest Occurrences, DRECP. Dataset in Databasin.org . https://databasin.org/datasets/9e7e4a80961f468887322ddd8e840777. Last accessed September 2018

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

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

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

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

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

California Invasive Plant Council (Cal-IPC). 2018. California Invasive Plant Inventory Database. Available at: <http://www.cal-ipc.org/paf.> (Accessed July 2018).

California Department of Food and Agriculture (CDFA). 2018. Amend Section 4500. Noxious Weed Species. http://www.cdfa.ca.gov/plant/ipc/encycloweedia/encycloweedia_hp.htm. (Accessed July 2018).

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

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

California Department of Fish and Wildlife. (CDFW). 2018a. Natural Diversity Database. July 2018. Special Animals List. Periodic publication. 51 pp.

California Department of Fish and Wildlife. (CDFW). 2018b. A Status Review of Townsend's Big-Eared Bat (*Corynorhinus townsendii*) in California.

California Department of Fish and Wildlife. (CDFW). 2018c. Natural Diversity Database Special Vascular Plants, Bryophytes, and Lichens List. Quarterly Publication. 73 pp. July 2018

California Department of Fish and Wildlife. (CDFW). 2018d. California Sensitive Natural Communities. https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities. October 2018

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

California Energy Commission (CEC), California Energy Commission, California Department of Fish and Wildlife, U.S. Bureau of Land Management, U.S. Fish and Wildlife Service. 2014a. Draft Desert Renewable Energy Conservation Plan (DRECP) and Environmental Impact Report/Environmental Impact Statement. July 2018 www.drecp.org.

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

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

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

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

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

California Native Plant Society (CNPS). 2018. CNPS Inventory of Rare and Endangered Plants, Riverside County. Available at: < http://www.rareplants.cnps.org/> Accessed July 2018

California Natural Diversity Data Base (CNDDB). 2018. Aztec Mines, Corn Spring, East of Aztec Mines, East of Victory Pass, Ford Dry Lake, Palen Lake, Palen Mountains, Pilot Mountain, and Sidewinder Well 7.5 minute USGS quadrangles.

Consortium of California Herbaria (CCH). 2018. Search results for taxa from CNPS Inventory in Riverside County, retrieved July 2, 2018. Available at: http://ucjeps.berkeley.edu/consortium/

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

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

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

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

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

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

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

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

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

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

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

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

Gervais, J. A., D. K. Rosenberg, and L. A. Comrack. 2008. Burrowing owl (*Athene cunicularia*). Pages 218-226 in California bird species of special concern: a ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California (W. D. Shuford and

T. Gardali, editors). Western Field ornithologists and California Department of Fish and Game, Studies of Western Birds 1: 1-450.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Murphy, R. W., K.H. Berry, T. Edwards, A.M. McLuckie. 2007. A Genetic Assessment of the Recovery Units for the Mojave Population of the Desert Tortoise, *Gopherus agassizii*. Chelonian Conservation and Biology 6(2):229-251.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation

concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at https://websoilsurvey.nrcs.usda.gov/. Accessed July 2018

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

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

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

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

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

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

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

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

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

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

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

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

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

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

agassizii). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. 222 pp.

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

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

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

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

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

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

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

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

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

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

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

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

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
AMPHIBIAN and REPTILES				
Couch's spadefoot toad *Scaphiopus couchii*	Occurs along desert washes, desert riparian, palm oasis, desert succulent shrub, and desert scrub habitats. Also found in cultivated cropland areas. Breeds in temporary pools within rocky streambeds, washes, agricultural fields, in road depressions railroad tracks, and cattle tanks. Pools of water must persist 7 to 8 days to facilitate eggs hatching and larvae transformation	Federal: None State: SSC BLM sensitive	low to moderate not observed potentially occur on G	low to moderate not observed potentially occur on gen-tie 3
Agassiz's desert tortoise *Gopherus agassizii*	higher populations in creosote bush communities with friable soils for burrow construction, with extensive annual blooms, but found in almost every desert habitat	Federal: FT State: ST State: ST	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,
Mojave fringe-toed lizard *Uma scoparia*	Restricted to fine, loose, wind-blown deposits in sand dunes, dry lakebeds, riverbanks, desert washes, sparse alkali scrub and desert shrub habitats	Federal: None State: SSC BLM sensitive	**Present** 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
MAMMALS				
Burro deer *Odocoileus hemionus eremicus*	Occur in early to intermediate successional stages of most forest, woodland, and brush habitats. Prefer a mosaic of various-aged vegetation that provides woody cover, meadow and shrubby openings, and free water	Federal: None State: CPGS	high 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
Desert bighorn sheep *Ovis canadensis nelsoni*	Habitats used include alpine dwarf-shrub, low sage, sagebrush, bitterbrush, pinyon-juniper, palm oasis, desert riparian, desert succulent shrub, desert scrub, subalpine conifer, perennial grassland, montane chaparral, montane riparian (DeForge 1980, Monson and Sumner 1980, Wehausen 1980). Use rocky, steep terrain for escape and bedding. Remain near rugged terrain while feeding in open habitat	Federal: BLMS State: CFP	low - unsuitable habitat not observed	low - unsuitable habitat not observed
Yuma mountain lion *Puma concolor browni*	Primarily inhabit the low mountains and extensive wash systems in and around Chuckwalla Bench, Chuckwalla Mountains, Chocolate Mountains, Picacho	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
American badger *Taxidea taxus*	Suitable habitat for badgers is characterized by herbaceous, shrub, and open stages of most habitats with dry, friable soils.	Federal: None State: SSC	**Present** carcass observed in C, dig and burrow observed in A, D, F potentially occur throughout site	high not observed potentially occur throughout gen-tie
Desert kit fox *Vulpes macrotis arsipus*	Lives in annual grasslands or grassy open vegetation dominated by scattered brush, shrubs, and scrub. Cover provided by occur. Active dens/complexes with sign observed. dens they dig in open, level areas with loose-textured, sandy and loamy soils.	Federal: None State: CPF	high burrows and complexes observed in A, C, D, E, F potentially occur throughout Project site	high not observed potentially occur throughout Project site
BATS				
Pallid bat *Antrozous pallidus*	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
Townsend's big-eared bat *Corynorhinus townsendii*	Habitat associations include coniferous forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Foraging associations include edge habitats along streams, adjacent to and within a variety of wooded habitats.	Federal: None State: SSC BLM sensitive	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
Big brown bat *Eptesicus fuscus*	widespread and abundant species has been recorded in virtually every North American vegetation type. Uncommon in hot desert habitats, and is absent only from the highest alpine meadows and talus slopes. Vagrant individuals may be seen in any habitat. Uses buildings and other human-made structures for roosting to such an extent that natural roosting habits are under documented	Federal: None State: none	low not observed distant from nearest records	low not observed distant from nearest records
Spotted bat *Euderma maculatum*	Arid, low desert habitats to high elevation conifer forests and prominent rock features appear to be a necessary feature for roosting	Federal: None State: SSC BLM sensitive	low not observed distant from nearest records	low not observed distant from nearest records
Western mastiff bat *Eumops perotis*	Variety of habitats, from desert scrub to chaparral to oak woodland and into the ponderosa pine belt and high elevation meadows of mixed conifer forests	Federal: None State: SSC BLM sensitive	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
Hoary bat *Lasiurus cinereus*	Highly associated with forested habitats. Usually are located at the edge of a clearing, although more unusual roosting sites have been reported in caves, beneath rock ledges, woodpecker holes, squirrel nests, building sides, and in dried palm fronds on palm trees.	Federal: None State: None	foraging moderate, roosting low not observed	foraging moderate, roosting low not observed
Western yellow bat *Lasiurus xanthinus*	Recorded below 600 m (2000 ft) in valley foothill riparian, desert riparian, desert wash. This species occurs year-round in California.	Federal: None State: SSC	foraging and roosting moderate, 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
California leaf-nosed bat *Macrotus californicus*	species depends on either caves or mines for roosting habitat. All major maternity, mating, and overwintering sites are in mines or caves (BLM CDD, 2002). California leaf-nosed bat forage almost exclusively among desert wash vegetation within 10 km of their roost (WBWG, 2005)	Federal: None State: SSC BLM sensitive	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
Arizona myotis *Myotis occultus*	Commonly known from conifer forests from 6,000 to 9,000 feet in elevation, although maternity roosts are known from much lower elevations including areas along the Colorado River in California.	Federal: None State: SSC	low not observed distant from nearest records	low not observed distant from nearest records
Cave myotis *Myotis velifer*	Found primarily at lower elevations of the arid southwest in areas dominated by creosote bush, palo verde, and cactus. This species is a “cave dweller” and	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		
Yuma myotis *Myotis yumanensis*	Associated with permanent sources of water, typically rivers and streams, feeding primarily on aquatic emergent insects. Also use tinajas (small pools in bedrock) in the arid west. Occurs in a variety of habitats including riparian, arid scrublands and deserts, and forests. Roosts in bridges, buildings, cliff crevices, caves, mines, and trees.	Federal: None State: None BLM sensitive	low not observed distant from nearest records	low not observed distant from nearest records
Pocketed free-tailed bat *Nyctinomops femorosaccus*	Known to occur in the desert from Mar-Aug, when they then migrate out of the area. In California, found primarily in creosote bush and chaparral habitats in proximity to granite boulders, cliffs, or rocky canyons.	Federal: None State: SSC	low not observed distant from nearest records	low not observed distant from nearest records
Big free-tailed bat *Nyctinomops macrotis*	Found generally sea level to 8,000 feet in elevation. This species occurs in desert shrub, . It roosts mostly in the crevices of rocks although may roost in buildings, caves, and tree cavities	Federal: None State: SSC	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
BIRDS				
Golden eagle **(Nesting and wintering)** *Aquila chrysaetos*	Typically rolling foothills, mountain areas, sage- juniper flats, desert. Nests on cliffs of all heights and in large trees in open areas. Rugged, open habitats with canyons and escarpments used most frequently for nesting.	Federal: BCC State: CFP, WL BLM sensitive	Nesting/Wintering - minimal Foraging - Low	Nesting/Wintering - minimal Foraging - Low

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
Short-eared owl (Nesting)	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	migration -moderate, nesting - low, not observed	migration-moderate, nesting - low, not observed
Asio flammeus		State: SSC	potentially occur on G	potentially occur near gen-tie 3
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	Federal: BCC	high - nesting, foraging	high - nesting, foraging
Athene cunicularia hypugaea		State: SSC	observed live at G, sign at A, B, C, D, E, F, G	not observed
		BLM sensitive	potentially occur throughout Project	potentially occur throughout Project
Redhead (Nesting)	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	low not observed	low not observed
Aythya americana		State: SSC	distant from nearest records	distant from nearest records
Ferruginous hawk (Wintering)	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	wintering/migration moderate, nesting low, not observed	wintering/migration moderate, nesting low, not observed
Buteo regalis		State: WL	potentially forage in D, F, gen-tie 1A, 3	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
Swainson's hawk *Buteo swainsoni*	Require large areas of open landscape for foraging, including grasslands and agricultural lands that provide low-growing vegetation for hunting and high rodent prey populations. Typically nest in large native trees such as valley oak, cottonwood, walnut, willow, and occasionally in nonnative trees within riparian woodlands, roadside trees, trees along field borders, isolated trees, small groves, and on the edges of remnant oak woodlands	Federal: BCC State: ST	migration moderate, nesting - low, observed at G potentially forage throughout Project	migration high, nesting – Low, observed at gen-tie 3 potentially forage throughout Project
Costa's hummingbird (Nesting) *Calypte costae*	Primary habitats are desert wash, edges of desert riparian and valley foothill riparian	Federal: BCC State: None	foraging, nesting - moderate not observed potentially forage or nest in D, F, G gen-tie 1A, 3	foraging, nesting - moderate not observed potentially forage or nest in gen-tie 1, 1A, 2A, 2B, 3, 4, ROW access
Vaux's swift (Nesting) *Chaetura vauxi*	Not known to breed in Riverside or Southern California. They prefer to nest in the hollows inside of large old conifer trees, especially snags, which are entirely lacking from the Project site.	Federal: None State: SSC	migration high, nesting - low, not observed potentially migrate throughout Project	migration high, nesting – low not observed potentially migrate throughout Project
Mountain plover (Wintering) *Charadrius montanus*	habitat includes short-grass prairie or their equivalents, and in southern California deserts are associated primarily with agricultural areas	Federal: BCC State: SSC BLM sensitive	wintering moderate, nesting low, not observed potentially forage in A, B, C, E, G	wintering moderate, nesting low, not observed potentially forage in gen-tie 1C
Black tern	restricted to freshwater habitats while breeding, can be fairly	Federal: None	wintering and nesting low	wintering and nesting low

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
Chlidonias niger	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
Northern harrier (Nesting) *Circus cyaneus*	Does not commonly breed in desert regions of California, where suitable habitat is limited, but winters broadly throughout California in areas with suitable habitat. Northern harriers forage in open habitats including deserts, pasturelands, grasslands, and old fields.	Federal: None State: SSC	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
Western yellow-billed cuckoo *Coccyzus americanus occidentalis*	Breeds along the major river valleys in southern and western New Mexico, and central and southern Arizona. In California, the western yellow-billed cuckoo's breeding distribution is now thought to be restricted to isolated sites in the Sacramento, Amargosa, Kern, Santa Ana, and Colorado River valleys.	Federal: FT, BCC State: SE BLM sensitive	migration and nesting low not observed uncommon migrant	migration and nesting low not observed uncommon migrant
Gilded flicker *Colaptes chrysoides*	Stands of giant cactus, Joshua tree, and riparian groves of cottonwoods and tree willows in warm desert lowlands and foothills. Nests primarily in cactus, but also will use cottonwoods and willows of riparian woodlands. May be nearly extinct in California.	Federal: BCC State: SE BLM sensitive	low not observed distant from nearest records	low not observed distant from nearest records
Black swift (Nesting) *Cypseloides niger*	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
Willow flycatcher (Nesting) *Empidonax traillii* **Southwestern willow flycatcher** *E. t. extimus*	Most often occurs in broad, open river valleys or large mountain meadows with lush growth of shrubby willows (Serena 1982). Common spring (mid-May to early June) and fall (mid- August to early September) migrant at lower elevations, primarily in riparian habitats throughout the state exclusive of the North Coast.	Federal: None State: SE Federal: FE State: SE	nesting and wintering low uncommon migrant not observed nesting/winter - low uncommon migrant	nesting and wintering low uncommon migrant not observed nesting/wintering low uncommon migrant
California horned lark *Eremophila alpestris actia*	A common to abundant resident in a variety of open habitats, usually where trees and large shrubs are absent. Found from grasslands along the coast and deserts near sea level to alpine dwarf-shrub habitat above tree line. In winter, flocks in desert lowlands and other areas augmented by winter visitants, many migrating from outside the state (Garrett and Dunn 1981).	Federal: None State: WL	high observed potentially occur throughout Project site	high observed potentially occur throughout Project site
Prairie falcon (Nesting) *Falco mexicanus*	Occurs in annual grasslands to alpine meadows, but associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub. Typically nests at cliffs and bluffs	Federal: BCC State: WL	foraging high, nesting low observed potentially occur foraging throughout Project site	foraging high, nesting low observed potentially occur foraging throughout Project site
American peregrine falcon (Nesting) *Falco peregrinus anatum*	Rare in the arid southeast, occur and are suspected to breed in the lower Colorado River Valley. Peregrine falcons require open habitat for foraging, and prefer breeding sites near water. Nesting habitat includes cliffs, steep banks, dunes, mounds, and some human-made structures	Federal: BCC State: CFP	foraging moderate, nesting low not observed potentially forage throughout Project	foraging moderate, nesting low not observed potentially forage throughout Project

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
Sandhill crane (Wintering) *Grus canadensis*	Breeds in open wetland habitats surrounded by shrubs or trees. They nest in marshes, bogs, wet meadows, prairies, burned-over aspen stands, and other moist habitats, preferring those with standing water. Outside of known wintering grounds, extremely rare except during migration over much of interior California.	Federal: None State: SSC	migration moderate, nesting low observed flying over Project migration - throughout Project, but no suitable foraging	migration moderate, nesting low observed flying over Project migration -throughout Project, but no suitable foraging
Yellow-breasted chat (Nesting) *Icteria virens*	This species occupies shrubby riparian habitat with an open canopy, and will nest in non-native species, including tamarisk.	Federal: None State: SSC	migration moderate, nesting low not observed potentially occur foraging during migration in D, F, gen-tie 1, 1A, 3	migration moderate, nesting low not observed potentially occur foraging during migration on gen-tie 1, 1A, 2A, 2B, 3, 4, ROW access
Loggerhead shrike (Nesting) *Lanius ludovicianus*	Open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Highest density occurs in open-canopied valley foothill hardwood, valley foothill hardwood- conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats	Federal: BCC State: SSC	nesting - high, foraging high observed at E potentially occur throughout Project site	nesting- high, foraging - high not observed potentially occur throughout Project site
Gila woodpecker *Melanerpes uropygialis*	In California, this species is found primarily along the Colorado River and in small numbers in Imperial County. In southeastern California, Gila woodpeckers formerly were associated with desert washes extending up to 1 mile from the Colorado River; however, their range may be expanding	Federal: BCC State: SE BLM sensitive	foraging, nesting - low to moderate, not observed potentially occur foraging or nesting on D, F, G gen-tie 1A, 3	foraging, nesting - low to moderate, not observed potentially occur foraging or nesting on gen-tie 1,1A, 2A, 2B, 3, 4
Elf owl *Micrathene whitneyi*	A very rarely seen spring and summer resident of the Colorado River Valley. Nests in desert riparian habitat with cottonwood, sycamore, willow or mesquite;	Federal: BCC State: SE	foraging, nesting - low to moderate not observed potentially occur foraging or nesting on D, F, G gen-tie 1, 1A, 3	foraging, nesting - low to moderate, not observed potentially occur foraging or nesting on gen-tie 1, 1A, 2A, 2B, 3, 4, ROW access

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
	absent from desert riparian habitat dominated by saltcedar	BLM sensitive		
Long-billed curlew (Nesting) *Numenius americanus*	Preferred breeding and winter habitats include large coastal estuaries, upland herbaceous areas, and croplands. On estuaries, feeding occurs mostly on intertidal mudflats.	Federal: BCC State: WL	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
Lucy's warbler (Nesting) *Oreothlypis luciae*	An uncommon to common, summer resident and breeder along the Colorado River, common locally in a few other desert areas, and rare near Salton Sea. It occurs in desert typical nesting habitat, mesquite wash and desert riparian habitats, may use abandoned verdin nests	Federal: BCC State: SSC BLM sensitive	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
American white pelican (Nesting colony) *Pelecanus erythrorhynchos*	Common spring and fall migrant at Salton Sea and Colorado River. Migrant flocks pass overhead almost any month, but mainly in spring and fall throughout the state, especially in southern California (Cogswell 1977, McCaskie et al. 1979, Garrett and Dunn 1981)	Federal: None State: SSC	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
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	Federal: None	foraging, nesting high observed	foraging, nesting high observed

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
Polioptila melanura	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
Vesper sparrow	Fairly common locally in southern deserts in the winter and during migration. Occupies grasslands, croplands, and open brush lands.	Federal: None	migration moderate, nesting low not observed	migration moderate, nesting low not observed
Pooecetes gramineus		State: SSC	migration throughout Project site, no suitable wintering or nesting habitat	migration throughout Project site, no suitable wintering or nesting habitat
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.	Federal: None	migration moderate, nesting low not observed	migration moderate, nesting low not observed
Progne subis		State: SSC	migration throughout Project site, no suitable wintering or nesting habitat	migration throughout Project site, no suitable wintering or nesting habitat
Vermilion flycatcher (Nesting)	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	wintering, nesting low not observed	wintering, nesting low not observed
Pyrocephalus rubinus		State: SSC	migration throughout Project site	migration throughout Project site

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
Ridgway's (Yuma) clapper rail *Rallus obsoletus yumanensis*	Occurs in inland areas in the southwestern United States. This subspecies is partially migratory, with many birds wintering in brackish marshes along the Gulf of California. Some remain on their breeding grounds throughout the year; for example, the Salton Sea (south) Christmas Bird Count frequently records this species in the fresh-water marshes in and around the Imperial Wildlife Area (Wister Unit). Nesting and foraging habitat occurs only along the Lower Colorado River (from Topock Marsh southward) and around the Salton Sea	Federal: FE State: ST, CFP	wintering, nesting low not observed rare, migrants only	wintering, nesting low not observed rare, migrants only
Bank swallow (Nesting) *Riparia riparia*	A neotropical migrant found primarily in riparian and other lowland habitats in California west of the deserts during the spring-fall period. Uses holes dug in cliffs and river banks for cover. Will also roost on logs, shoreline vegetation, and telephone wires.	Federal: None State: ST BLM sensitive	wintering, nesting low, migration moderate not observed migration throughout Project site	wintering, nesting low, migration moderate not observed migration throughout Project site
Sonora Yellow warbler (Nesting) *Setophaga petechia sonorana*	In southeastern California, this species is known only from the lower Colorado River Valley from the middle of San Bernardino County through Riverside and Imperial Counties. This species commonly uses wet, deciduous thickets for breeding, and seeks a variety of wooded, scrubby habitats in winter	Federal: BCC State: SSC	nesting low, migration moderate migration throughout Project site	nesting low, migration moderate migration throughout Project site

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
Lawrence's goldfinch (Nesting) *Spinus lawrencei*	Highly erratic and localized in occurrence. Rather common along western edge of southern deserts. Breeds in open oak or other arid woodland and chaparral, near water. Typical habitats in southern California include desert riparian, palm oasis, pinyon-juniper, and lower montane habitats.	Federal: BCC State: none	wintering, nesting low, migration moderate migration throughout Project site	wintering, nesting low, migration moderate migration throughout Project site
Bendire's thrasher *Toxostoma bendirei*	Favors open grassland, shrubland, or woodland with scattered shrubs, primarily in areas that contain large cholla, Joshua tree, Spanish bayonet, Mojave yucca, palo verde, mesquite, catclaw, desert-thorn, or agave.	Federal: BCC State: SSC BLM sensitive	foraging moderate, nesting low potentially occur on D, F, gen-tie 1, 1A, 3	foraging moderate, nesting low potentially occur on gen-tie 1, 1A, 2A, 2B, 3, 4, ROW access
Crissal thrasher *Toxostoma crissale*	This species prefers habitats characterized by dense, low scrubby vegetation, which, at lower elevations, includes desert and foothill scrub and riparian brush.	Federal: None State: SSC	wintering, nesting low, migration moderate potentially occur throughout Project site	wintering, nesting low, migration moderate potentially occur throughout Project site
Le Conte's thrasher *Toxostoma lecontei*	Occurs primarily in open desert wash, desert scrub, alkali desert scrub, and desert succulent shrub habitats; also occurs in Joshua tree habitat with scattered shrubs.	Federal: None State: SSC	High potentially occur on C, D, E, F, G, and gen-tie 1, 1A, 3	High potentially occur on gen-tie 1, 1A, 2A, 2B, 3, 4, ROW access

SPECIES	HABITAT REQUIREMENTS	CONSERVATION STATUS	POTENTIAL TO OCCUR ON PROJECT SITE	
			PRIVATE	PUBLIC
***Arizona* Bell's vireo**	Subspecies *V. b. pusillus* (endemic to California and Baja California - state and federally listed) and *V. b arizonae* are state listed. Bell's vireo is a rare, local, summer resident below about 600 m (2000 ft) in willows and other low, dense valley foothill riparian habitat and lower portions of canyons mostly in San Benito and Monterey Co.; in coastal southern California from Santa Barbara Co. south; and along the western edge of the deserts in desert riparian habitat.	Federal: BCC	wintering and nesting low, migration moderate	wintering and nesting low, migration moderate
Vireo bellii arizonae		State: SE BLM sensitive	migration throughout Project	migration throughout Project
Least Bell's vireo		Federal: FE	wintering and nesting low, migration moderate	wintering and nesting low, migration moderate
V. b. pusillus		State: SE	migration throughout Project	migration throughout Project
Yellow-headed blackbird (Nesting)	Nests in fresh emergent wetland with dense vegetation and deep water, often along borders of lakes or ponds. Forages in emergent wetland and moist, open areas, especially cropland and muddy shores of lacustrine habitat. Occurs as a migrant and local breeder in deserts	Federal: None	wintering and nesting low, migration moderate	wintering and nesting low, migration moderate
Xanthocephalus xanthocephalus		State: SSC	migration throughout Project	migration throughout Project

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
Chaparral sand verbena *Abronia villosa var. aurita*	Annual herb; sandy – chaparral, coastal scrub, desert dunes; Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura	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
Angel trumpets *Acleisanthes longiflora*	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
Desert sand parsley *Ammoselinum giganteum/ Spermolepis gigantea*	Annual herb; Sonoran Desert scrub, Riverside-known in CA only from Hayfields Dry Lake	Federal: none CRPR: 2B.1	~152	Mar-Apr	low - distant from known records not observed	low – distant from known records not observed
Small-flowered andstrostphium *Androstephium breviflorum*	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
Harwood's milkvetch *Astragalus insularis* var. *harwoodii*	Annual herb; sandy or gravelly - desert dunes, Mojavean Desert scrub; Riverside, San Bernardino, San Diego, Inyo	Federal: none CRPR: 2B.2	0-710	Jan-May	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
Coachella Valley milkvetch *Astragalus lentiginosus* var. *coachellae*	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
California ayenia *Ayenia compacta*	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
Pink fairy duster *Calliandra eriophylla*	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
Sand evening-primrose *Chylisimia arenaria*[=*Camissonia arenaria*]	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
Crucifixion thorn *Castela emoryi*	perennial deciduous shrub; gravelly -Mojavean desert scrub, Playas, Sonoran Desert scrub, Imperial, Inyo, Riverside, San Bernardino	Federal: none CRPR: 2B.2	90-725	Apr-Oct	**Present** observed at D	moderate not observed
Abram's spurge *Chamaesyce abramsiana*	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
Arizona spurge *Chamaesyce arizonica*	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
Flat-seeded spurge *Chamaesyce platysperma*	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
Las Animas colubrina *Colubrina californica*	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
Spiny abrojo *Condalia globosa* var. *pubescens*	Perennial deciduous shrub, Sonoran desert scrub, Imperial, Riverside, San Diego	Federal: none CRPR: 4.2	85-1000	Mar-Nov	minimal not observed	minimal not observed
Foxtail cactus *Coryphantha alversonii*	perennial stem succulent; sandy or rocky, usually granitic - Mojavean desert scrub, Sonoran desert scrub; Imperial, Riverside, Imperial	Federal: none CRPR: 4.3	75-1525	Apr-Jun	minimal not observed	minimal not observed
Ribbed cryptantha *Cryptantha costata*	annual herb; sandy - Desert dunes, Mojavean desert scrub, Sonoran desert scrub; Imperial, Inyo, Riverside, San Bernardino, San Diego	Federal: none CRPR: 4.3	-560	Feb-May	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
Winged cryptantha	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
Cryptantha holoptera	desert scrub Imperial, Inyo, Riverside, San Bernardino, San Diego	CRPR: 4.3			Not observed	Not observed
Wiggins' cholla *Cylindropuntia wigginsii* [=*Opuntia wigginsii*]	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
Utah milkvine *Cynanchum utahense* *(*syn=[=*Funastrum utahense*]	Perennial herb; sandy or gravelly - Mojavean desert scrub, Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego	Federal: none CRPR: 4.2	100-1435	Mar-Oct	moderate not observed 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
Glandular ditaxis *Ditaxis claryana*	perennial herb; sandy; Mojavean desert scrub; Sonoran desert scrub; Imperial, Riverside, San Diego	Federal: none CRPR: 2B.2	0-465	Oct-Mar	moderate not observed 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
California ditaxis *Ditaxis serrata* var. *californica*	Perennial herb; Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego	Federal: none CRPR: 3.2	30-1000	Mar-Dec	moderate not observed 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
Cottontop cactus *Echinocactus polycephalus var. polycephalus*	Perennial stem succulent. Rocky hills, silt valleys; Sonoran desert scrub; Imperial, Inyo, Riverside, San Bernardino, San Diego	Federal: none CRPR: CBR	<1400	Mar-Aug	minimal not observed	minimal not observed
Harwood's Eriastrum *Eriastrum harwoodii*		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
California satintail *Imperata brevifolia*	perennial rhizomatous herb; Chaparral, Coastal scrub, Mojavean desert scrub, Meadows and seeps (often alkali), Riparian scrub; Butte, Fresno, Imperial, Inyo, Kern, Lake, Los Angeles, Orange, Riverside, San Bernardino, Tehama, Tulare, Ventura	Federal: none CRPR: 2B.1	0-1215	Sep-May	minimal not observed	minimal not observed
Pink velvet mallow *Horsfordia alata*	Perennial shrub; Sonoran desert scrub (rocky); Imperial, Riverside	Federal: none CRPR: 4.3	100-500	Feb-Dec	minimal not observed	minimal not observed
Bitter hymenoxys *Hymenoxys odorata*	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
Spearleaf *Matelea parvifolia*	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
Argus blazing star *Mentzelia puberula*	Perennial herb; sandy or rocky -Mojavean desert scrub Sonoran desert scrub, Imperial, Riverside, San Bernardino	Federal: none CRPR: 2B.2	90-1280	Mar-May	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
Slender cotton-heads *Nemacaulis denudata* var. *gracilis*	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
Lobed cherry *Physalis lobata*	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
Desert portulaca *Portulaca halimoides*	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
Desert unicorn plant *Proboscidea althaeifolia*	Perennial herb; gently sloping sandy flats and washes, sometimes roadsides, Sonoran desert scrub; Imperial, Riverside, San Bernardino, San Diego	Federal: none CRPR: 4.3	85-1000	May-Oct	**Present** Observed at A, B, C and gen-tie 1A	**Present** Observed at gen-tie 1A
Orocopia sage *Salvia greatae*	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
Desert spikemoss *Selaginella eremophila*	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
Cove's cassia *Senna covesii*	Perennial herb; dry, sandy desert washes and slopes, Sonoran desert scrub; Imperial, Riverside, Kern, San Bernardino, San Diego	Federal: none CRPR: 2B.2	225-1295	Mar-Aug	low – unsuitable elevation not observed	low-unsuitable elevation not observed
Mesquite nest straw *Stylocline sonorensis*	Annual herb; Sonoran desert scrub (sandy) Known in CA from only a single collection (1930) at Hayfields Dry Lake Possibly extirpated after 1930 by development	Federal: none CRPR: 2A	+/- 400	Apr	low - distant from known records not observed	low - distant from known records not observed
Dwarf germander *Teucrium cubense ssp. depressum*	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
Jackass clover *Wislizenia refracta ssp. refracta*	Annual herb; desert dunes, Mojavean desert scrub, playas, Sonoran desert scrub, Riverside, San Bernardino	Federal: none CRPR: 2B.2	600-800	Apr-Nov	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
Palmer's jackass clover Wislizenia refracta ssp. Palmeri	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
"Palen Lake atriplex" *Atriplex sp. nov. J. Andre* *(Atriplex canescens ssp.)*	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
Mammals	
antelope ground squirrel	*Ammospermophilus leucurus*
round tail ground squirrel	*Xerospermophilus tereticaudus*
black tailed jackrabbit	*Lepus californicus*
desert kit fox	*Vulpes macrotis*
coyote	*Canis latrans*
burro deer	*Odocoileus hemionus*
Reptiles	
sidewinder rattlesnake	*Crotalus cerastes*
desert iguana	*Dipsosaurus dorsalis*
side blotched lizard	*Uta stansburiana*
western whiptail lizard	*Aspidoscelis tigris*
zebra-tailed Lizard	*Calisaurus draconoides*
Birds	
American kestrel	*Falco sparverius*
Anna's hummingbird	*Calypte anna*
ash-throated flycatcher	*Myiarchus cinerascens*
barn owl	*Tyto alba*
black phoebe	*Sayornis nigricans*
black tailed gnatcatcher	*Polioptila melanura*
black throated sparrow	*Amphispiza bilineata*
black-headed grosbeak	*Pheucticus melanocephalus*
black-necked stilt	*Himantopus mexicanus*
black-tailed gnatcatcher	*Polioptila melanura*
blue grey gnatcatcher	*Polioptila caerulea*
brown headed cowbird	*Molothrus ater*
burrowing owl	*Athene cunicularia*
cactus wren	*Campylorhynchus brunneicapillus*
common poorwill	*Phalaenoptilus nuttallii*
common raven	*Corvus corax*
common yellowthroat	*(Geothlypis trichas)*
Cooper's hawk	*Accipiter cooperii*
Eurasian collared-dove	*Streptopelia decaocto*
European starling	*Sturnus vulgaris*
Gambel's quail	*Callipepla gambelii*

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

APPENDIX D

Athos Renewable Energy Project
Plant List, Spring and Fall 2018

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

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

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

SCIENTIFIC NAME	COMMON NAME	GENUS	SOLAR FARM	GEN-TIE
Psorothamnus spinosus	smoke tree	Fabaceae	X	X
**Saccharum* sp.	Sugar cane	Poaceae	X	
**Salsola tragus*	Russian thistle	Chenopodiaceae	X	
**Schismus arabicus*	Mediterranean grass	Poaceae	x	
Senegalia greggii	catclaw acacia	Fabaceae	X	
Simmondsia chinensis	Jojoba	Simmonsiaceae	X	
Sphaeralcea ambigua	desert globemallow	Malvaceae	X	
Stillingia sp.	Mojave toothleaf	Euphorbaceae	X	
**Tamarix sp.*	tamarisk	Tamariaceae	X	
Tidestromia suffruticosa var. *oblongifolia*	Arizona honeysweet	Amaranthaceae	X	X
Tiquilia plicata	fanleaf crinklemat	Boraginaceae	X	
Washingtonia filifera	California fan palm	Arecaceae	X	X
**Washingtonia robusta*	Mexican fan palm	Arecaceae	X	
**Antennaria* sp.	pussytoes	Asteraceae	X	
**Carpobotus edulis*	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
CFGC	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 3456.8acres, 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.

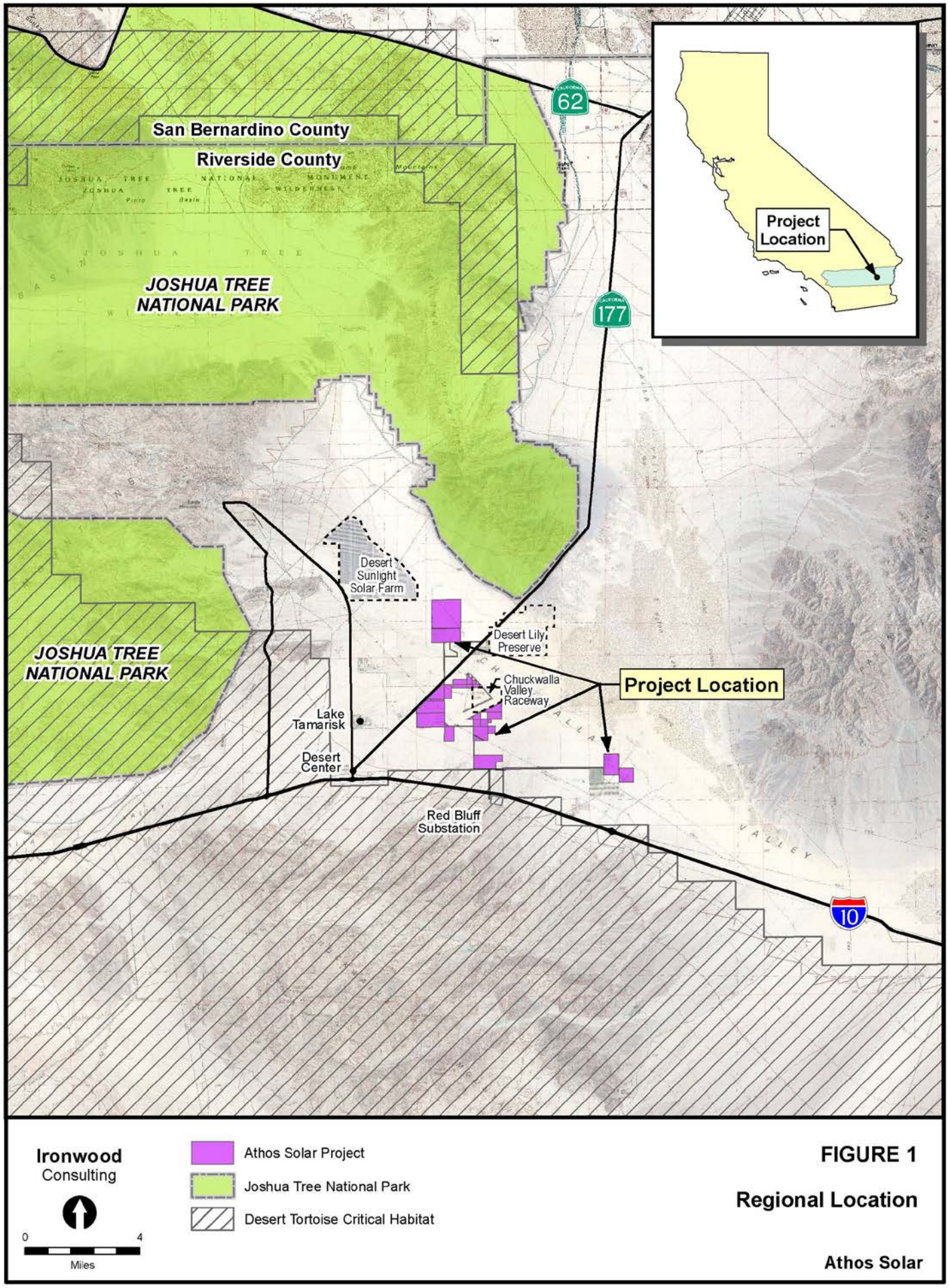
Site maintenance would be largely conducted during daytime hours, typically in the early morning or evening when the plant would be producing the least amount of energy. Maintenance typically would include panel repairs; panel washing; maintenance of electrical equipment; road and fence repairs; and 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.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Riverside County
JOSHUA TREE NATIONAL MONUMENT
WILDERNESS
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JOSHUA TREE NATIONAL PARK
JOSHUA TREE NATIONAL PARK
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177
10
Project Location
Desert Sunlight Solar Farm
Desert Lily Preserve
Chuckwalla Valley Raceway
Project Location
Lake Tamarisk
Desert Center
Red Bluff Substation
VALLEY
Ironwood Consulting
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Miles
Athos Solar Project
Joshua Tree National Park
Desert Tortoise Critical Habitat
FIGURE 1
Regional Location
Athos Solar

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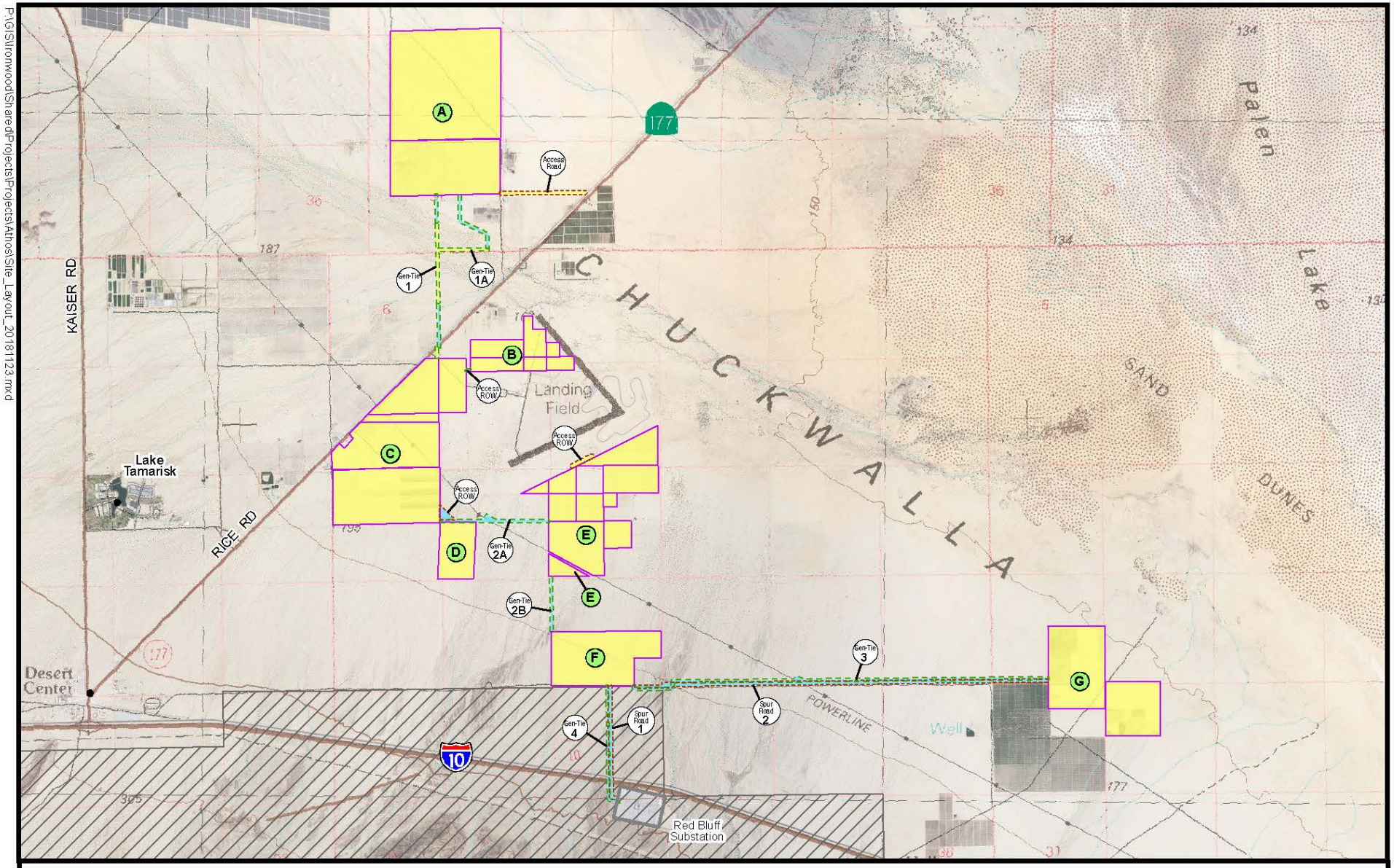

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Consulting

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Miles

- 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 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.

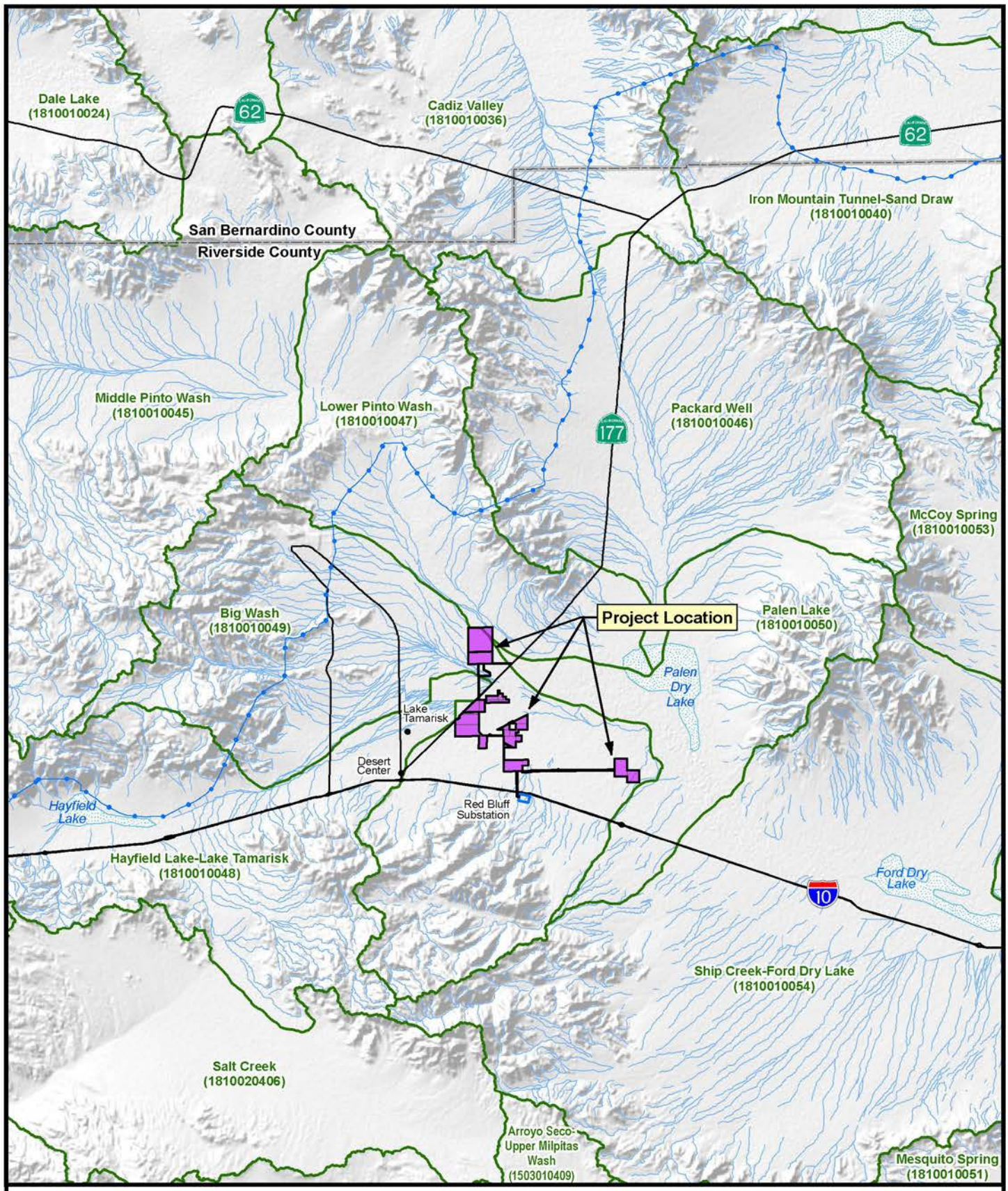
Existing anthropogenic features and private land uses that exist within and adjacent to the Project site include agricultural, residential, renewable energy, energy transmission, historical military, and recreational development. Much of the agricultural activity within proximity of the Project has waned 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.


P:\GIS\Ironwood\Shared\Projects\Projects\AthosHydro_JD.mxd
Dale Lake
(1810010024)
62
Cadiz Valley
(1810010036)
62
Iron Mountain Tunnel-Sand Draw
(1810010040)
San Bernardino County
Riverside County
Middle Pinto Wash
(1810010045)
Lower Pinto Wash
(1810010047)
177
Packard Well
(1810010046)
McCoy Spring
(1810010053)
Project Location
Big Wash
(1810010049)
Palen Lake
(1810010050)
Palen
Dry
Lake
Lake
Tamarisk
Desert
Center
Red Bluff
Substation
Hayfield
Lake
Hayfield Lake-Lake Tamarisk
(1810010048)
10
Ford Dry
Lake
Ship Creek-Ford Dry Lake
(1810010054)
Salt Creek
(1810020406)
Arroyo Seco-
Upper Milpitas
Wash
(1503010409)
Mesquito Spring
(1810010051)
Ironwood
Consulting
0
4
Miles
Athos Solar Project
Ephemeral Drainage
Aqueduct
Intermittent Water Feature
Watershed Boundary
FIGURE 3
Hydrologic Unit Map
Athos Solar

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[1]
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.

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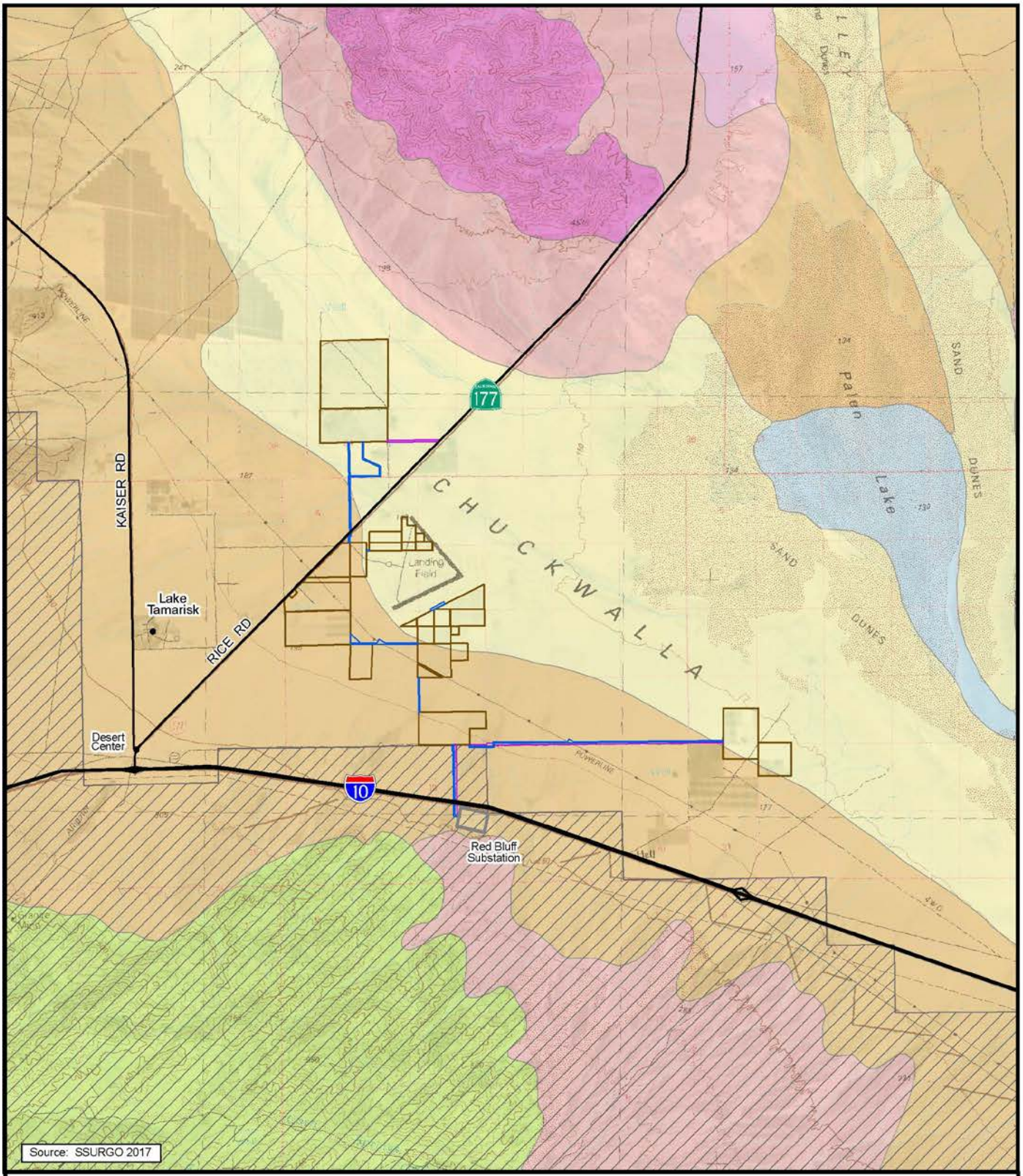

Ironwood Consulting

0 1 2 Miles

- 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

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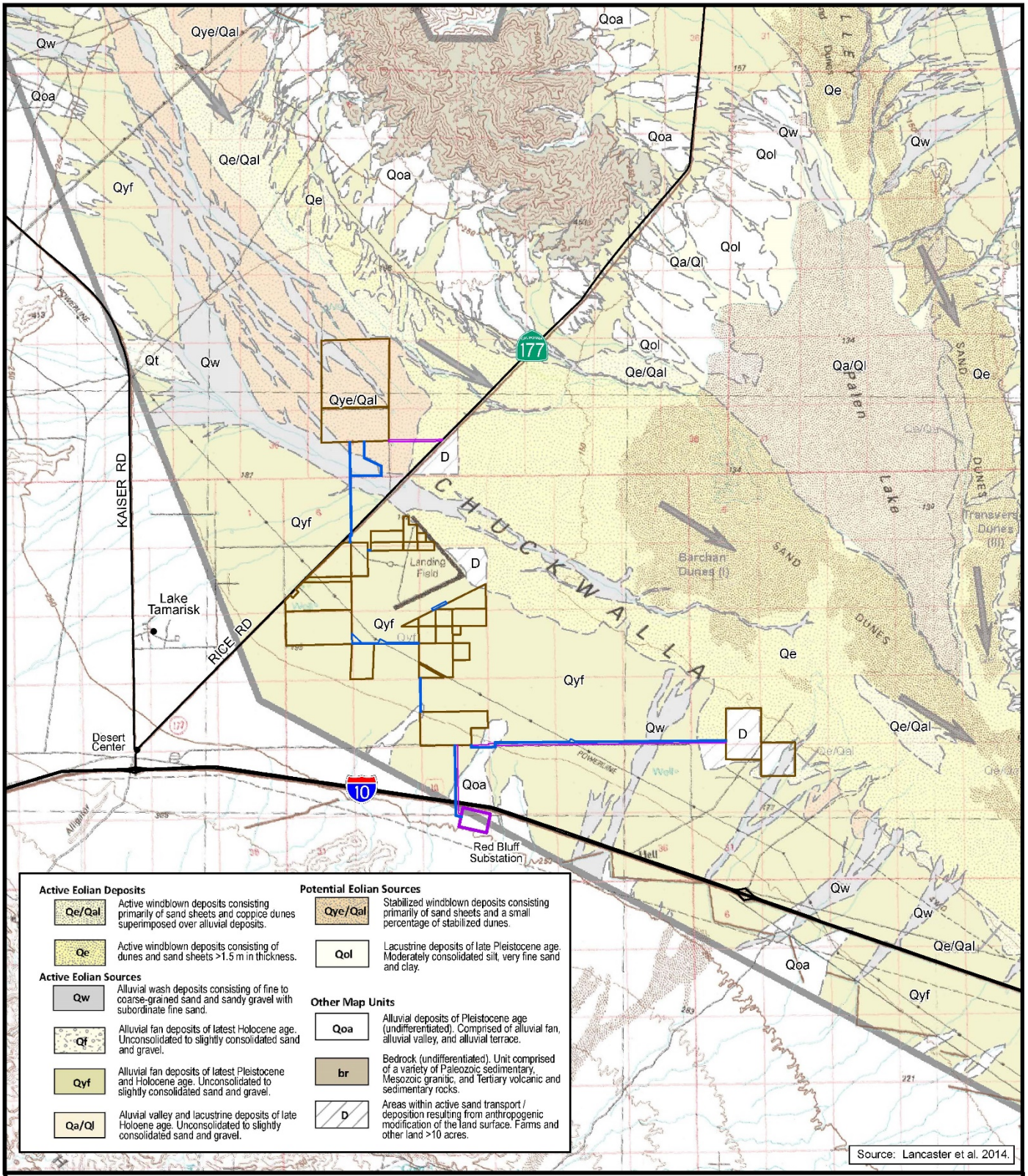


Active Eolian Deposits

- Qe/Qal — Active windblown deposits consisting primarily of sand sheets and coppice dunes superimposed over alluvial deposits.
- Qe — Active windblown deposits consisting of dunes and sand sheets >1.5 m in thickness.

Active Eolian Sources

- Qw — Alluvial wash deposits consisting of fine to coarse-grained sand and sandy gravel with subordinate fine sand.
- Qf — Alluvial fan deposits of latest Holocene age. Unconsolidated to slightly consolidated sand and gravel.
- Qyf — Alluvial fan deposits of latest Pleistocene and Holocene age. Unconsolidated to slightly consolidated sand and gravel.
- Qa/Ql — Aluvial valley and lacustrine deposits of late Holocene age. Unconsolidated to slightly consolidated sand and gravel.

Potential Eolian Sources

- Qye/Qal — Stabilized windblown deposits consisting primarily of sand sheets and a small percentage of stabilized dunes.
- Qol — Lacustrine deposits of late Pleistocene age. Moderately consolidated silt, very fine sand and clay.

Other Map Units

- Qoa — Alluvial deposits of Pleistocene age (undifferentiated). Comprised of alluvial fan, alluvial valley, and alluvial terrace.
- br — Bedrock (undifferentiated). Unit comprised of a variety of Paleozoic sedimentary, Mesozoic granitic, and Tertiary volcanic and sedimentary rocks.
- D — Areas within active sand transport / deposition resulting from anthropogenic modification of the land surface. Farms and other land >10 acres.

Ironwood Consulting

0 1 2 Miles

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© 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.

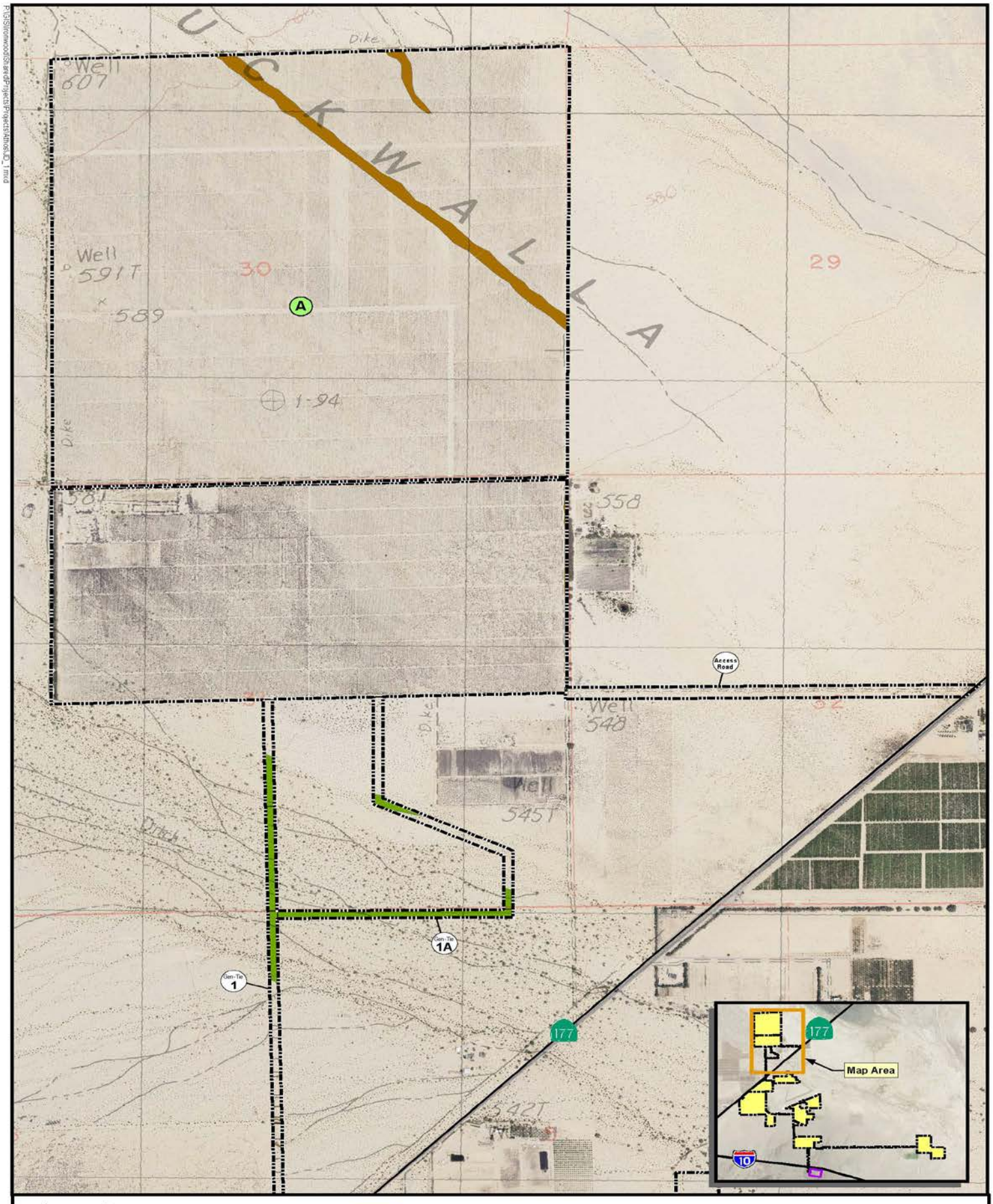
Active channels within the lower alluvial fan, where the Project is situated, showed sign of frequent avulsion (changes in flow direction following surface water flow events) due to high sand content and patterns of brief, intense surface water flow. The avulsion process results in a network of active 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.



Ironwood Consulting

0 500 1,000 Feet

Athos Solar Project

Desert Dry Wash Woodland

Unvegetated Ephemeral Dry Wash

FIGURE 6a

Potential CDFW - Juridictional Areas

Athos Solar

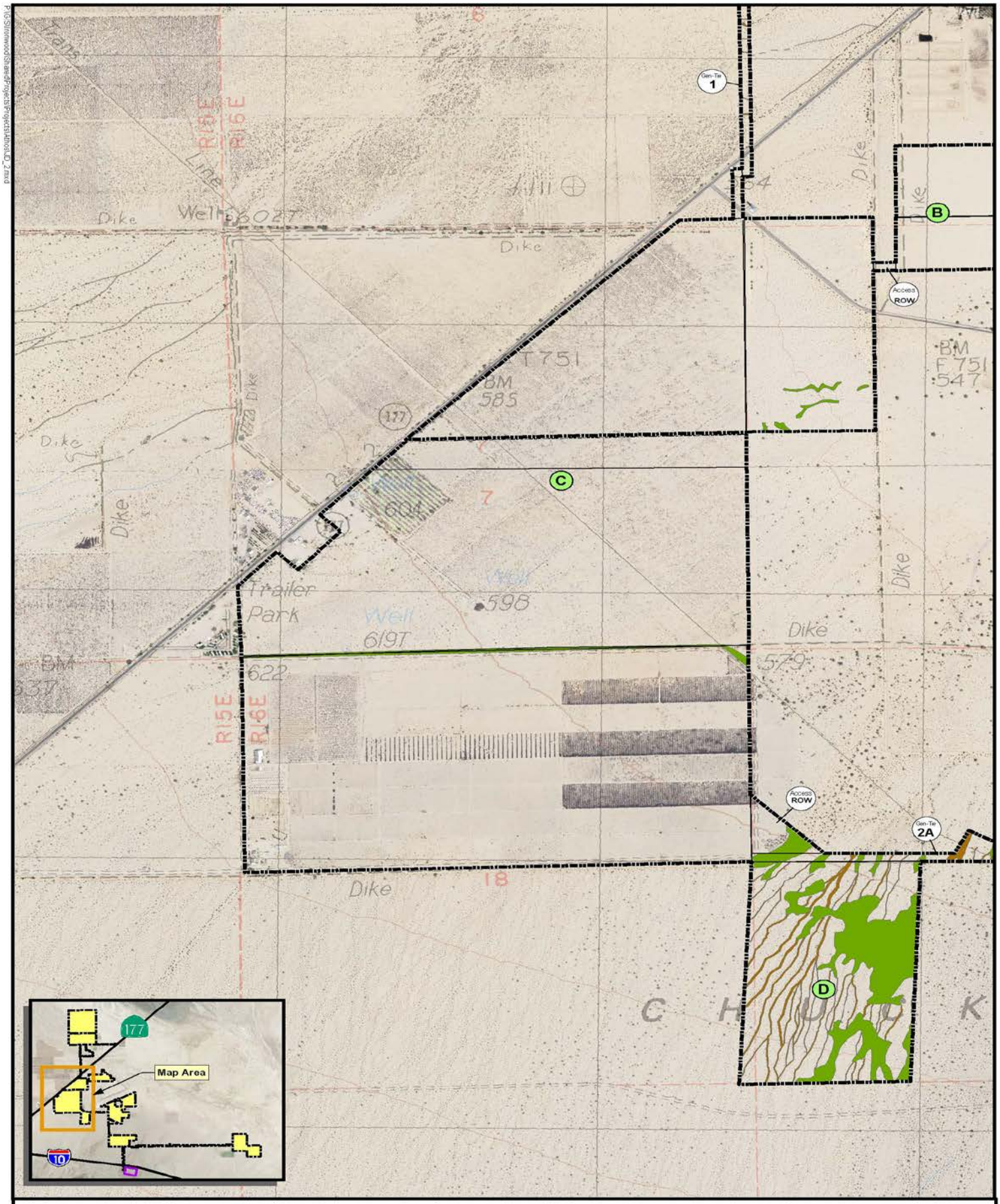


FIGURE 6b

Potential CDFW - Juridictional Areas

Athos Solar

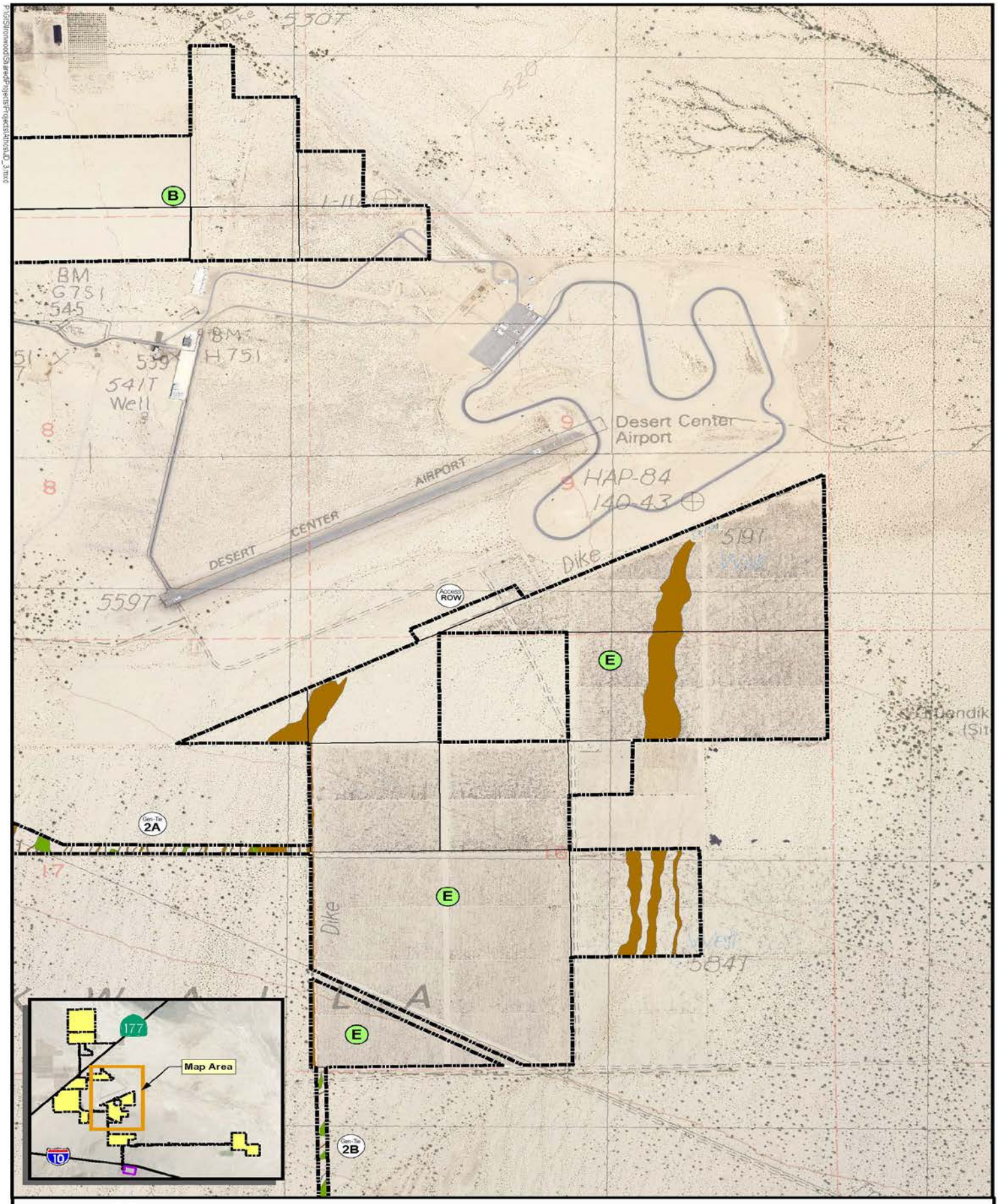
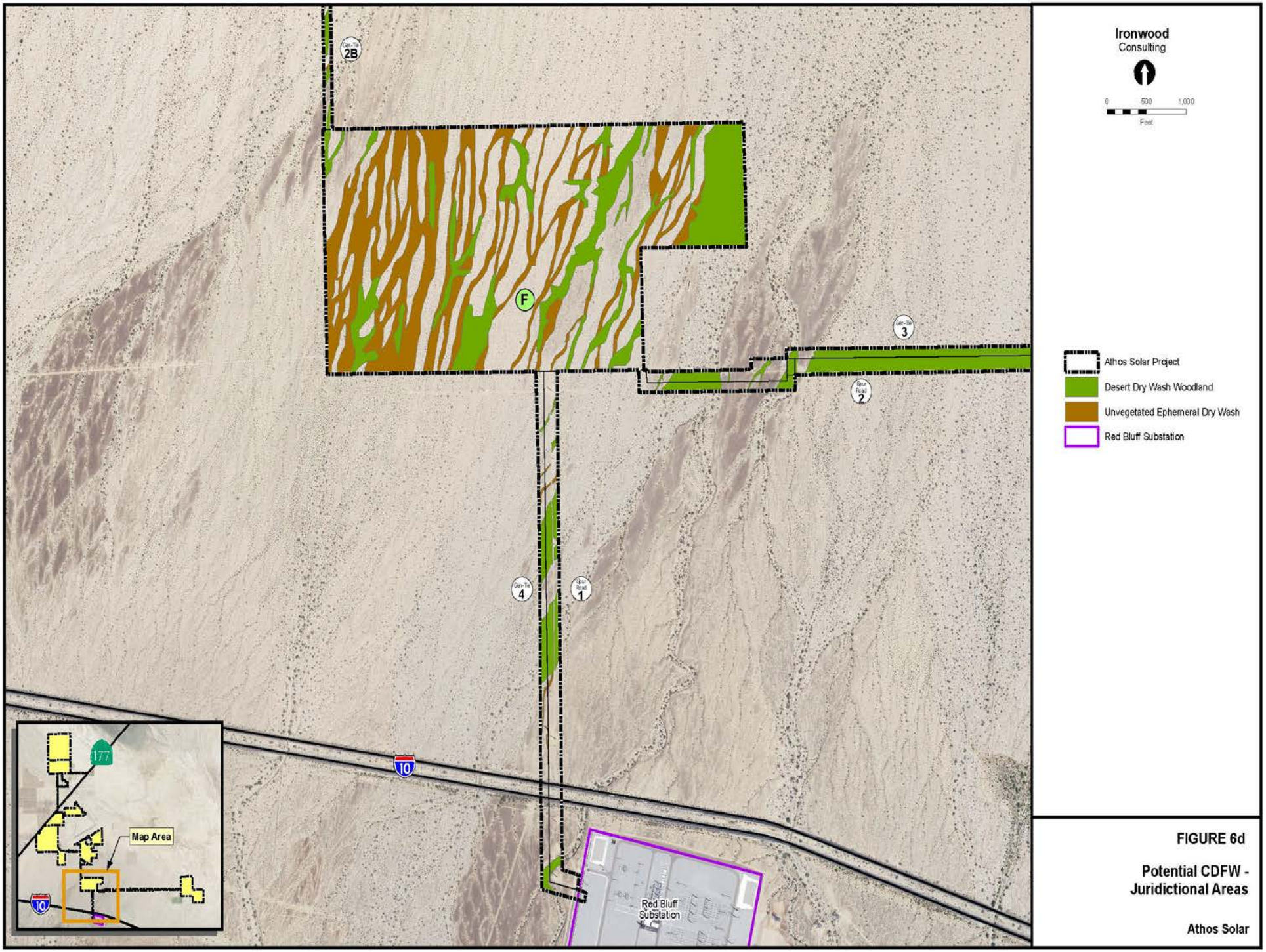
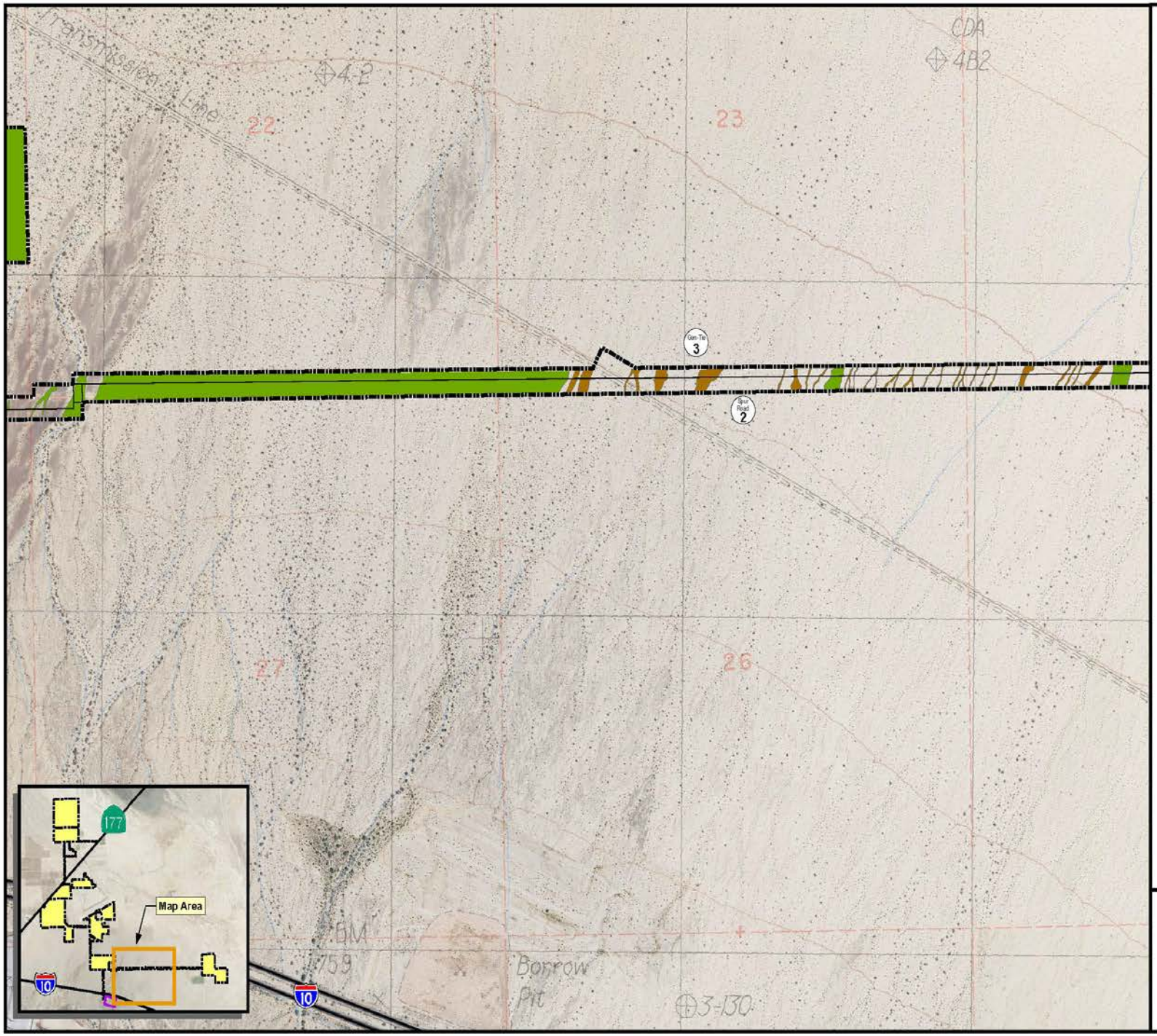


FIGURE 6c

Potential CDFW - Juridictional Areas

Athos Solar


Ironwood
Consulting
0
500
1,000
Feet
Gen-Tie 2B
F
Gen-Tie 3
Spur Road 2
Gen-Tie 4
Spur Road 1
177
10
Map Area
Red Bluff Substation
Athos Solar Project
Desert Dry Wash Woodland
Unvegetated Ephemeral Dry Wash
Red Bluff Substation
FIGURE 6d
Potential CDFW - Juridictional Areas
Athos Solar



Ironwood
Consulting

0 500 1,000
Feet

Athos Solar Project
Desert Dry Wash Woodland
Unvegetated Ephemeral Dry Wash

FIGURE 6e

Potential CDFW - Juridictional Areas

Athos Solar

FIGURE 6f

Potential CDFW - Juridictional 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 [1] (acres)		Gen-Tie BLM [1] (acres)		
	Native	Ag	Native	Ag	Native	Ag	
Streambed - Unvegetated Ephemeral Dry Wash	100.28	45.62	0.39	-	10.38	0.06	**156.67**
Streambed and Riparian - Desert Dry Wash Woodland	91.2	-	12.54	-	59.19	-	**162.93**
Agricultural Pond	-	2.3	-	-	-	-	**2.3**
subtotals	***191.48***	***47.92***	***12.93***	***0***	***69.57***	***0.06***	**321.9**

[1] 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.

7 REFERENCES

AECOM. 2009. Palen Solar Power Project Biological Jurisdictional Delineation Report for Regulated Waters of the United States and State. Riverside County, California. Submitted to Solar Millennium, LLC, Berkeley, CA and Chevron Energy Solutions, San Francisco, CA. 116 pp.

Bureau of Land Management (BLM). 2018. Final Supplemental EIS/EIR for the Palen Solar Photovoltaic Project. Palm Springs -South Coast Field Office. May 2018.

Brady, Roland H. III, Kris Vyverberg. 2013. Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants. California Energy Commission. Publication Number: CEC-500-2014-013.

Brady, Roland H. III, Kris Vyverberg. 2013. MESA – Mapping Episodic Stream Activity. California Energy Commission, Publication Number: CEC-500-2014-013, Appendix G.

BrightSource. 2013. PSEGS Summary of Survey for Jurisdictional State Waters Palen Solar Electric Generating System Docket No. (09-Afc-7c). TN71131. June 5, 2013.

California Department of Fish and Wildlife. 1994. A Field Guide to Lake and Streambed Alteration Agreements.

California Energy Commission (CEC), California Energy Commission, California Department of Fish and Wildlife, U.S. Bureau of Land Management, U.S. Fish and Wildlife Service. 2015. Desert Renewable Energy Conservation Plan (DRECP) and Environmental Impact Report/Environmental Impact Statement. www.drecp.org.

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

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

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

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

Natural Resources Conservation Service (NRCS), United States Department of Agriculture. 2018 U.S. General Soil Map (STATSGO2). Available online. Accessed [May 15, 2018)].

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

United States Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetlands Delineation Manual. Wetlands Research Program Technical Report Y-87-1. Department of the Army. Vicksburg, VA. U.S. Army Waterways Experiment Station. Hickman. J.C. [ed.].

United States Army Corps of Engineers (USACE). 2008a. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). J.S. Wakeley, R.W. Lichvar, and C.V. Noble [eds.]. ERDC/EL TR-06016. Vicksburg, MS. U.S. Army Engineer Research and Development Center.

United States Army Corps of Engineers (USACE). 2008b. Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the U.S. A Delineation Manual.

United States Army Corps of Engineers (USACE). 2014. National Wetland Plant List, version 3.2. http://wetland_plants.usace.army.mil/. Accessed April 2018.

United States Department of Agriculture (USDA). 2016. National Agriculture Imagery Program.

United States Environmental Protection Agency (USEPA). 2015. Clean Water Rule: Definition of waters of the United States; Final Rule, 124 Federal Register 80 (29 June 2015), pp. 37054 – 37127.

United States Environmental Protection Agency (USEPA) and U.S. Army Corps of Engineers (USACE). 2017. Notice of Intention to Review and Rescind or Revise the Clean Water Review.

United States Fish and Wildlife Service (USFWS). 2018. National Wetlands Inventory Interactive Wetlands Mapper. Available at http://www.nwi.fws.gov.

United States Geological Survey (USGS). 2018. National Hydrography Dataset. Watershed Boundary Dataset. http://nhd.usgs.gov/. Accessed August 2016.

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

Westwood Professional Services. January 2019. Preliminary Onsite Drainage Study: Athos Solar Project Riverside County, California. Submitted to Intersect Power, San Francisco, California. 139pp.

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.

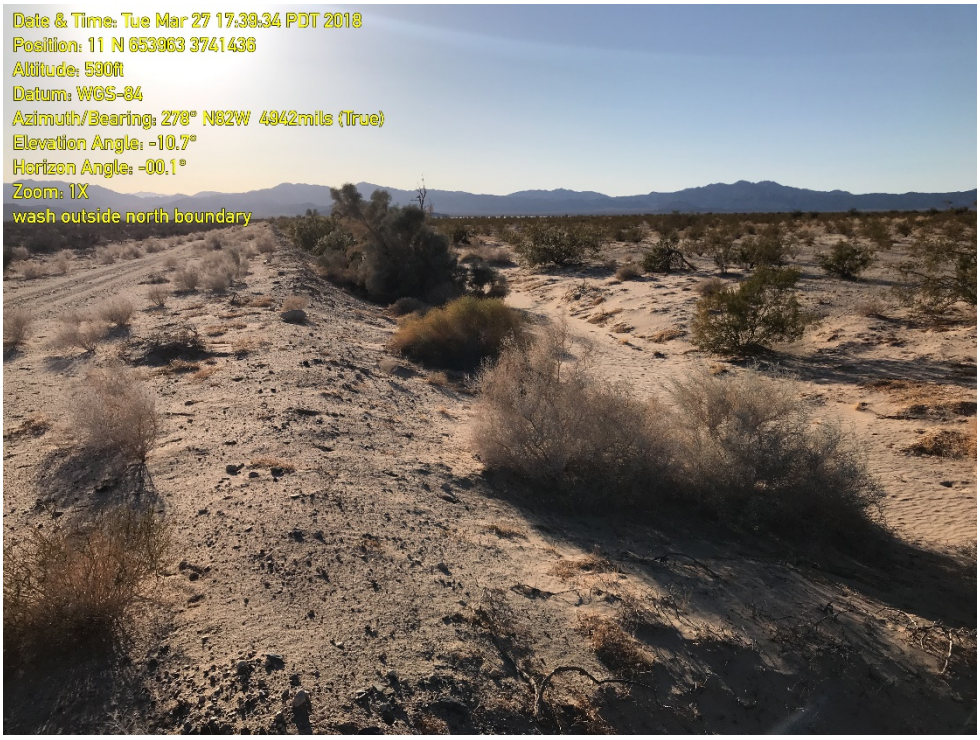


Photo 2 – Parcel Group A. Northern boundary facing west. Earthen berm intact. Distal extent of Pinto Wash diverted along the northern boundary.

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.

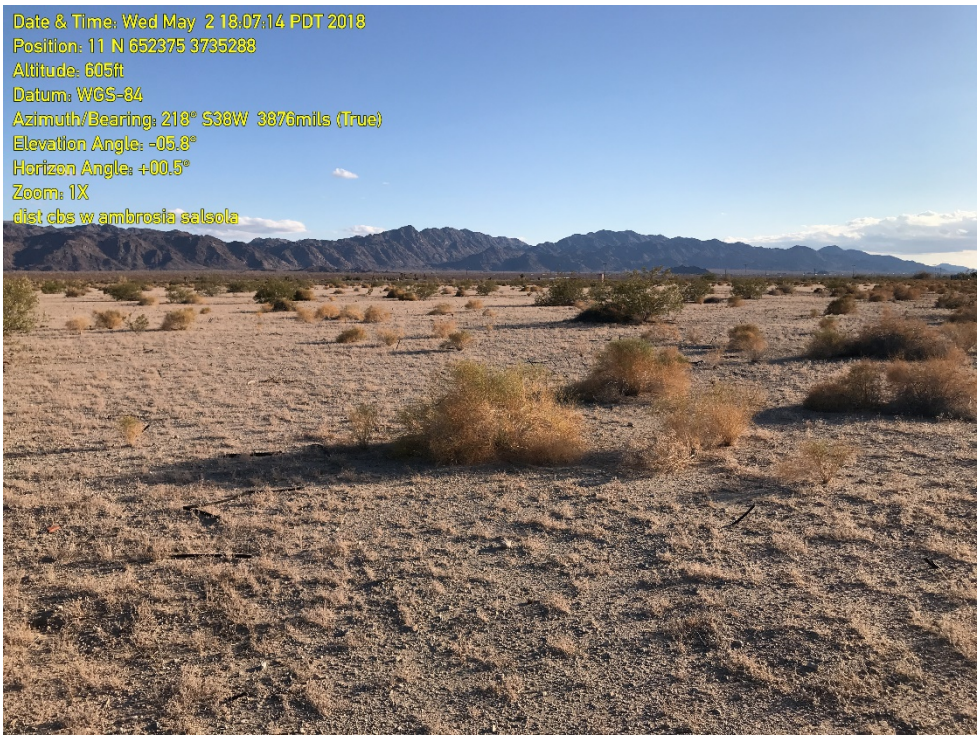


Photo 5 – Parcel Group B. Facing south. Lack of active watercourse within disturbed scrub.

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, CESPD-PDS-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.

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 http://www.usace.army.mil/cecw/pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- 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.

- 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.

B: PROFFERED PERMIT: You may accept or appeal the permit

- 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.

- 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.

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:

If you have questions regarding this decision and/or the appeal process you may contact:

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

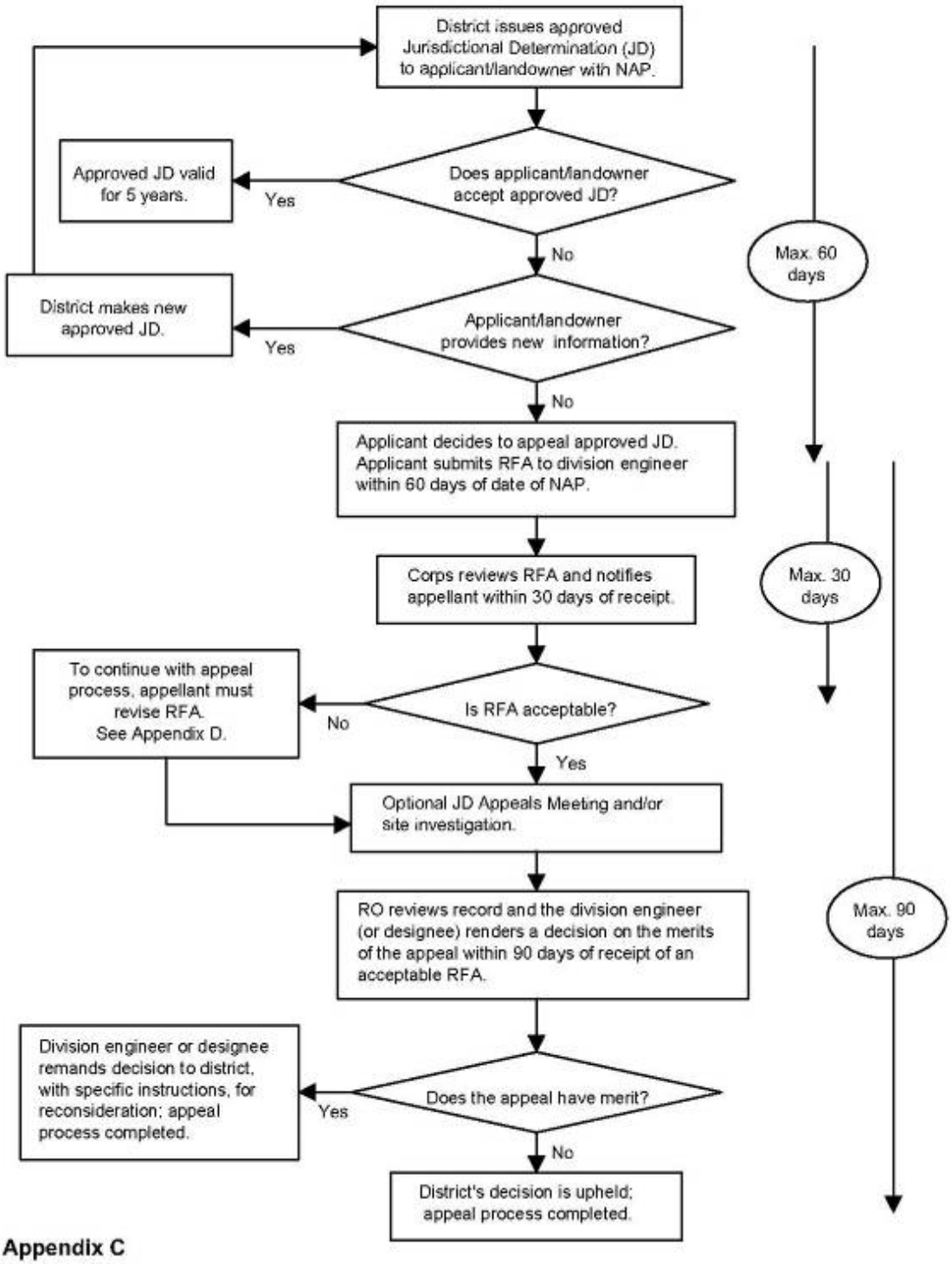
If you only have questions regarding the appeal process you may also contact: Thomas J. Cavanaugh

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

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.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

Administrative Appeal Process for Approved Jurisdictional Determinations



Appendix C

§ 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 superceded 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

Prepared for:

IP Athos, LLC
San Francisco, CA

Prepared by:

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

March 2019

Contents

Tables

Attachments

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 gen-tie 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 (*Psorothamnus emoryi*), 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 CNDDB 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 (*Psorothamnus spinosus*). The understory is a modified creosote scrub with big galleta grass (*Hilaria rigida*), brittlebush (*Encelia farinosa*), desert lavender (*Hyptis emoryii*), 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
Natural vegetation and habitat types				
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
subtotals	*395.3*	*19.5*	*141.5*	*556.5*
Recovering vegetation and habitat types				
Recovering creosote bush scrub	183	2.6	1.8	187.4
Recovering salt bush scrub	295.1	-	-	295.1
subtotals	*478.1*	*2.6*	*1.8*	*482.5*
Anthropogenic land use and cover types				
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
subtotals	*2,353.9*	*0.9*	*9.0*	*2,363.8*
Totals[1]	3,227.5	23.0	152.3	3,402.8

1 - 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 (CNDDB; 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 (CNDDB, 2018);
- Birds or bats included in the CDFW lists of Special Plants or Special Animals (CNDDB, 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
BIRDS				
Circus cyaneus 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
Aquila chrysaetos 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)
Pandion haliaetus 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
Buteo swainsonii 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
Buteo regalis 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 shrub-land; 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
Accipiter striatus 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
Accipiter cooperii 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
Falco columbaris 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
Falco mexicanus 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
Athene cunicularia hypugaea 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.
Falco peregrinus anatum 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
Asio flammeus 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
Asio otus 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
Micrathene whitneyi 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
Chaetura vauxi 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
Progne subis 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
Riparia riparia 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
Cypseloides niger 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
Colaptes chrysoides 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.
Melanerpes uropygialis 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
Lanius ludovicianus 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
Aphelocoma californica cana 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)
Aythya Americana 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
Charadrius montanus 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
Pelecanus erythrorhynchos 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
Chlidonias niger 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
Grus canadensis 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
Numenius americanus 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
Rallus obsoletus yumanensis 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
Eremophila alpestris actia 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
Coccyzus americanus occidentalis 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
Calypte costae 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
Toxostoma bendirei 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
Toxostoma crissale 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
Toxostoma lecontei 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
Empidonax traillii 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
Empidonax traillii extimus 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
Pyrocephalus rubinus 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
Polioptila melanura 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
Vireo bellii arizonae 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
Vireo bellii pusillus 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
Icteria virens 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
Xanthocephalus xanthocephalus 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
Pooecetes gramineus 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
Spinus lawrencei Lawrence's goldfinch	Highly erratic and localized in occur-rence. 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
Setophaga petechia sonorana 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
Vermivora luciae 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
MAMMALS				
Antrozous pallidus 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.
Corynorhinus (Plecotus) townsendii 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
Euderma maculatum 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
Eumops perotis 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
Lasiurus xanthinus 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
Macrotus californicus 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
Myotis occultus 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
Myotis velifer 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
Myotis yumanensis 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
Nyctinomops macrotis (Tadarida molossa) 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
Nyctinomops femorosaccus (Tadarida femorosaccus) 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 (CNDDB, 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 (CNDDB, 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 (CNDDB, 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 (CNDDB, 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 if 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 Electrocution 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 preconstruction 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 e 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 morality, 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 morality, 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 morality, 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 morality, 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 pace 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 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.

Literature Cited

American Ornithologists' Union. 1998. Check-list of the North American Birds, 7th ed. Prepared by Committee on Classification and Nomenclature. American Ornithologists' Union, Washington, DC.

APLIC (Avian Power Line Interaction Committee). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA. 207 pp.

Aspen (Aspen Environmental Group). 2012. Biological resources technical report: Desert Harvest Solar Project. Unpublished report prepared for enXco, San Ramon, California and submitted to BLM Renewable Energy Coordinating Office, Moreno Valley, California.

BLM (Bureau of Land Management). 2018. Special status animals in California, including BLM designated Sensitive Species. BLM California State Director's Office, Sacramento. http://www.blm.gov/ca/dir/pdfs/2010/im/CAIM2010-008ATT1.pdf.

_____. 2015. Desert Renewable Energy Conservation Plan Proposed Land Use Plan Amendment and Final Environmental Impact Statement; Section III.15, Mineral Resources and Section III.4, Biological Resources, October.

_____. 2011a. Notice of Intent to prepare an Environmental Impact Statement for the proposed enXco Desert Harvest Solar Farm Project, Riverside County, CA, and Possible Land Use Plan Amendment. Federal Register 76:57073-57074 (15 Sep).

_____. 2011b. Desert Sunlight Solar Farm Project: California Desert Conservation Area plan amendment and final environmental impact statement. BLM Palm Springs South Coast Field Office, Palm Springs, California.

_____. 2011c. Record of Decision – Desert Sunlight Solar Farm Project and Amendment to the California Desert Conservation Area Land Use Management Plan, Riverside County, California. Palm Springs South Coast Field Office Palm Springs, California. (August).

_____. 2009. Solar facility point count protocol. Unpublished field survey protocol distributed by BLM Desert District Office, Moreno Valley, California.

CBOC (California Burrowing Owl Consortium). 1993. Burrowing owl survey protocol and mitigation guidelines. Alviso, California. 13 pp.

CDFW (California Department of Fish and Wildlife). 2018. List of natural communities. Vegetation Classification and Mapping Program, CDFG, Sacramento. http://www.dfg.ca.gov/biogeodata/vegcamp/natural_communities.asp.

_____. 2018a. California Natural Diversity Database (CNDDB) July 2018 Special Animals List. Periodic publication. 51 pp.

_____. 2018b. A Status Review of Townsend's Big-Eared Bat (*Corynorhynus townsendii*) in California.

_____. 2012. Staff Report on Burrowing Owl Mitigation. March 7.

Dooling, R.J. and A.N. Popper. 2007. The effects of highway noise on birds. Report to the California. Department of Transportation, Division of Environmental Analysis, Sacramento, California. http://www.dot.ca.gov/hq/env/bio/files/caltrans_birds_10-7-2007b.pdf

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

Gannon, W.L. 2003. Bats (Vespertilionidae, Molossidae, Phyllostomidae). Pages 56-74 in Feldhamer, G.A., B.C. Thompson, and J.A. Chapman (eds.). Wild Mammals of North America: Biology, Management and Conservation, 2nd ed. Johns Hopkins University Press, Baltimore MD. 1216 pp.

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

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

Grinnell, J. and A.H. Miller. 1944. The Distribution of the Birds of California. Cooper Ornithological Club, Berkeley (reprint 1986 by Artemisia Press, Lee Vining, Calif.).

Hall, E.R. 1981. The Mammals of North America. John Wiley and Sons, New York.

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

Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. Unpublished report, Non-game Heritage Program, California Department of Fish and Game, Sacramento. 156 pp.

Ironwood Consulting, Inc. 2018. Biological resources technical report: Athos Renewable Energy Project. Prepared for Aspen Environmental Group.

_____. 2010 (20 Jul). Biological resources technical report: Desert Sunlight Solar Farm Project. Prepared for Desert Sunlight Holdings, LLC. 77 pp. Appendix H in Desert Sunlight Solar Farm Project: California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement. BLM Palm Springs – South Coast Field Office, Palm Springs, California.

Johnsgard, P.A. 1990. Hawks, Eagles and Falcons of North America. Smithsonian Institution Press, Washington, DC. 403 p.

Kochert, M.N., K. Steenhof, C.L. Mcintyre and E.H. Craig. 2002. Golden Eagle (*Aquila chrysaetos*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology. http://bna.birds.cornell.edu/bna/species/684doi:10.2173/bna.684

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

McCrary, M.D., R.L. McKernan, R.W. Schreiber, W.D. Wagner and T.C. Sciarrotta. 1986. Avian mortality at a solar energy power plant. Journal of Field Ornithology 57:135-141.

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

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

Pagel, J.E., D.M. Whittington, and G.T. Allen. 2010. Interim golden eagle technical guidance: inventory and monitoring protocols; and other recommendations in support of eagle management and permit issuance. Division of Migratory Bird Management, Arlington Virginia. 26pp.

Patten, M.A., G. McCaskie, and P. Unitt. 2003. Birds of the Salton Sea: Status, Biogeography, and Ecology. University of California Press, Berkeley. 363 pp.

Pierson, E.D. and W.E. Rainey. 1998. California leaf-nosed bat, *Macrotus californicus* Pallid bat, *Antrozous pallidus*, Townsend's big-eared bat, *Corynorhinus townsendii*. Western mastiff bat, *Eumops perotis*, pocketed free-tailed bat *Nyctinomops femorosaccus*, and big free-tailed bat *Nyctinomops macrotis*. Pages 27-41 and 66-76 in Bolster, B.C. (ed.) Terrestrial Mammal Species of Special Concern in California. Draft Final Report prepared by P.V. Brylski, P.W. Collins, E.D. Pierson, W.E. Rainey and T.E. Kucera. Report submitted to California Department of Fish and Game Wildlife Management Division, Nongame Bird and Mammal Conservation Program for Contract No. FG3146WM. http://www.dfg.ca.gov/wildlife/nongame/ssc/1998mssc.html

Rosenberg, K.V., R.D. Ohmart, W.C. Hunter, and B.W. Anderson. 1991. Birds of the Lower Colorado River Valley. University of Arizona Press, Tucson. 416 pp.

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evans. 2009. Manual of California Vegetation, 2nd ed. California Native Plant Society, Sacramento, California. 1300 pp.

Schuford, W.D and T. Gardali (eds.). 2008. California Bird Species of Special Concern. Studies of Western Birds, No. 1, Western Field Ornithologists, Camarillo, California and California Dept. of Fish and Game, Sacramento, California. 450 pp.

Sterling, J. 2008. Bendier's thrasher (*Toxostoma bendirei*). Pages 311-315 in W.D. Schuford and T. Gardali (eds.), California Bird Species of Special Concern. Studies of Western Birds, No. 1, Western Field Ornithologists, Camarillo, California and California Dept. of Fish and Game, Sacramento, California.

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

_____. 2010a (3 Aug). Considerations for avian and bat protection plans: U.S. Fish and Wildlife Service white paper. USFWS Director's Office, Washington, DC.

_____. 2010b (2 Sep). Region 8 interim guidelines for the development of a project-specific avian and bat protection plan for solar energy plants and related transmission facilities.

_____. 2009. Final environmental assessment: proposal to permit take as provided under the Bald and Golden Eagle Protection Act. Division of Migratory Bird Management, Arlington, Virginia. 199 pp.

_____. 2008. Birds of conservation concern 2008. Division of Migratory Bird Management, Arlington, Virginia. 85 pp.

_____. 2007 (5 Jun). Protection of eagles; definition of ''disturb.'' Federal Register 72:31132 -31140.

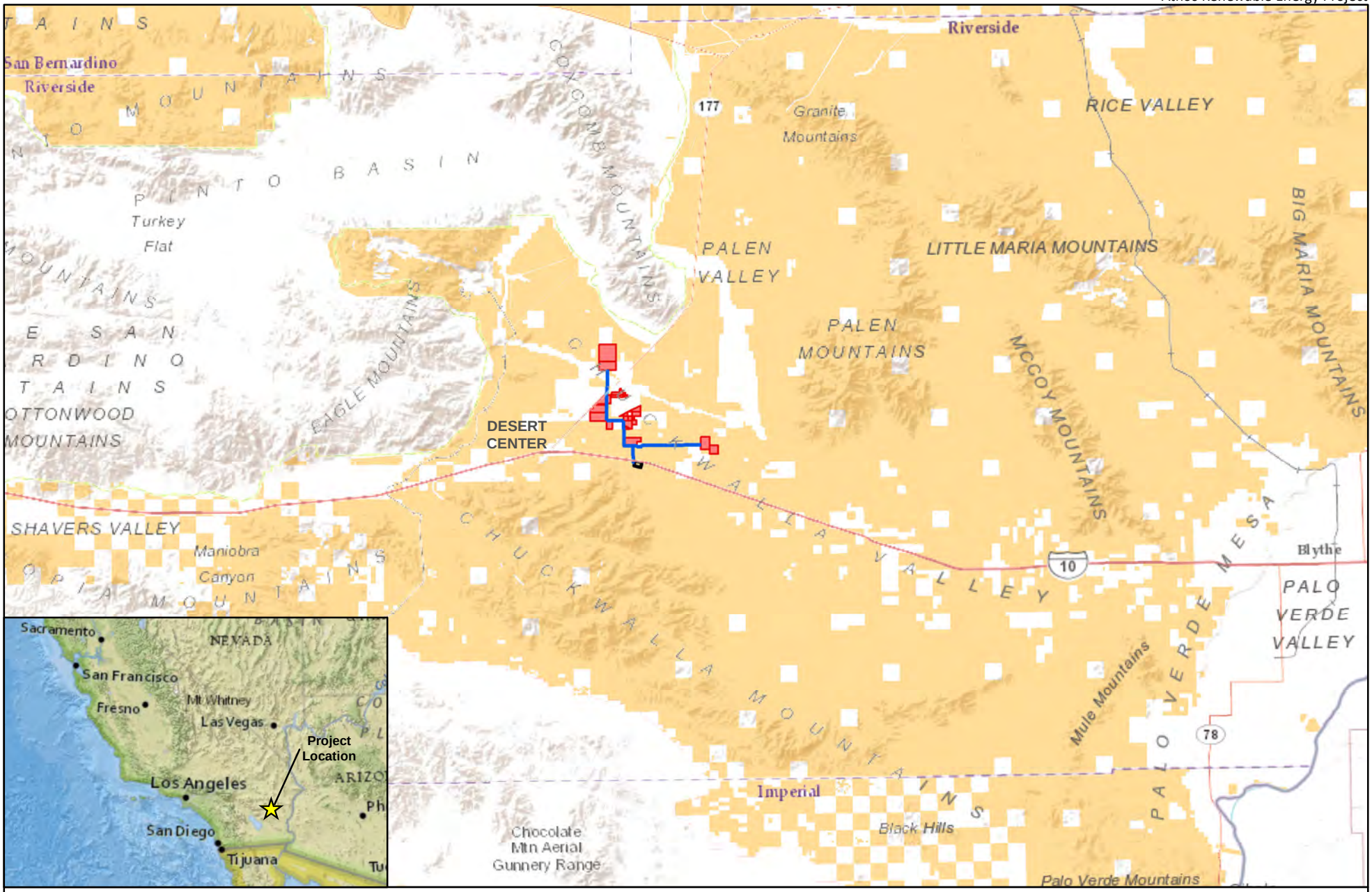
WBWG (Western Bat Working Group). 2016. Species Account and status designations. http://wbwg.org/western-bat-species/. Accessed August 2, 2016.

Wilkerson, R.L. and R.B. Siegel. 2011. Distribution and abundance of western burrowing owls (*Athene cunicularia hypugaea*) in southeastern California. Southwestern Naturalist 56:378-384.

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

Zeiner, D.C., W.F. Laudenslayer, K.E. Mayer, and M. White. 1990. California's Wildlife, Vol. II: Birds. California Department of Fish and Game, Sacramento.

Appendix A – Figures



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1 in = 8 miles

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Proposed Gen-Tie

Solar Facility

Red Bluff Substation

BLM Land

Figure 1

Project Vicinity

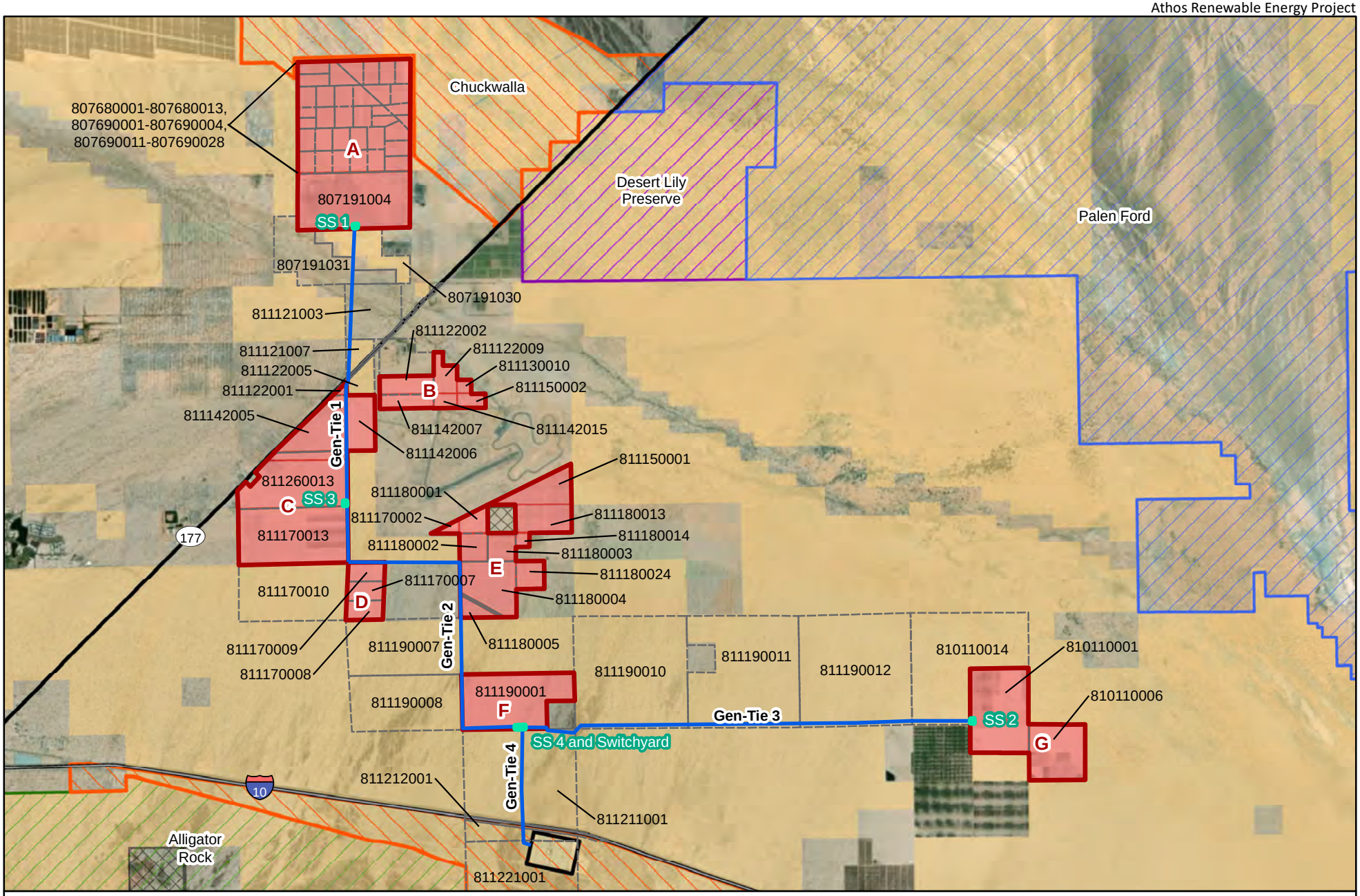
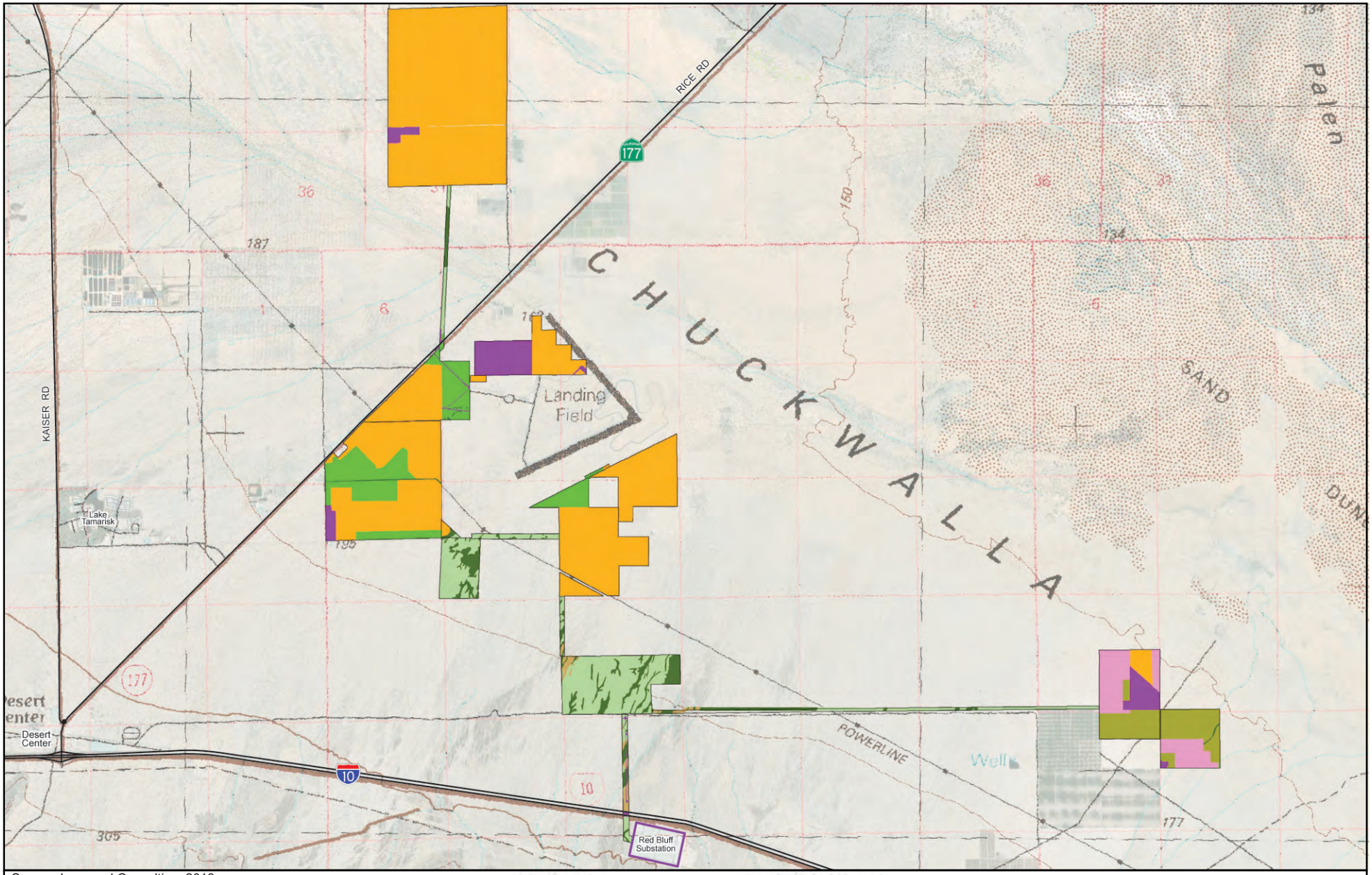


Figure 2

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

Athos Solar Project Construction Phase – Solar Facility Avian Nest Reporting Form

Discoverer's Name _____

Phone Number _____ **Date of Nest Discovery** _____

Nest Location (circle one) Tree Shrub Structure Ground

Nest Coordinates _____

Other Location Information _____

Surrounding Habitat (circle all that apply)

Agricultural Desert Scrub Riparian
Grassland Disturbed/Developed Bare

Nest Condition (circle one) Active Inactive, Intact
Inactive, Partial Deterioration Inactive, Heavy Deterioration

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 Birds/Construction (circle one)

No Risk Potential Risk – Not Imminent Potential Risk – Imminent

Additional Comments _____

_____

_____

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

Discoverer's Name _____

Phone Number _____ **Date of Nest Discovery** _____

Nest Location (circle one) Tree Shrub Structure Ground

Nest Coordinates or Closest Pole Location _____

Other Location Information _____

Surrounding Habitat (circle all that apply)

Agricultural	Desert Scrub	Riparian
Grassland	Disturbed/Developed	Bare

Nest Condition (circle one) Active Inactive, Intact
Inactive, Partial Deterioration Inactive, Heavy Deterioration

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 Birds/Construction (circle one)

No Risk Potential Risk – Not Imminent Potential Risk – Imminent

Additional Comments _____

_____

_____

Attachment 2 – Operational Avian Nest Reporting Form

Athos Solar Project Operational Phase – Solar Facility Avian Nest Reporting Form

Discoverer's Name _____

Phone Number _____ **Date of Nest Discovery** _____

Nest Location (circle one) Facility Equipment or Structure Tree Shrub Ground

Nest Coordinates _____

Other Location Information _____

Surrounding Habitat outside of Solar Array Fence (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, whitewash, 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 Solar Array and Equipment (circle one)

No Risk Potential Risk – Not Imminent Potential Risk – Imminent

Additional Comments _____

_____

_____

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[1] (*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):

_____

_____

_____

_____

PHOTOGRAPHS[2]:

Close Up: Photo 1 _____ Photo 2 _____

Landscape: Photo 3 _____ Photo 4 _____

PHOTO NOTES:

_____

_____

NOTIFICATION[3]:

DATE: _____ TIME: _____

NAME: _____ AGENCY/ASSOCIATION: _____

NOTES:

_____

_____

_____

_____

_____

[1] Permit required to handle bird carcasses.

[2] 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).

[3] Indicate who was notified of the event, date, time, etc.