2015 Desert Tortoise Survey and General Biological Resources Assessment

for the

Joshua Tree Solar Farm
(Airport Site)
San Bernardino County, CA

United States Geological Survey 7.5-minute Joshua Tree North and Sunfair quadrangle
Township 1 N, Range 7 E, Section 21

Assessor's Parcel Numbers: 0607-364-06, 0607-231-07, 0607-231-09, 0607-231-10, 0607-231-11, 0607-231-12, 0607-231-13, 0607-231-14, 0607-231-15, and 0607-231-18

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EXECUTIVE SUMMARY

Joshua Tree Solar Farm, LLC (Applicant) is proposing to construct, own, and operate a 20 megawatt (MW) solar photovoltaic (PV) generating facility located on approximately 115-acres, referred to as the Joshua Tree Solar Farm (Project). The Project would be on private land in unincorporated San Bernardino County, California, located approximately 3.5 miles east of the town of Joshua Tree and one mile north of Twentynine Palms Highway (Hwy 62). The power produced by the Project would be transmitted to the local power grid via a 1-mile, 33-kilovolt (kV) generation-tie line (gen-tie) overbuild of an existing line connecting to Southern California Edison's (SCE's) existing Pinto line located south of the Project.

Tetra Tech, Inc. (Tetra Tech) conducted comprehensive field surveys for biological resources in Spring 2012 and Spring 2015 to determine the potential presence or absence of special-status species and their habitat within and on lands surrounding the proposed Project. Surveys were also conducted on additional surrounding areas in Spring 2013. Focused surveys were conducted for these species and concurrently, a general biological resource assessment was completed. This report includes the results of the Spring 2012 and 2015 surveys and replaces the Spring 2012 *Desert Tortoise Survey and General Biological Resources Assessment* (Tetra Tech and Karl 2012). This report also satisfies the County of San Bernardino *Report Protocol for Biological Assessment Reports.*

Surveyors did not find any federally or state-threatened, endangered, or candidate plant species during surveys. However, botanists did observe one California Native Plant Society ranked plant: Utah vine milkweed (*Funastrum utahense,* California Rare Plant Rank 4). Surveyors observed and tallied four species protected by the California Desert Native Plants Act (CDNPA) and San Bernardino County code: Joshua tree (*Yucca brevifolia*), beavertail cactus (*Opuntia basilaris*), buckhorn cholla (*Cylindropuntia acanthocarpa*), and silver cholla (*Cylindropuntia echinocarpa*). One California Natural Diversity Database vegetation community occurs within the survey area that is globally and state-ranked as a community of special concern (G or S rank 1-3): Big Galleta-Creosote Bush (*Pleuraphis rigida-Larrea tridentata*) Shrub Steppe Alliance. However, it is not considered a high quality representation of the community, due to intensive disturbance; nor is it rare in the area.

No live tortoises or their sign were observed during Spring 2012 or Spring 2015 surveys, indicating that tortoises are not currently present on the Project and have not used the survey area in any biologically significant way in recent years. The majority of the survey area is highly disturbed due to the development and operation of the Roy Williams Airport and is poor or non-desert tortoise habitat. However, tortoises are known to occur in the valley within which the Project lies and adjacent parcels contain more suitable habitat.

Other non-listed special-status species observed include prairie falcon (*Falco mexicanus*) and desert kit fox (*Vulpes macrotis*; natal dens [inactive in 2015] and scat only).

There is the potential for Project-related impacts on: four native plant species protected by the CDNPA and San Bernardino County code, Utah vine milkweed, desert tortoise, nesting birds protected under the Migratory Bird Treaty Act (MBTA), and desert kit fox. (Burrowing owls are covered under a separate report.) If avoidance is not feasible, the CDNPA plants will be salvaged. Mitigation measures to avoid and minimize potential Project impacts include but are

not limited to: desert tortoise exclusion fencing on the site perimeter, limiting construction disturbance, salvaging topsoil, having biological monitors present during fence construction and in unfenced areas, enforcing the designated speed limit, and implementing a worker environmental awareness program.

TABLE OF CONTENTS

TABLE OF CONTENTS
(continued)

LIST OF TABLES

LIST OF FIGURES

TABLE OF CONTENTS
(continued)

APPENDICES

1.0 INTRODUCTION

Joshua Tree Solar Farm, LLC (the Applicant) is proposing to construct, own, and operate a 20 megawatt (MW) solar photovoltaic (PV) generating facility located on approximately 115-acres, referred to as the Joshua Tree Solar Farm (Project). The Project would be on private land in unincorporated San Bernardino County, California, located approximately 3.5 miles east of the town of Joshua Tree and one mile north of Twentynine Palms Highway (Hwy 62) (Figure 1, Figure 2). The power produced by the Project would be transmitted to the local power grid via a 1-mile, 33-kilovolt (kV) generation-tie line (gen-tie) overbuild of an existing line connecting to Southern California Edison's (SCE's) existing Pinto line located south of the Project.

The former owner of the Project initially contracted Tetra Tech, Inc. (Tetra Tech) to conduct comprehensive field surveys for biological resources in Spring 2012 to determine the potential presence or absence of special-status species and their habitat within the proposed Project. Focused surveys were subsequently conducted for these species and, concurrently, a general biological resource assessment was completed (Tetra Tech and Karl 2012). Surveys were conducted on the Project as well as on additional lands around the Project that were in an earlier Project configuration. Additional surveys on 40 acres adjacent to the Project were conducted in Spring 2013. After a change in Project ownership, the Applicant contracted Tetra Tech to re-survey the Project for biological resources to obtain current data on the presence of special-status species, particularly any state or federally listed species, and evaluate the current conditions. This report includes the results of both Spring 2012 and Spring 2015 surveys and replaces the Spring 2012 *Desert Tortoise Survey and General Biological Resources Assessment* (Tetra Tech and Karl 2012). This report satisfies the County of San Bernardino *Report Protocol for Biological Assessment Reports.* It also includes information from the additional surveys surrounding the Project, to provide a more thorough examination of the impacts to special-status species.

1.1 Project Description

The Project will be designed to consist of 20 one-MW alternating current (AC) array blocks. Each array block will be laid in a grid pattern across the site and will use solar PV modules that will be installed in uniform rows. The Project will convert energy captured from the sun to direct current (DC) electricity and then to AC electricity. Energy is expected to be generated from this Project during daylight hours every day of the year for over 30 years. The generated power will be delivered to the electrical grid via a 33 kV interconnection to the SCE distribution system.

For the purposes of this document, the following terminology applies:

- "Project" is the Joshua Tree Solar Farm and includes the solar plant site and gen-tie line.
- "Project site" is the 115- acre area currently under consideration for development. It includes the solar plant site (modules, power conversion station, and switchgear). The area disturbed for development will be approximately 96 acres, but remains flexible to accommodate grading requirements and solar technology. The solar plant will be built within the Project site.
- "Survey area" is the area that was surveyed in Spring 2012 and 2015 (Figure 3). It is equivalent to the Project site plus a 60-foot wide corridor for the gen-tie (7.4 acres).

Modules

Solar photovoltaic modules will be the main component of the solar system. The modules will be installed in a series of strings to gain maximum exposure to the sun. Solar modules consist of a flat plate of PV cells which are designed to convert the photons that hit the surface into DC electricity. The chosen PV technology will be either crystalline silicon or thin film (copper indium gallium selenide or cadmium telluride).

Power Inverter Station

The inverter stations convert the DC electrical energy from the PV arrays into AC. These stations perform three critical functions for the plant: (1) collect DC power in a central location, (2) convert the DC power into AC power, and, (3) convert low-voltage AC power to medium-voltage AC power at the appropriate grid potential. Each inverter station consists of DC collection equipment (junction boxes and overcurrent protective devices, etc.), utility-scale inverters, and a low-to-medium-voltage transformer. The output power from the inverter stations is then fed to the AC collection system, an underground network of medium-voltage conductors and collection switchgear, discussed next. The typical height of an inverter station is approximately nine feet, with a maximum possible height of approximately 10.5 feet, and no higher than 12 feet.

AC Collection System

The AC collection system is 33 kV and all related equipment will be 35 kV class. The collection system is a network of either buried or aboveground cables appropriately sized to minimize energy loss. The system will effectively collect energy from the solar panels and transfer energy to the main collection switchgear, which will allow the energy to be transmitted to the electric grid. The Project's current design is an underground collection system that will terminate at the switchgear, which will be separately enclosed with a security fence and lockable access gates.

Distribution Line Improvements

The distribution line improvements will be along the section of Sunfair Road between Twenty Nine Palms Hwy and Two Mile Road. SCE will be replacing approximately one mile of existing distribution line poles with new poles that are a maximum of 65 feet high. The improvements will be constructed, owned, and operated by SCE. It is anticipated that the work areas needed for replacement of this line and the stringing of the new overhead electrical cable will be entirely included within the existing SCE easement.

Access Roads and Fencing

Fencing will be installed around the perimeter of the Project site. The fencing is currently planned to be 8 feet tall and will include desert tortoise exclusion fencing. The security fence will be built in accordance with the County standards. Access roads will be constructed along the interior perimeter of the site and between the MW block solar arrays. Primary access to the Project will be via a gate on Sunfair Road.

Lighting

Safety lighting will be installed at the entry gates and the switchgear location. A limited amount of lighting will be installed and will be designed to prevent spillover into neighboring properties. There will be operable lighting at each conversion station, but these units will be used as needed and will not typically operate at night. The entry will have fixtures that provide minimal lighting and will have additional on-demand (e.g., timer) lighting as needed or required.

Grading

The previous airport development significantly reduces the need for site leveling, cut and fill, and other site modifications. No site grading is planned for the majority of the array area; however, limited grading may be required for erosion or stormwater control to comply with permit conditions.

1.2 Operation

During operations, the Project facility will be primarily managed, monitored, and controlled remotely. Therefore it is assumed that the Project will have one to two employees one to two times per month on site for system inspections and two to six employees on site one to two times per month for troubleshooting and maintenance requirements.

Brief weekly inspections are planned. Ongoing maintenance is expected to occur on a monthly basis and will be scheduled to avoid peak power demand periods, and unplanned maintenance will typically be responded to as needed depending on the event. Preventative maintenance kits and certain critical spares will be stored on-site and all other components will be readily available from a remote warehouse facility.

Periodic array module washings will be scheduled and completed depending on the soil conditions that exist at the site, and could be up to four times per year. It is expected that less than one acre foot of water will be used per washing. All treatment equipment will be mobile with no permanent infrastructure required. Due to high evaporation rates and rapid onsite ground percolation, it is expected that no water from the washings will run offsite. Module cleaning will use conditioned water obtained from the closest source of adequate quality water.

1.3 Project Schedule

Project construction work is expected to last for approximately six months and will consist of site preparation, grading, PV system installation, gen-tie construction, testing, and site cleanup. Construction is planned to begin in Spring 2016; commercial operation date is targeted for late 2016.

2.0 PROJECT SETTING

2.1 Project Location

The survey area is located on private land (Table 1) within the Mojave Desert, approximately 2.5 miles north of the Little San Bernardino Mountains (Figure 1, Figure 2). The site is within the Joshua Tree North and Sunfair United States Geological Survey 7.5-minute (1:24,000) quadrangles. Joshua Tree National Park is approximately 2.5 miles south of the site and the

Twentynine Palms Marine Corps Base is approximately 6.5 miles north. The site is currently a small private airport, the Hi Desert/Roy Williams Airport. It is bordered by dirt roads to the north, west, and south, and paved Sunfair Road to the east. The major east-west freight and travel route for the area, Hwy 62, is one mile south. A cement factory (Hi-Grade Material Company) borders the survey area to the south. The parcels immediately surrounding the site are vacant; however, there are residences north and northeast of the survey area, as well as sparsely scattered throughout the valley.

Table 1. Project Site Assessor's Parcel Numbers

APN	Acres
0607-364-06	20.00
0607-231-07	19.24
0607-231-09	20.00
0607-231-10	19.24
0607-231-11	10.00
0607-231-12	10.00
0607-231-13	2.50
0607-231-14	2.50
0607-231-15	9.39
0607-231-18	2.14
Total	**115.01**

2.2 Environmental Setting

The site conditions and vegetation within the survey area were essentially identical in 2012 and 2015. The Project lies on a gently sloping lower bajada at an elevation of approximately 2,440 feet above mean sea level. The major native plant community (as described by Sawyer, Keeler-Wolf, and Evens [2009]) that represents the site is a Big Galleta Grass - Creosote Bush (*Pleuraphis rigida - Larrea tridentata*) Shrub Steppe Alliance (Figure 4, Table 2, Appendix A). It is dominated by big galleta grass, California croton (*Croton californicus*), and creosote bush. Silver cholla (*Cylindropuntia echinocarpa*) and beavertail cactus (*Opuntia basilaris*) are relatively common throughout. Much of the survey area has been cleared or subjected to intensive previous surface disturbance for airport operation and, where runways are absent, has regrown with croton and perennial bunch grasses big galleta grass and Indian rice grass (*Stipa* [= *Achnatherum*] *hymenoides*). In 2015, there appeared to be more growth of weedy species (annual burrweed [*Ambrosia acanthicarpa*]) through the cracks in the asphalt on part of the runway system. There are six existing structures and a swimming pool on site surrounded by landscaped trees (mostly *Tamarix* sp.). There are no obvious natural drainages on the Project site and drainage is mostly percolation with some flow to the northeast.

The cement factory was active in 2012 and appears to still be active, although possibly diminished. In 2012, effluent flowed from the factory to the runway from the eastern side of the cement factory; in 2015 this no longer occurred. There was evidence of soil erosion from water flow, as well as vegetation that grows in response to a consistent water source, specifically broom baccharis (*Baccharis sarothroides*) and tamarisk (*Tamarix ramosissima*); Mexican palo verde (*Parkinsonia aculeata*), a non-native horticultural waif, was also present. In 2015, the riparian obligate, broom baccharis, was dead.

Soils are soft, slightly loamy stabilized sands with less than 20% cover of fine gravel in the substrate. Loose-sandy areas lie adjacent to disturbed areas, such as roads and runways. East of the cement plant, a thin layer of fine, silty material covers the soil surface, apparently deposited by wind and/or runoff from the cement factory.

The area surveyed for the gen-tie crosses several vegetation and cover types not found on the Project site (Table 2, Figure 4). At its north end, the gen-tie crosses aeolian sand sheets adjacent to both banks of a major wash. The wash extends east-west across the gen-tie and Sunfair Road. The wash is generally fairly poorly vegetated, with plant cover increasing on the benches and upslope; soils are sandy, with silty surface layers. It would be loosely considered a poor quality Big Galleta Grass – Creosote Bush Shrub Steppe Alliance. Farther south, the gen-tie crosses Big Galleta Shrub Steppe Alliance dominated by big galleta grass, which transitions to Big Galleta-Creosote Bush Shrub Steppe Alliance as it nears Hwy 62. The area surveyed for the gen-tie was generally degraded due to its proximity to Sunfair Road.

Table 2. Vegetation and Land Cover Acreage

Vegetation and Other Cover	Acres
Project Site	
Previously cleared, regrowth of big galleta grass, Indian rice grass, and croton	31
Moderately intact Big Galleta Grass-Creosote Bush Scrub Steppe Alliance	19
Bladed (barren), developed, or recently bladed (early regrowth)	40
Loose – sandy soils due to adjacent disturbance	4
Big Galleta – Creosote Bush Shrub Steppe Alliance disturbed by adjacent industry	21
Project Site Total	**115**
Gen-tie Line Corridor	
Aeolian Sand Sheets	0.4
Big Galleta – Creosote Bush Shrub Steppe Alliance	5
Big Galleta Shrub Steppe Alliance	1
Wash (includes Main Wash Channel and Bench of Channel)	1
Gen-tie Corridor Total	**7.4**

3.0 REGULATORY SETTING

3.1 Federal Laws and Regulations

Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 United States Code [USC] 1531 *et seq.*; 50 Code of Federal Regulations [CFR] 17.1 *et seq.*) designates and provides for protection of threatened and endangered plant and animal species and their critical habitat. Section 9 of the ESA prohibits "take" of threatened or endangered species. Under the ESA, a lead agency or project proponent must formally consult with FWS regarding a proposed action that may adversely affect listed species. After consultation, the FWS will determine whether to issue an incidental take statement. If a permit on private lands is required under the ESA, it would be conducted following Section 10 of the ESA to obtain an incidental take permit.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, prohibits "take" of migratory birds (16 USC 703-712). Under the MBTA it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product. All birds that are native to the United States and belong to a family, group or species covered by at least one of the four migratory bird conventions to which the United States is party are covered under the MBTA. There is currently no permitting framework (i.e., incidental take permits) that allow liability protection for Project developers. The administering agency is FWS.

FWS's Division of Migratory Bird Management also maintains a list of Birds of Conservation Concern, which identifies species, subspecies, and populations of migratory and non-migratory birds that may be in need of additional conservation actions. This action was an outcome of a 1988 amendment to the Fish and Wildlife Conservation Act, which mandates the FWS to identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the ESA.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) prohibits the take of any bald or golden eagle, alive or dead, including any part, nest, or egg. "Take" is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" a bald or golden eagle. "Disturb" means to agitate or bother an eagle to a degree that causes, or is likely to cause (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. The administering agency is FWS.

Clean Water Act

Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344) regulates all discharge of dredged and fill material into waters of the United States, including wetlands. The United States Army Corps of Engineers (USACE) and United States Environmental Protection Agency (USEPA) share responsibility for administering and enforcing Section 404 including jurisdictional delineations, permitting decisions, and development of policy and guidance. Waters of the United States and wetlands are those defined by the USACE/USEPA in CWA regulations (33CFR 328.3). Field surveys to delineate jurisdictional waters were conducted in Spring 2012 and are addressed under a separate technical report (Tetra Tech 2012).

3.2 State Laws and Regulations

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires review of any project that is undertaken, funded, or permitted by a state or local governmental agency. Typically, the state or local agency with overall project permitting authority takes the lead for CEQA compliance. The lead agency has the discretion to consider any non-listed species a *de facto* listed species by the statement that "a species not included in any listing in subsection (c) shall nevertheless be considered to be rare or endangered if the species can be shown to meet the criteria in subsection (b)" (CEQA Guidelines §15380, Subsection d). If significant project effects were

identified, the lead agency would have the option of requiring mitigation for those effects through changes in the project or deciding that overriding considerations make mitigation infeasible (CEQA Sec. 21002). San Bernardino County is the lead state agency for CEQA review for the Joshua Tree Solar Project.

California Endangered Species Act

The California Endangered Species Act of 1984 (CESA, California Department of Fish and Wildlife [CDFW] Code Sections 2050 *et seq.*) protects California's rare, threatened, and endangered species. CDFG Code Sections 1900 *et seq.* designate rare, threatened and endangered plants under the Native Plant Protection Act of 1977. If a federal biological opinion is issued for a project, the CDFW can choose to find it consistent with state law (a 2080.1 consistency determination), or choose to require a separate state incidental take permit (ITP or 2081 permit) if species listed by CESA could be harmed or killed during construction or operation of the project. CDFW is the administering agency.

Title 14, California Code of Regulations, Sections 670.2 and 670.5

Under this code, animals are designated as threatened or endangered in California. California Species of Special Concern (SSC) is a category conferred by CDFW on those species that may have declining population levels, limited ranges or continued threats that may ultimately result in their CESA listing as protected species. These species do not have any special legal status, but are often considered during the CEQA process. The SSC designation is used by CDFW as a management tool for consideration when land use decisions are made.

Native Plant Protection Act; CDFG Code Sections 1900 *et seq*.

The Native Plant Protection Act (NPPA) includes measures to preserve, protect, and enhance rare and endangered native plant species. Definitions for "rare and endangered" are different from those contained in CESA, although CESA-listed threatened and endangered species are included in the list of species protected under the NPPA.

CDFG Code Sections 3503 and 3503.5

These codes state that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, including birds of prey, or take, possess, or destroy birds of prey, except as otherwise provided by this code or any regulation made pursuant thereto.

CDFG Code Sections 3511, 4700, 5050, and 5515

These state laws classify and prohibit the take of "fully protected" bird, mammal, amphibian/reptile, and fish species in California.

CDFG Code Section 3513

This code prohibits any take or possession of birds that are designated by the MBTA as migratory non-game birds, except as allowed by federal rules and regulations pursuant to the MBTA.

CDFG Code Section 4150

This state law makes it unlawful to take or possess any non-game mammal or parts thereof except as provided in the CDFG Code or in accordance with regulations adopted by the commission. However, Title 14 Section 460 prohibits the taking of desert kit foxes.

California Desert Native Plants Act; California Food and Agriculture Code §§ 80001-80006

The California Desert Native Plants Act (CDNPA) allows the harvest of certain species of non-listed native plants under permits issued by the county Agricultural Commissioner or Sheriff. The purpose of the CDNPA is to prevent the unlawful harvesting of native desert trees and cacti, either for wood, landscaping, or other purposes. Regulated species include: trees, cacti, ocotillo (*Fouquieria splendens*), yucca, and fan palms (*Washingtonia filifera*). Where feasible and practicable, individual plants can be salvaged and used for the project's revegetation program or salvaged by an approved nursery, landscaper, or other group to indirectly reduce unlawful harvesting elsewhere. Species in the Joshua Tree Solar Project vicinity that are subject to permitting include Joshua tree (*Yucca brevifolia*) and several species of cacti (silver cholla, buckhorn cholla [*Cylindropuntia acanthocarpa*], pencil cholla [*C. ramossissima*], and beavertail cactus [*Opuntia basilaris*]).

CDFW Streambed Alteration Agreement; CDFG Code Section 1600-1616

Waters of the state of California are subject to the jurisdiction of the CDFW. The CDFW monitors streambed alteration to conserve, protect, and manage California's fish, wildlife, and native plant resources. CDFG Section 1602 requires any person, state or local governmental agency, or public utility to notify the CDFW before beginning an activity that will substantially divert, obstruct, or change the natural flow of the bed, channel, or bank (including associated riparian vegetation) of a river, stream, or lake; or use material from a streambed prior to commencement of the activity. If CDFW determines that the action could have an adverse effect on existing fish and wildlife resources, a Lake or Streambed Alteration Agreement is required. Jurisdictional waters were surveyed separately and are addressed under a separate report (Tetra Tech 2014).

3.3 County Regulations

San Bernardino County Development Code; Title 8, Chapter 88.01 *Plant Protection and Management*

This County code augments and implements provisions of the California Desert Native Plants Act. The County manages the removal or relocation of native plant resources in unincorporated areas of the County. Species protected under County code are smoke tree (*Psorothamnus spinosus*), all mesquite (*Prosopis*) species, all species in the Agavaceae family, creosote rings 10 feet or larger in diameter, Joshua trees, ironwood (*Olneya tesota*), and all palo verde (*Cercidium* or *Parkinsonia*) species. No plants that are protected under the Code may be removed without a Tree or Plant Removal Permit.

4.0 SURVEY METHODS

4.1 Literature Review

Several species known to occur on or in the vicinity of the Project are accorded "special-status" by federal and state agencies because of their recognized rarity or potential vulnerability to extinction. These species typically have a limited geographic range and/or limited habitat and are referred to collectively as "special-status" species. Prior to Spring 2012 and 2015 field surveys, a target list of special-status species that might be affected by the Project was developed (Table 3) based on available literature and databases (e.g., California Native Plant Society [CNPS], California Natural Diversity Data Base [CNDDB, Appendix B]), and consultation with local experts. Nelson's bighorn sheep (*Ovis canadensis nelsoni)* and burro deer (*Odocoileus hemionus eremicus*) (both managed game species), burros (protected by the Wild, Free-Roaming Horse and Burro Act), and desert kit fox (*Vulpes macrotis*), a protected furbearer (CDFG Code 4000), were also included in the target list. This list was re-evaluated prior to surveys in 2015 to include changes in rankings and species status.

4.2 Field Survey Methods

The surveys in 2015 included a subset of the area surveyed in 2012: the 115-acre Project site and the gen-tie. Dr. Alice Karl, Tim Thomas, and Glenn Rink conducted surveys on March 27 (first plant survey for early blooming species), April 1-2 (desert tortoise and other wildlife), and April 10 and 11 (plants), 2015. All special-status wildlife species in Table 3 were sought concurrently with desert tortoise surveys. Focused burrowing owls (BUOW) surveys were conducted in according to CDFW guidance (CDFG 2012), with clarifications approved by CDFW. The methods and results of the BUOW surveys are reported in a separate report. Survey methods were reviewed and approved by FWS and CDFW in both 2012 and 2015 prior to commencing field work. Detailed methods are provided in the following sections, including modifications from 2012 surveys.

4.2.1 Rare Plant and Vegetation Surveys

4.2.1.1 Special-status Plant Species

Plant surveys were conducted separately from tortoise and other wildlife surveys in Spring 2015; plants were surveyed during tortoise surveys in 2012. Surveyors attempted surveys on March 27, 2015 based on the prior weeks' warm temperatures; however, plant growth was insufficient for all but the earliest blooming species (e.g., little San Bernardino Mountains gilia [*Linanthus maculatus*]). Accordingly, botanists surveyed the best areas for plant growth and returned to the site on April 11-12, 2015 to survey the entire site. Although the surveyors were already very familiar with the species, prior to conducting surveys they reviewed the target species' descriptions, photographs of live or herbarium specimens as needed and microhabitat associations. Surveyors carried plant keys and descriptions to ensure correct identification of all species observed. All perennial species could be identified without blooms. In addition to targeting special-status species, a complete inventory was made of all species observed growing on the survey area.

Table 3. Potential for Special-status and Other Target Plant and Wildlife Species on the Project or that May Be Affected by the Project

Species	Status[1]				Habitat	Likelihood of Occurrence on the Project Area
	Federal	State	CNDDB Rank[2]	CRPR[3]/ Other		
Plants						
Abrams' Spurge (*Chamaesyce abramsiana*)	---	---	G4/S2	2B.2	Sandy sites in Mojavean and Sonoran Desert scrubs in eastern California; 0 to 3,000 feet. Blooms September through November (annual herb).	Low possibility. Not observed and mostly known from further southeast; however, blooms in fall so could not be surveyed.
Alkali Mariposa Lily (*Calochortus striatus*)	---	---	G3/S3	1B.2	Alkaline soils of meadows and washes, in chaparral, chenopod scrub, and Mojavean Desert scrub at 200 to 5,200 feet. Also occurs in Nevada. Blooms April through June (perennial herb).	Not possible; no habitat
Arizona Cottontop (*Digitaria californica*)	---	---	G5T5?/S2	2B.3	Rocky Sonoran and Mojavean Desert Scrubs; three consortium records in California; 950 to 4,900 feet. Blooms July through November (succulent).	Unlikely due to habitat
Appressed Muhly (*Muhlenbergia appressa*)	---	---	G4/S3	2B.2	Coastal sage scrub, Mojavean Desert scrub, and valley and foothill grassland on rocky slopes and canyon bottoms; 65 to 5,250 feet elevation (annual grass).	Unlikely due to habitat
Ayenia (*Ayenia compacta*)	---	---	G4/S3?	2B.3	Sandy and gravelly washes and canyons in desert scrubs, 450 to 6,000 feet. Blooms March through April (perennial herb). Sonoran Desert.	Highly unlikely due to known range
Beaver Dam Breadroot (*Pediomelum castoreum*)	---	---	G3/S2	1B.2	Open areas and roadcuts in desert washes, Joshua tree woodland and Mojavean Desert scrub; many locations in Lucerne Valley, Barstow areas; <5741 ft. Blooms April and May (perennial herb).	Possible. Not observed.
Coulter's Goldfields (*Lasthenia glabrata ssp.coulteri*)	---	---	G4T2/S2	1B.1	Usually alkaline soils in marshes, playas, vernal pools, and valley and foothill grassland below 4,600 feet elevation. Believed extirpated from Kern, Los Angeles, and San Bernardino Counties. Blooms April through May (annual herb).	Not possible; no habitat
Creamy Blazing Star (*Mentzelia puberula*)	---	---	G3/S3	1B.3	Gravelly to sandy Mohavean Desert Scrub from 2,100 to 3,900 feet. Blooms March to May.	Possible; not observed
Crucifixion Thorn (*Castela emoryi*)	---	---	G4/S2S3	2B.2	Mojavean and Sonoran Desert Scrubs; typically associated with drainages from 295 to 2,200 feet. Blooms April through September (perennial deciduous shrub).	Not present
Darlington's Blazing Star (*Mentzelia puberula*)	---	---	G4/S2	2B.2	Rocky, generally mountainous sites from the Ord Mts. to northern Baja California; 295 to 4,200 feet. Blooms March through May (perennial herb).	Highly unlikely due to habitat
Desert Portulaca (*Portulaca halimoides*)	---	---	G5/S3	4.2	Sandy areas and flats in Joshua tree woodland and desert mountains; 3,280 to 3,937 feet. Blooms September (annual herb). North-westernmost location is in Joshua Tree National Park.	Highly unlikely due to elevation and known range
Foxtail Cactus (*Coryphantha alversonii*)	---	---	G3/S3	4.3	Primarily rocky substrates between 250 and 4,000 feet in Creosote Bush Scrub. Blooms April through June (perennial stem succulent).	Not present
Fremont Barberry *(Berberis fremontii)*	---	---	G5/S2S3	2B.3	Chaparral, Joshua tree woodland, pinyon and juniper woodland in rocky areas from 2,800 to 6,100 feet. Blooms April through June (evergreen shrub).	Highly unlikely due to habitat

Table 3. Potential for Special-status and Other Target Plant and Wildlife Species on the Project or that May Be Affected by the Project (Continued)

Species	Status[1]				Habitat	Likelihood of Occurrence on the Project Area
	Federal	State	CNDDB Rank[2]	CRPR[3]/ Other		
Jackass Clover (*Wislizenia refracta* var. *refracta*)	—	—	G5T2T4/S1	2B.2	Sandy washes, roadsides, flats; 1,900 to 2,700 feet. Blooms April through November (annual herb).	Possible; not observed
Laguna Mountains Jewelflower (*Streptanthus bernardinus*)	---	---	G3/S3	4.3	Chaparral and lower montane coniferous forest; 2,198 to 8,200 feet elevation. Blooms May through August (perennial herb).	Highly unlikely due to habitat
Latimer's Woodland Gilia (*Saltugilia latimeri*)	---	---	G2/S2	1B.2	Dry desert slopes of coarse sandy to rocky soils in chaparral and Mojavean desert scrub at 1,300 to 6,200 feet elevation. Blooms March through June (annual herb).	Possible; not observed
Little San Bernardino Mountains Linanthus (*Linanthus maculatus*)	---	---	G2/S2	1B.2	Loose, well-aerated sand on wash edges with few or no competing species and devoid of large shrubs or trees, in areas of desert dune, desert scrub, and Joshua tree woodland at 600 to 6,800 feet elevation. Known only from the San Bernardino Mountains (north and east sides), the Little San Bernardino Mountains, and the northern part of the Coachella Valley. Blooms March through May (annual herb).	Highly unlikely due to lack of habitat
Lobed Ground Cherry (*Physalis lobata*)	---	---	G5/S2	2B.3	Mojave Desert scrub, playas, granitic soils, 1,640-2,625 feet. Blooms May through January (perennial herb). Known from the southeast Mojave Desert and northeast Sonoran Desert.	Highly unlikely based on habitat and known range
Mojave Fishhook Cactus (*Sclerocactus polyancistrus*)	---	---	G3/S3	4.2	Mojavean Desert scrub (creosote bush scrub and pinyon-juniper woodland, and Great Basin scrub at 2,100 to 7,650 feet. Blooms April through July (perennial stem succulent).	Not present
Mojave Menodora (*Menodora spinescens* var. *mohavensis*)	---	---	G4T2T3/S2S3	1B.2	Rocky hillsides and canyons and andesite gravel in Mojavean Desert scrub; 2,200-6,600 (7,600) feet. Blooms April through May (perennial deciduous shrub).	Not present
Mojave Monkeyflower (*Mimulus mohavensis*)	---	---	G2/S2	1B.2	Desert washes in Mojavean Desert scrub and Joshua tree woodland; 2,200-3,300 feet. Blooms April and May.	Possible; not observed
Orcutt's Linanthus (*Linanthus orcuttii*)	---	---	G4/S2	1B.3	Openings (often gravelly) in chaparral, pinyon and juniper woodland, and coniferous forest at 3,000 to 7,000 feet elevation. Blooms May through June (annual herb).	Highly unlikely due to elevation and habitat
Orocopia Sage (*Salvia greatae*)	---	---	G2G3/S2S3	1B.3	Sonoran Desert Scrubs; gravelly/rocky bajadas, mostly near washes; below 3,000 feet. Blooms March through April (perennial evergreen shrub).	Not present
Parish's Club-cholla (*Grusonia parishii*)	---	---	G3G4/S2?	2B.2	Sandy sites within Mojavean Desert scrub, Sonoran Desert scrub, and Joshua tree woodland at 984 to 5,000 feet. Blooms May through June (perennial stem succulent).	Not present
Parish's Daisy *(Erigeron parishii)*	T	---	G2/S2	1B.1	Generally found on or near carbonate rocky slopes, or in washes or on adjacent benches in canyons; usually in pinyon woodland, pinyon-juniper woodland, or blackbrush scrub at 2,600 to 6,600 feet elevation (usually above 3,600 feet). Blooms May through June (herbaceous perennial or subshrub).	Highly unlikely due to habitat

Table 3. Potential for Special-status and Other Target Plant and Wildlife Species on the Project or that May Be Affected by the Project (Continued)

Species	Status[1]				Habitat	Likelihood of Occurrence on the Project Area
	Federal	State	CNDDB Rank[2]	CRPR[3]/ Other		
Pinyon Rock Cress (*Boechera dispar*)	---	---	G3/S3	2B.3	Granitic, gravelly slopes and mesas in Joshua tree woodland, pinyon-juniper woodland, and Mojave Desert scrub at 4,000 to 7,900 feet elevation. Blooms March through June (perennial herb).	Highly unlikely due to elevation and habitat
Purple-nerve Cymopterus (*Cymopterus multinervatus*)	---	---	G5?/S2	2B.2	Sandy or gravelly areas in Mojavean Desert scrub, pinyon-juniper woodland, and Joshua tree woodland at 2,592-5,906 feet. Blooms March through April (perennial herb).	Possible; not observed
Robinson's Monardella *(Monardella robisonii)*	---	---	G3/S3	1B.3	Rocky, granitic slopes often among boulders in pinyon-juniper woodland and Joshua tree woodland 2,000 to 5,000 feet elevation. In California, known only from the immediate vicinity of the Little San Bernardino Mountains in Riverside and San Bernardino Counties. Blooms April through October (perennial herb).	Highly unlikely due to habitat
Salt Spring Checkerbloom *(Sidalcea neomexicana)*	---	---	G4?/S2S3	2B.2	Alkaline springs and brackish marshes below 5,000 feet elevation. Blooms March through June (perennial herb).	Not possible; no habitat
Small-flowered Androstephium (*Androstephium breviflorum*)	---	---	G5/S2S3	2B.2	Sandy habitats in Mojave Desert Scrub at 700-2,500 feet. Blooms March – April (perennial herb).	Possible; not observed
Spearleaf (*Matelea parvifolia)*	---	---	G5?/S3	2B.3	Dry, rocky ledges and slopes in Mojavean and Sonoran Desert Scrubs at 1,312 to 3,593 feet in elevation. Blooms March through May (perennial herb).	Highly unlikely due to habitat
Thorny Milkwort (*Polygala acanthoclada*)	---	---	G4/S1	2B.3	Pinyon-juniper and Joshua tree woodlands, chenopod scrub; 2,500-7,550 feet. Blooms May through August (perennial shrub).	Not present
Utah Vine Milkweed (*Funastrum utahense*)	---	---	G4/S4	4.2	Sandy and gravelly areas in Mojavean and Sonoran Creosote Bush Scrub; 490 – 4,700 feet. Blooms April through June (perennial herb).	Observed within survey area in 2012 and 2015.
White-bracted Spineflower (*Chorizanthe xanti* var. *leucotheca*)	---	---	G4T3/S3	1B.2	Sandy to gravelly soils in coastal scrub, Mojavean Desert scrub, Pinyon-Juniper woodlands, especially associated with washes; (200-) 1,300-4,300 feet. Most locations around San Bernardino and San Jacinto Mts. and west, but also known from near Old Woman Springs and Morongo pass. Blooms April through June (annual herb).	Unlikely; not observed but blooms in summer
White Pygmy-poppy (*Canbya candida*)	---	---	G3G4/S3S4	4.2	Sandy soils in Joshua tree woodland and Mojavean Desert scrub; 2,000-4,450 feet. All known locations are Victorville and west. Blooms March through June (annual herb).	Unlikely due to known range.
Winged Cryptantha (*Cryptantha holoptera*)	---	--	G3G4/S3?	4.3	330-5,500 feet in Mojave and Sonoran Desert Scrubs; often sandy habitats. Blooms March through April (annual herb).	Possible
Reptiles						
Desert Tortoise (*Gopherus agassizii*)	T	T	G3/S2	---	Most desert habitats below approximately 5,000 feet in elevation	Not observed and unlikely except as transient, due to poor habitat quality; but present in the vicinity.
Flat-tailed Horned Lizard (*Phrynosoma mcallii*)	---	SSC	G3/S2	---	Desert washes and desert flats from the Coachella Valley southeast	Highly unlikely – outside of known range; not observed

Table 3. Potential for Special-status and Other Target Plant and Wildlife Species on the Project or that May Be Affected by the Project (Continued)

Species	Status[1]				Habitat	Likelihood of Occurrence on the Project Area
	Federal	State	CNDDB Rank[2]	CRPR[3]/ Other		
Mojave Fringe-toed Lizard (*Uma scoparia*)	---	SSC	G3G4/ S3S4	---	Restricted to aeolian sandy habitats in the Mojave and northern Sonoran deserts	Highly unlikely due to lack of habitat; not observed
Red Diamond Rattlesnake *(Crotalus ruber)*	---	SSC	G4/S2?	---	Desert scrub, thornscrub, open chaparral and woodland; occasional in grassland and cultivated areas. Prefers rocky areas and dense vegetation.	Unlikely - outside of known range; not observed.
Birds						
American Peregrine Falcon (*Falco peregrinus anatum*)	Delisted BCC	Delisted Fully Protected	G4T4/S3S4	---	Dry, open country, including arid woodlands; nests in cliffs	No nesting habitat on-site; possible limited foraging onsite due to distance from suitable nesting habitat; not observed
Bendire's Thrasher (*Toxostoma bendirei*)	BCC	SSC	G4G5/S3	---	Arid to semi-arid brushy habitats, usually with yuccas, cholla, and trees	Possible; not observed
Brewer's Sparrow (*Spizella breweri*)	BCC	---	G5/S3	---	Open meadows and flats	Possible migrant; not observed
Burrowing Owl (*Athene cunicularia*)	BCC	SSC	G4/S3	---	Open, arid habitats	Likely; not observed
Crissal Thrasher (*Toxostoma crissale*)	---	SSC	G5/S3	---	Dense mesquite and willows along desert streams and washes	Highly unlikely due to lack of habitat; not observed
Ferruginous Hawk (*Buteo regalis*)	BCC	--- (wintering)	G4/S3S4	---	Arid, open country	Possible; not observed
Golden Eagle (*Aquila chrysaetos*)	BCC	Fully Protected	G5/S3	---	Open country; nests in large trees in open areas or cliffs	Possible; no nesting habitat on-site; possible limited foraging onsite; not observed
Le Conte's Thrasher (*Toxostoma lecontei*)	BCC	---	G4/S3	---	Open desert with scattered shrubs	Likely
Loggerhead Shrike (*Lanius ludovicianus*)	BCC	SSC (nesting)	G4/S4	---	Arid habitats with perches	Likely
Long-eared Owl (*Asio otus*)	---	SSC (nesting)	G5/S3?	---	Riparian woodlands with willows, cottonwoods, or live oak.	Unlikely except as transient; not observed
Northern Harrier (*Circus cyaneus*)	---	SSC (nesting)	G5/S3	---	Open habitats; nests in shrubby pen land and marshes	Possible; not observed
Prairie Falcon (*Falco mexicanus*)	BCC	--- (nesting)	G5/S4	---	Dry, open country, including arid woodlands; nests in cliffs	Observed within survey area in 2012; no nesting habitat on-site; possible limited foraging onsite due to distance from suitable nesting habitat
Short-eared Owl (*Asio flammeus*)	---	SSC (nesting)	G5/S3	---	Open habitats: marshes, fields; nests on ground and roosts on ground, low poles	Possible; not observed

Table 3. Potential for Special-status and Other Target Plant and Wildlife Species on the Project or that May Be Affected by the Project (Continued)

Species	Status[1]				Habitat	Likelihood of Occurrence on the Project Area
	Federal	State	CNDDB Rank[2]	CRPR[3]/ Other		
Summer Tanager (*Piranga rubra*)	---	SSC (nesting)	G5/S2	---	Desert riparian areas along Colorado River and locally elsewhere in California deserts	Possible transient; not observed
Swainson's Hawk (*Buteo swainsoni*)	BCC	T	G5/S3	---	Forages in open stands of grass-dominated vegetation, sparse shrublands, and small, open woodlands	Possible migrant; not observed
Vermilion Flycatcher (*Pyrocephalus rubinus*)	---	SSC (nesting)	G5/S2S3	---	Desert riparian areas during nesting	Possible transient; not observed
Yellow-breasted Chat (*Icteria virens*)	---	SSC (nesting)	G5/S3	---	Dense streamside thickets, willows; brushy hillsides and canyons	Possible transient; not observed
Yellow Warbler *(Dendroica petechia brewsteri)*	BCC	SSC (nesting)	G5/S3S4	---	Riparian areas with willow, cottonwoods, aspens, and sycamores	Possible migrant; not observed
Mammals						
American Badger (*Taxidea taxus*)	---	SSC	G5/S3	---	Many habitats	Possible; sign not observed
Big Free-tailed Bat (*Nyctinomops macrotis*)	---	SSC	G5/S3	WBWG:M	Apparently rare in CA although broadly distributed in the southwest. No maternity roosts are documented in CA. Cliffs and rugged rocky habitats in arid, country, also riparian woodlands	Highly unlikely due to lack of habitat; not observed[4]
Burro (*Equus asinus*)	---	---	---	Protected by the Wild, Free-Roaming Horse and Burro Act	Various habitats near water	Highly unlikely; not observed
Burro Deer (*Odocoileus hemionus eremicus*)	---	Game Species	---	---	Arboreal and densely vegetated drainages	Highly unlikely; not observed
California Leaf-nosed Bat (*Macrotus californicus*)	---	SSC	G4/S3	WBWG:H	Lowland desert associate, found in caves, mines, tunnels and old buildings. Only known significant roosts are in southeastern CA. Forages in desert wash vegetation, especially with trees.	Highly unlikely; not observed[4]
Cave Myotis (*Myotis velifer*)	---	SSC	G5/S1	WBWG:M	Caves, mines and buildings in lower desert scrub habitats; also near streams and in woodlands, old agricultural fields	Possible; not observed[4]
Desert Kit Fox (*Vulpes macrotis*)	---	Protected furbearer	---	---	In open desert scrub and dunes	Sign observed within survey area
Mountain Lion (*Felis concolor browni*)	---	SSC	G5T1T2Q/S1	---	Colorado River bottomlands	Highly unlikely due to lack of habitat, even as transient; not observed

Table 3. Potential for Special-status and Other Target Plant and Wildlife Species on the Project or that May Be Affected by the Project (Continued)

Species	Status[1]				Habitat	Likelihood of Occurrence on the Project Area
	Federal	State	CNDDB Rank[2]	CRPR[3]/ Other		
Nelson's Bighorn Sheep (*Ovis canadensis nelsoni*)	---	Game Species/Fully Protected	G4T4/S3	---	In mountains and adjacent valleys in desert scrub	Highly unlikely due to lack of habitat and movement corridor; no individuals or sign observed
Pallid Bat (*Antrozous pallidus*)	---	SSC	G5/S3	WBWG:H	Several desert habitats. Roosts in rock crevices and buildings and occasionally in trees, caves, and mines.	Possible; not observed[4]
Palm Springs Pocket Mouse (*Perognathus longimembris bangsi)*	---	SSC	G5T2T3/S2S3	---	Desert riparian, desert wash, and desert scrub. Nearest CNDDB record is Big Morongo Canyon,	Possible; not observed[4]
Pocketed Free-tailed Bat (*Nyctinomops femorosaccus*)	---	SSC	G4/S3	WBWG:M	Variety of areas in pinyon-juniper woodland, desert scrubs, palm oases, drainages, rocky areas. Roosts is crevices of cliffs and rocky outcrops, and sometimes under roof tiles.	Unlikely due to lack of habitat; not observed[4]
Pallid San Diego Pocket Mouse *(Chaetodipus fallax pallidus)*	---	SSC	G5T3/S3S4	---	Sandy herbaceous areas, usually associated with rocks or coarse gravel in desert wash, desert scrub, desert succulent scrub, pinyon-juniper woodlands in desert areas. Known from surrounding area.	Possible; not observed[4]
San Diego Desert Woodrat (*Neotoma lepida intermedia)*	---	SSC	G5T3T4/S3S4	---	Coastal scrub. Abundant in rock outcrops and rocky slopes	Unlikely due to lack of habitat and distance from known occurrences; not observed[4]
Spotted Bat (*Euderma maculatum*)	---	SSC	G4 /S3	WBWG:H	Many habitats, from arid scrub and grasslands, to coniferous forests. Roosts in rocky cliffs or rock mines; often found foraging in wet areas.	Unlikely due to lack of preferred foraging habitat and distance from cliffs; not observed[4]
Townsend's Big-eared Bat (*Corynorhinus townsendii*)	---	Candidate T/ SSC	G3G4/S2	WBWG:H	Broad habitat associations. Roosts in caves and manmade structures; feeds in trees.	Possible but unlikely due to lack of foraging habitat; not observed[4]
Western Mastiff Bat (*Eumops perotis californicus*)	---	SSC	G5T4/S3S4	WBWG:H	Crevice-dwelling species that occupies cliffs, trees, tunnels, buildings; found in a wide variety of habitats, from low desert scrub to ponderosa pine. May forage many miles from roosts.	Possible; not observed[4]
Western Yellow Bat (*Lasiurus xanthinus*)	---	SSC	G5/S3	WBWG:H	Found in desert and riparian areas of the southwest U.S. Individuals roost in the dead fronds of palm trees and have also been documented roosting in cottonwood trees.	Highly unlikely due to lack of habitat; not observed[4]

Sources: Unless noted, information is from CNDDB RareFind 2015, *The Jepson Manual* (Baldwin et al. 2002), CNPS Online Inventory (CNPS 2015), and Jepson Flora Project (http://ucjeps.berkeley.edu/)

[1] CDFW and CNDDB Habitat Data Analysis Branch, Biogeographic Data Branch January 2015, http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPAnimals.pdf

E Endangered
T Threatened
BCC USFWS Bird of Conservation Concern
SSC CDFW Species of Special Concern (species that appear to be vulnerable to extinction)
Fully Protected Species that cannot be taken without authorization from the Fish and Game Commission
WBWG = Western Bat Working Group (http://wbwg.org)
H – High Priority – These species should be considered the highest priority for funding, planning, and conservation actions.
M – Medium Priority – These species warrant closer evaluation, more research, and conservation actions of both the species and the threats
L – Low Priority – Most of the existing data support stable populations of the species and that the potential for major changes in status is unlikely

Table 3. Potential for Special-status and Other Target Plant and Wildlife Species on the Project or that May Be Affected by the Project (Continued)

[2] CNDDB 2015: California Department of Fish and Wildlife, CNDDB, Special Animals, January 2015 (www.dfg.ca.gov/biogeodata/cnddb/pdfs/spanimals.pdf) and CDFW Special Vascular Plants, Bryophytes, and Lichens List, January 2015 (www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPPlants.pdf). CNDDB Rank Interpretation (from http://www.natureserve.org/explorer/ranking.htm#interpret)

Global Rank
- G1 = Critically Imperiled
- G2 = Imperiled
- G3 = Vulnerable
- G4 = Apparently Secure
- G5 = Secure
- ? = Inexact Numeric Rank

State Rank
- S1 = Critically Imperiled
- S2 = Imperiled
- S3 = Vulnerable
- S4 = Apparently Secure
- S5 = Secure

Subspecies or Variety Rank and Other Symbols
- T1-T5: same definition as global and state ranks, except that rank only applies to the particular variety or subspecies.

[3] California Rare Plant Rank (CRPR) (CNDDB 2015):
- List 1A - Plants presumed extirpated in California and either rare or extinct elsewhere
- List 1B - Plants rare and endangered in California and elsewhere
- List 2 - Plants rare and endangered in California but more common elsewhere
- List 3 - Plants about which CNPS needs more information (Review List)
- List 4 - Plants of limited distribution (Watch List)
- (Note: CRPR 1 and 2 plants require CEQA consideration.)

Threat Ranks:
- 0.1-Seriously threatened in California (high degree/immediacy of threat)
- 0.2-Fairly threatened in California (moderate degree/immediacy of threat)
- 0.3-Not very threatened in California (low degree/immediacy of threats or no current threats known)

[4] Not observed; however, no focused surveys were conducted (e.g., mist-netting, trapping).

Surveys for special-status plants achieved 100 percent visual coverage (approximately 10-meter-wide transects) of the survey area. In 2012, below-average precipitation fell in Winter 2011-2012, resulting in well below-average germination and low biomass of annual forbs (Table 4); virtually no native annuals germinated in 2012 at the Project. Precipitation in February 2012 was closer to average, which prompted several perennial species and a few individuals of exotic annuals to leaf out and/or bloom. Precipitation was again below average in Winter 2014/2015 (Table 4), especially during the most important germination period in late fall, but was average in March, which was sufficient for germination of several annual species (although fewer individuals of all species) in Spring 2015.

Table 4. 2011/2012 and 2014/2015 Monthly Precipitation Data (in inches), Joshua Tree, CA

YEAR	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	Nov	Dec	Annual
2011	0.00	0.57	0.14	0.06	0.00	0.00	0.32	0.69	0.27	0.01	0.16	0.08	2.30
2012	0.01	0.43	0.20	0.14	0.00	0.00	0.36	1.27	0.00	0.00	0.00	0.08	2.49
2014	0.00	0.03	0.73	0.10	0.00	0.00	0.06	0.32	0.32	0.00	0.00	0.35	1.91
2015	0.74	0.32	0.37	0.00	-	-	-	-	-	-	-	-	-
Average 1959-2015	0.60	0.43	0.39	0.13	0.15	0.01	0.33	0.52	0.31	0.28	0.54	0.73	4.15

Source: Western Regional Climate Center (WRCC 2015)

– Data not currently available for these months

4.2.1.2 Species Protected by the California Desert Native Plants Act and San Bernardino County Code

In 2012, surveyors counted all individuals of the native species protected by the CDNPA and San Bernardino County code within the survey area, except Joshua trees that were clearly planted for landscaping, and escaped landscape palo verde next to the cement plant. For naturally occurring Joshua trees (the only native tree on the survey area), the location, height, and diameter at breast height was recorded. As these species are perennial, surveyors did not conduct another count in 2015, with the exception of naturally occurring Joshua trees.

4.2.1.3 Vegetation Communities and Special Habitats

In 2012, surveyors described and mapped vegetation communities throughout the survey area and in 2015 noted any changes since the 2012 surveys. Vegetation communities were described based on biotic and abiotic features, including but not limited to, species composition, species density and dominance, shrub cover percent, shrub height, common understory species, soils, substrates, hydrology, and topography. Mapping included communities determined by CDFW to be sensitive (e.g., CNDDB Natural Communities[1] with a G or S rank 1-3) or otherwise special. Surrounding anthropogenic and natural features that could provide insight into populations of special-status species, including population functioning (e.g., corridors), and existing or anticipated impacts to special-status species, were also identified and mapped.

4.2.1.4 Non-native Plants

Invasive plants are defined as any non-native plant species that are injurious to the public health, agriculture, recreation, wildlife habitat, or the biodiversity of native habitats. To determine

[1] *http://www.dfg.ca.gov/bigeographicaldata/vegcamp/natural_comm_background.asp*

which invasive species are currently present and their approximate abundance, surveyors inventoried all invasive plant species and recorded the location of concentrations. Special attention was given to the highly invasive and noxious Sahara mustard (*Brassica tournefortii*), Russian thistle (*Salsola tragus*), and tamarisk (*Tamarix* sp.). Filaree (*Erodium cicutarium*) and the nearly ubiquitous exotic annual, Mediterranean grass (*Schismus* sp.), was identified but not evaluated for concentrations.

4.2.2 Wildlife Surveys

Surveys were conducted in Spring 2012 and Spring 2015 of the proposed Project site and gen-tie route; no buffer surveys were conducted of most of the surrounding lands due to difficulty in contacting landowners and obtaining their permission to access their parcels. However, in 2012, previous Project configurations were under investigation and we surveyed several parcels to the south and southwest of the Project site, as well as across Sunfair Rd. in 2013. In surrounding locations that were not accessible, surveyors conducted a visual assessment of the habitat from the survey area's borders. All transect data were recorded on specially-designed data forms (Appendix C); representative areas were photographed in 2012, with potentially changed areas photographed in 2015 as well. Specific survey methods for each taxon are described below. Table 5 presents the weather conditions during surveys.

Table 5. Weather Conditions during Spring 2012 and 2015 Field Surveys

Date	Temperature* (°C)		Average Cloud Cover	Daily Wind Speed Range (mph)
	Start	End		
2012				
4-Apr	10.9	25.6	53%	0-9
16-May	32.8	38.9	0	0-5
2015				
27-Mar,	28.9	39.6	0	2-4
1-Apr	9.3	22.2	50%	2-4
2-Apr	6.7	18.4	10-15%	4-7, gusts to 12
11, 12- Apr	-	-	-	-

*Temperatures were taken at 5 cm above ground level in the shade of the surveyor
- Weather conditions not recorded because these were plant surveys only.

4.2.2.1 Desert Tortoise

On April 4 (gen-tie route only) and May 16, 2012 and April 1 and 2, 2015, surveyors followed FWS protocols for surveying desert tortoise (FWS 2010) using ~30-foot (10-meter) wide, contiguous transects to achieve 100 percent visual coverage (Figure 3). Surveyors sought all tortoise sign (tortoises, burrows, shells, scat, tracks, drinking depressions) and if observed, surveyors measured, mapped, and described tortoise sign relative to condition, age and, if possible, gender (see Appendix D for a Key to Sign Classes). If observed, tortoises were photographed only if achieved without touching or otherwise harassing the tortoise. If observed, tortoise location relative to its burrow (i.e., aboveground, visible in burrow, not visible in burrow) was recorded because of its relevance to the FWS calculation for tortoise density. If observed,

shells and shell parts were evaluated relative to the cause of death, if possible. Current and recent weather conditions were recorded and the topography, drainage patterns, soils, substrates, plant cover, and aspect-dominant, common and occasional plant species described and mapped. All incidental sightings of common ravens, other known tortoise predators, and other site features (e.g., anthropogenic influences) that could assist in the analysis of tortoise population impacts were recorded and mapped. Mapping was achieved using a Global Positioning System unit.

4.2.2.2 Mojave Fringe-toed Lizard

There are no formal survey protocols for Mojave fringe-toed lizards; therefore, surveys were conducted concurrently with desert tortoise surveys. Desert tortoise surveys achieved 100 percent visual coverage of the ground surface; therefore, survey intensity was sufficient to determine presence or absence of Mojave fringe-toed lizards as well as map the boundaries of potential Mojave fringe-toed lizard habitat.

4.2.2.3 Bats

The presence of landscaped trees and structures on the Project site could provide bat roosting habitat. Surveyors investigated the on-site structures and trees for evidence of roosting bats (i.e., guano) and monitored these areas at dusk for emerging bats. Surveyors surveyed the outside and accessible interiors of all of the structures on April 2, which included the airplane hangar, shop, residence, and water tower. Accessible rafters, trees, and the ground below were all examined. Not all rafters or roof tiles were accessible or safe to inspect because of structural instability and out of respect for privacy of the tenants. On April 11, 12, 23, and May 28, 2015 the buildings and trees were monitored at dusk for emerging bats. If bats had been found roosting on site, a bat expert would have been consulted to determine whether and what type of additional surveys would be necessary.

4.2.2.4 Other Special-status Wildlife

All incidental observations of special-status wildlife species listed in Table 3, their sign (e.g., scat, tracks, bones, feathers, nests), their habitats (e.g., water sources, nesting habitat), or movement corridors were included when compiling and mapping survey results during both survey years. Although desert kit fox is not a special-status species, no take is permitted by CDFW. Therefore, in addition to recording kit foxes, surveyors recorded and mapped all kit fox natal dens or other burrow complexes. All sign of all special-status species was qualified relative to age, size, and other factors that could illuminate the potential use of the site by the species. Additionally, an inventory of all wildlife species observed was recorded.

5.0 SURVEY RESULTS AND DISCUSSION

This section describes the results of the Spring 2012 and 2015 surveys and focuses on special-status species observations. A complete list of plants and wildlife observed during surveys can be found in Appendix E.

5.1 Rare Plants and Vegetation

5.1.1 Special-status Plant Species

Surveyors did not find any federally or state-threatened, endangered, or candidate plant species during 2012 or 2015 surveys. However, botanists observed one CNPS-ranked plant within the survey area in both years: Utah vine milkweed – CRPR 4 (Tables 6A and 6B, Figures 5A and 5B).

Table 6A. Special-status Plants and CDNPA Plant Observed during Spring 2012 Surveys

No. on Figure 5A	UTM (NAD 83)		Species		Pop-ulation Size	Area (m^2)	Comments
	Easting	Northing					
1	569356	3779804	*Funastrum utahense*	Utah vine milkweed	2	10	In soft, sandy soil with no gravel. Several dried plants from 2011 are approximately 100 feet west of this location.
2	568489	3779466	*Funastrum utahense*	Utah vine milkweed	2	50	In soft sand.
3	569371	3779368	*Funastrum utahense*	Utah vine milkweed	< 10	4	In soft sand with scattered fine gravel. Another small population approximately 150 m to the southwest of this location.
4	569215	3779100	*Funastrum utahense*	Utah vine milkweed	3	1	In soft, slightly loamy sand, but silty deposition.
5	569233	3779415	*Yucca brevifolia*	Joshua tree	1	1	1.8 m tall; 56.5 cm circumference.

Table 6B. Special-status Plants and CDNPA Plant Observed during Spring 2015 Surveys

No. on Figure 5B	UTM (NAD 83)		Species		Pop-ulation Size	Area (m^2)	Comments
	Easting	Northing					
6	568539	3779430	*Funastrum utahense*	Utah vine milkweed	1	<1	Growing in coarse sand.
7	568863	3779479	*Funastrum utahense*	Utah vine milkweed	2	<1	Growing in open out of soil. Incidental to tortoise/wildlife surveys.
8	568920	3779608	*Funastrum utahense*	Utah vine milkweed	~20	5	Growing in open. Incidental to tortoise/wildlife surveys.
9	569247	3779805	*Funastrum utahense*	Utah vine milkweed	1	<1	Growing in open. Incidental to tortoise/wildlife surveys.
10	569279	3779781	*Funastrum utahense*	Utah vine milkweed	27	200	Growing in open. Incidental to tortoise/wildlife surveys.
11	569180	3779720	*Funastrum utahense*	Utah vine milkweed	2	<1	Growing in open. Incidental to tortoise/wildlife surveys
12	569222	3779708	*Funastrum utahense*	Utah vine milkweed	~35	~500	Growing in open. Incidental to tortoise/wildlife surveys.
13	569280	3779712	*Funastrum utahense*	Utah vine milkweed	32	500	Incidental to tortoise/wildlife surveys.
14	569250	3779648	*Funastrum utahense*	Utah vine milkweed	9	50	Growing out of sand in the open.
15	569291	3779566	*Funastrum utahense*	Utah vine milkweed	2	<1	Growing in open. Incidental to tortoise/wildlife surveys.

No. on Figure 5B	UTM (NAD 83)		Species		Pop-ulation Size	Area (m^2)	Comments
	Easting	Northing					
16	569382	3779627	*Funastrum utahense*	Utah vine milkweed	~30	30	In very weedy, shallow swale. Incidental to tortoise/wildlife surveys.
17	569165	3779363	*Funastrum utahense*	Utah vine milkweed	12	5	Growing in open. Incidental to tortoise/wildlife surveys.
18	569117	3779089	*Funastrum utahense*	Utah vine milkweed	1	<10	Growing in open out of sand.
19	569226	3779101	*Funastrum utahense*	Utah vine milkweed	2	<1	Growing out of a dead *Hilaria rigida* mound in full sun.
20	569384	3778526	*Funastrum utahense*	Utah vine milkweed	2	<1	Growing in *Hilaria rigida* along gen-tie line. Incidental to tortoise/wildlife surveys.

Utah Vine Milkweed (CRPR 4; Rank G4/S4)

This perennial herb in the milkweed family (Apocynaceae) is found mostly on dry, sandy, or gravelly desert areas at elevations below 3,300 feet (Baldwin et al. 2002). It was previously considered uncommon in California (Baldwin et al. 2002, CNPS 2015) and known only from the Mojave Desert, extending to Utah and Arizona (Jepson Flora Project 2013). The Consortium of California Herbaria (Consortium) has California records mostly in San Bernardino County, with a few records from San Diego, Riverside, and Imperial Counties (Consortium 2015). However, the large-scale surveys for solar energy developments in the Interstate 10 corridor in 2009 through 2011 documented a far more common species (e.g., BLM 2010, 2012).

Approximately 20 live plants were found throughout the survey area in 2012 and 175 in 2015 (Figures 5A and 5B). The live plants were growing independently on the ground in primarily sandy soils and, as is often the habit of this species, vining through other shrubs for support. In 2012, lack of winter and early spring precipitation limited germination of annuals and herbaceous perennials at the time of surveys. In 2015 precipitation was closer to average resulting in an increase in the aboveground growth and number of individuals of this species. In a year with sufficient rainfall this species is expected to be widespread within the survey area.

Photo: Alice Karl

Utah vine milkweed vining onto big galleta grass for support.

Photo: Rachel Woodard

Utah vine milkweed in flower and bud.

5.1.2 CDNPA and San Bernardino County Protected Plant Species

Biologists observed and tallied four species protected by the CDNPA during Spring 2012 surveys, three cacti species and one yucca species (Table 7). The most numerous was beavertail cactus. One Joshua tree <10 feet tall may have grown naturally within the survey area (Table 6, Figure 5), although we suspect it was planted; 19 (three <10 feet tall and 16 >10 feet tall) were planted in front of the house.

Table 7. CDNPA Species found within the Survey Area

Species	Total in Survey Area
Beavertail cactus (*Opuntia basilaris*)	42
Buckhorn cholla (*Cylindropuntia acanthocarpa*)	1
Joshua Tree* (*Yucca brevifolia*)	1
Silver cholla *(Cylindropuntia echinocarpa*)	51
Total	**95**

*Landscaped Joshua trees are excluded

5.1.3 Sensitive Plant Communities

Big Galleta Shrub Steppe Alliance (G3S2) and Big Galleta-Creosote Bush Shrub Steppe Alliance (the latter is a subset of the former) are the only CNDDB globally and state-ranked communities of special concern (G or S rank 1-3) in the survey area. The global rank is G3, the state rank is S2. CNDDB guidelines direct project proponents to determine if project-affected stands of certain vegetation types represent high-quality occurrences of the given community to determine if there would be significant impacts to the vegetation type[2]. Essentially the entire survey area is within the Big Galleta-Creosote Bush Shrub Steppe Alliance (Table 2, Figure 4), with Big Galleta Shrub Steppe Alliance present only along the gen-tie route. Both have been substantially degraded by previous clearing, and are bordered by several anthropogenic features that directly impact the Project community through dust and trash, and the introduction of non-native noxious plant species. Because of this, and the relative commonness of these communities in the region, they are not considered high quality representations or rare in the area.

5.1.4 Non-Native Plants

Surveyors detected six non-native noxious species during Spring 2012 and Spring 2015 surveys: Russian thistle, Sahara mustard, tamarisk, Mexican palo verde (one individual), filaree, and Mediterranean grass. Russian thistle and Sahara mustard were present but not abundant adjacent to the dirt runway and cement plant in the southeastern portion of the survey area; they were abundant in the road shoulder of Sunfair Rd., including along the gen-tie. Tamarisk and Mexican palo verde were rare and only occurred east of the cement plant, either in an area that received runoff from the cement plant or adjacent to the on-site infrastructure (tamarisk only). Mediterranean grass and filaree were common throughout the survey area and region.

[2] *http://www.dfg.ca.gov/biogeodata/vegcamp/natural_comm_background.asp#codes*

5.2 Wildlife

5.2.1 Listed Species

5.2.1.1 Desert Tortoise (FWS: *Threatened*; CDFW: *Threatened*)

No live tortoises or their sign were observed during Spring 2012 or 2015 surveys of the Project, and the entirety of the survey area is either poor quality desert tortoise habitat or developed and not habitat. The lack of recent or past sign indicates that tortoises do not currently use the Project and have not used it in recent years. Most of the Project is highly disturbed by the development and/or operation of the airport and the cement plant. The introduction of non-native plant species and the proximity to a well-traveled paved road (Sunfair Road) further contribute to the lowered quality of the habitat. There are only small patches of relatively undisturbed Big Galleta Grass-Creosote Bush Scrub Steppe Alliance (Figure 4). The version of this community that occurs at the Project is inherently poor tortoise habitat and is further compromised by the surrounding disturbance.

As topography flattens toward Coyote Dry Lake east of the Project, desert tortoise habitat quality declines due to lower coversite potential and reduced foraging opportunities. Accordingly, areas lower on the bajada likely support lower tortoise densities. Studies in the area have found tortoise sign higher on the bajada, while one study east of the airport found no sign (E. LaRue, Circle Mountain Biological Consultants, Inc., pers. comm. to A. Karl). Surveys of the proposed Cascade Solar Project, approximately one mile northeast of the Project near Coyote Dry Lake, did not detect any tortoise or tortoise sign in April 2011 (PCR 2011). The Project is located on the lower bajada, approximately one mile from Coyote Dry Lake, and the lack of tortoise sign and poor habitat quality is consistent with these observations. In 2012 and 2013, the surveys for the Project immediately south of the current Project site and across Sunfair Rd. also observed no tortoise sign. Although the Project contains no tortoises and poor habitat to non-habitat, there are no barriers to prevent tortoise movement onto the Project from adjacent parcels that contain better habitat. One tortoise was observed in 2012 approximately 0.5 mile to the southwest in an area of higher quality tortoise habitat. Also, the CNDDB (2015) records show tortoise occurrences in the valley surrounding the Project (Appendix B). Accordingly, the possibility of transient tortoise should be considered.

The survey area is not within FWS critical habitat. FWS designated critical habitat areas for the desert tortoise in 1994 (FWS 1994) and prescribed management actions to aid recovery, with critical habitat providing legal protection. The closest critical habitat unit to the survey area is the Pinto Mountain Critical Habitat Unit, approximately 12 miles to the southeast.

5.2.2 Non-listed, Special-status Species

Surveyors recorded all special-status wildlife observations and their habitat during the desert tortoise surveys (Table 8A and 8B). The following discussion includes species that were not observed or otherwise detected during surveys but for which suitable habitat is present.

Table 8A. Non-listed, Special-status Wildlife Detected during Spring 2012

Number on Figure 6A	UTM (NAD 83)		Species		Sign Type	Comments
	Easting	Northing				
1	568945	3779674	*Vulpes macrotis*	Desert kit fox	Natal den	Active. Appears well-established and in use for a while. Four entrances with many tracks and old and fresh scat.
2	568735	3779531	*Vulpes macrotis*	Desert kit fox	Natal den	Inactive. Old scat.
3	568608	3779534	*Vulpes macrotis*	Desert kit fox	Natal den	Inactive. Very caved in.
4	569086	3779378	*Falco mexicanus*	Prairie falcon	Individual	Perched on *Tamarix* near the on-site infrastructure.

Table 8B. Non-listed, Special-status Wildlife Detected during Spring 2015

Number on Figure 6B	UTM (NAD 83)		Species		Sign Type	Comments
	Easting	Northing				
5	568733	3779533	*Vulpes mactrotis*	Desert kit fox	Natal den	Inactive. Eleven entrances; old scat present.
6	568871	3779761	*Vulpes mactrotis*	Desert kit fox	Natal den	Inactive. Three entrances; old scat present.
7	568945	3779668	*Vulpes mactrotis*	Desert kit fox	Natal den	Inactive. Six entrances.
8	568917	3779615	*Vulpes mactrotis*	Desert kit fox	Natal den	Inactive. Five entrances; old scat present.

5.2.2.1 Reptiles and Amphibians

Mojave Fringe-toed Lizard (CDFW: *SSC*)

Mojave fringe-toed lizards are loose-sand specialists, found only in aeolian sand dunes, sand fields, hummocks, and other areas with loose sand deposits between 300 and 3,000 feet in elevation (Stebbins 2003). No Mojave fringe-toed lizards were observed during either survey year and although sandy soils are present within the survey area, there are no loose sand deposits within the survey area that would be considered suitable Mojave fringe-toed lizard habitat. There are no documented CNDDB occurrences within the survey area; the closest record is over 10 miles to the northeast.

5.2.2.2 Birds

Prairie Falcon (FWS: Bird of Conservation Concern)

Surveyors observed one prairie falcon (*Falco mexicanus*) perched on a tamarisk within the survey area during Spring 2012 surveys (Table 8, Figure 6). No prairie falcons were observed in Spring 2015. Prairie falcons are year-round residents of the region within which the Project lies. The prairie falcon is found in a variety of habitats, but is associated primarily with desert scrub

and similar open habitats where it utilizes open ledges and cliffs for perching and nesting and forages over the open terrain (Steenhof 1998). The Project does not provide suitable nesting habitat, although it could provide suitable foraging habitat.

5.2.2.3 Special-status Mammals

Desert Kit Fox (Protected by CDFW)

Suitable denning and foraging habitat for the desert kit fox occurs throughout the undeveloped portions of the survey area and kit fox sign was observed in Spring 2012 and Spring 2015. In 2012, surveyors detected one active and two inactive kit fox natal dens within the survey area (Table 8A, Figure 6A) and scat throughout. In 2015, there was no evidence of recent occupation of the Project, but four inactive natal dens were observed within the survey area (Table 8B, Figure 6B). Desert kit fox inhabits many desert habitats, typically with less than 20 percent cover (NPS 2006). Despite the absence of recent sign during the 2015 surveys, there is suitable habitat present and kit fox are highly mobile species; therefore, it is possible that kit fox will reinhabit the Project.

Bats (**Several Species Protected by CDFW**)

A few of the nine special-status bat species whose geographic ranges overlap the Project roost in trees and buildings as well as caves, mines, cliffs, and rocks (Table 3). Based on foraging preferences, only cave myotis, pallid bat, and western mastiff bat likely use the site. However, no major roosts (i.e., guano, dead bats) were detected during the Spring 2015 inspection of the on-site structures and trees. Additionally, no bats were observed emerging from the on-site buildings or trees at dusk during focused monitoring. Up to six bats were observed flying north of the on-site structures during monitoring on May 28, 2015; canyon bat (*Parastrellus hesperus*) and probably *Myotis* sp. A swimming pool present on-site provides a water source for bats and a source of insect prey as well, which undoubtedly attracts bats to the area. There are no important maternal or communal roosts that are apparent in the onsite structures and trees.

5.3 Potential for Other Special-status Species to Occur

5.3.1 Special-status Wildlife and Plant Species Not Observed, but that May Occur on the Project Area

In addition to the special-status species observed during surveys, it is possible that some of the remaining special-status species from Table 3 could inhabit the survey area and immediately adjacent areas. These are noted in Table 3 and include species that may not have been observed during surveys because of their rarity, behavior, season of surveys (e.g., wintering birds or summer annuals), or lack of germination or above ground growth due to reduced rainfall. In addition, several annual plant species identified in Table 3 may not have been present during spring surveys because germination or growth occurs earlier or later in the year, or because rainfall was insufficient for germination. There are several species that have moderate potential to be present on the Project, and may be available for surveying in fall or summer.

5.3.2 Special-status Wildlife and Plant Species Not Observed, but that are Not Likely to Occur on the Project Area

There are species listed in Table 3 that were determined unlikely to occur within the survey area based on the survey area habitats or lack thereof. These are noted in Table 3. Golden eagles (*Aquila chrysaetos*) and Nelson's bighorn sheep are among these species, but are of particular concern to FWS and CDFW and therefore are discussed in more detail, below.

Golden Eagle (FWS: *MBTA and BGEPA*; CDFW: *Fully Protected*)

Golden eagles are found in variety of habitats but generally prefer open spaces for hunting and cliffs, trees, or other tall structures (e.g., transmission line structures) for nesting (Kochert et al. 2002). No eagles were observed during surveys and the survey area does not contain suitable nesting habitat for eagles. The nearest CNDDB golden eagle occurrence of nesting eagles is approximately 8 miles southeast of the Project, from 1980. The closest mountain range to the Project with suitable nesting habitat is the Little San Bernardino Mountains, approximately 2.5 miles to the south-southwest. Therefore, it is likely that eagles nest in the Little San Bernardino Mountains and eagles may hunt in the valley surrounding the Project. However, it is not expected that eagles will use the Project due to the high level of disturbance on the Project and the adjacent residential and industrial development.

Bighorn Sheep (CDFW: *Managed Game Species*)

Nelson's bighorn sheep require steep, rocky terrain to escape predators and raise lambs, and movement corridors among mountain ranges are important to maintaining healthy populations. CNDDB records indicate that the Little San Bernardino Mountains, approximately 2.5 miles south of the survey area, are occupied by bighorn sheep. However, the Project does not contain suitable bighorn sheep lambing or foraging habitat; nor is it situated in a movement corridor between important mountain ranges. Residential and industrial development in the valley, lack of steep, rocky habitat on or near the Project, and the absence of occupied mountain ranges north of the Project preclude the use of this site by bighorn sheep. The Project is not within a known bighorn sheep corridor as identified in *A Linkage Design for the Joshua Tree-Twentynine Palms Connection* (Penrod et al. 2008). Not surprisingly, no evidence of Nelson's bighorn sheep was found during field surveys.

6.0 POTENTIAL IMPACTS AND PROPOSED MITIGATION

6.1 Special-status Plants

6.1.1 Utah Vine Milkweed

Utah vine milkweed is CRPR 4 and does not meet the requirements to trigger consideration under CEQA; therefore, no species-specific mitigation measures are required. However, the topsoil, which contains the native seed bank, should be separated and set aside during grading and redistributed over temporarily disturbed areas. Using the topsoil will facilitate passive revegetation of temporarily disturbed areas. Limiting construction disturbance to only the area required for development will further minimize impacts.

6.1.2 Other Special-status Plants Not Observed but that May Occur

Some species of plants listed in Table 3 could occur within the survey area but were not available for observation due to the relatively dry conditions in both years of the survey. However, the site is sufficiently degraded that the potential for presence is diminished. If present, these species could be impacted by Project development. Impacts include removal of individuals and/or the seed bank. Redistributing the native topsoil on temporarily disturbed areas and limiting construction disturbance to only the area required for development will minimize impacts.

6.1.3 CDNPA species

Four species protected under the CDNPA (beavertail cactus, buckhorn cholla, Joshua tree, and silver cholla, Tables 6 & 7, Figure 5A) could be directly impacted by development if they fall within the Project footprint. Where feasible, individuals of these species should be avoided. For those that cannot be avoided, removal should comply with the California Desert Native Plant Protection Act and the San Bernardino County Code.

6.2 Special-status Wildlife

6.2.1 Desert Tortoise

There is no evidence that tortoises are using the Project or have used it in the recent past. Therefore, impacts to tortoises are expected to be negligible and encounters limited to transient tortoises. If tortoises walk onto the Project, they could be injured or killed (e.g., collision with vehicles or equipment). Therefore, the following mitigation measures are recommended to avoid impacts on tortoises. The following is a summary, and each measure should be described in detail in the mitigation and measures that will be stipulated by the County prior to construction.

- Install permanent tortoise exclusion fencing around the perimeter of the Project site to exclude tortoise during construction and operation. Clearance surveys of the fenced site should be conducted according to FWS protocol by qualified biologists, to ensure that no tortoises are inside the site. Any newly installed fence will be monitored appropriately to ensure that no tortoises exhibit fence walking behavior that could result in injury or death to the tortoise.
- Monitor and maintain the fence at appropriate intervals throughout construction and operations. This includes monitoring during storm events or other circumstances that could damage the fence.
- Implement a worker environmental awareness training for all Project personnel.
- Enforce speed limits of 25 miles per hour on all roads used for Project access.
- A qualified biologist should be on site during all initial surface grubbing and grading in the event that a tortoise is encountered. Biological monitors should be present during construction of the perimeter fence and during ground disturbance in unfenced areas to properly implement mitigation measures. A qualified biologist must be available (not onsite) during construction activities in fenced areas that have been surveyed for and cleared of tortoises and other biological resources to promptly implement protection measures for biological resources in the unlikely event that a tortoise or other biological resource is detected onsite.

6.2.2 Prairie Falcon

Because the survey area does not provide suitable nesting habitat for prairie falcon, and ample, suitable foraging habitat is present in the surrounding areas, the loss of foraging habitat due to Project development is not considered a likely adverse impact. However, standard measures such as limiting the area of disturbance will contribute toward avoiding any potential impacts to this species and their habitat.

6.2.3 Nesting Birds

Vegetation removal during construction, and construction noise and activity, could adversely impact nesting birds. Therefore, to the extent feasible, vegetation removal should take place outside of the breeding season, which is typically February 15 to August 31. If construction will take place during the breeding season, pre-construction clearance surveys to locate nesting birds should be conducted immediately prior to construction. If active nests are present within the construction area, they must be avoided by establishing a non-disturbance buffer until the young fledge or the nest fails (as determined by a qualified biologist, in consultation with CDFW and USFWS). Nesting birds that are adjacent to the construction should also be avoided by this approved buffer. The buffer areas should be delineated and flagged to ensure avoidance.

6.2.4 Kit Fox

Kit fox could be affected by Project development by loss of habitat. However, ample suitable habitat is present in the surrounding areas, and the loss of habitat due to Project development is not considered a likely adverse impact. Kit fox could move onto the Project prior to development, so surveys should be completed within 30 days of site grading. Depending on the results of those surveys, a plan may be developed to address individuals that are denning within the Project site. Other standard measures such as speed limits, limiting area of disturbance, and having biological monitors present will contribute toward minimizing any potential impacts to this species and their habitat.

7.0 OTHER RECOMMENDATIONS

Plants

Although surveys were conducted in spring, some species were not available for observation due to the dry conditions or because germination occurs in late summer or fall. If there is adequate 2015 summer precipitation, fall surveys should be conducted. However, another round of spring surveys is probably not warranted due to the site's degraded conditions.

Wildlife

Development within the vicinity of tortoise habitat has permitting implications and frequent communication with CDFW and FWS on avoidance and permitting requirements is recommended. According to FWS (2010) pre-project survey protocol, desert tortoise survey results are valid for one year. After one year, if the site has not been developed or begun permitting, FWS and CDFW should be contacted to determine whether another survey is required.

The survey results and recommended mitigation measures within this report do not constitute authorization for incidental take of listed species. Tortoises are protected by the California Endangered Species Act and the Federal Endangered Species Act. As such, if a tortoise if found on-site during construction, all activities likely to adversely affect the tortoise should cease immediately and the County, FWS, and CDFW should be contacted to determine the appropriate course of action.

8.0 CERTIFICATION

CERTIFICATION: *"I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Field work conducted for this assessment was performed by me or under my direct supervision. I certify that I have no financial interest in the project."*

DATE: 6-12-15 SIGNED: 

Emily Mix

DATE: SIGNED: Signature forthcoming

Dr. Alice Karl

Include names and signatures for those performing fieldwork:

1) Fieldwork Performed By

Signature forthcoming

Dr. Alice Karl

2) Fieldwork Performed By:

Signature forthcoming

Tim Thomas

3) Fieldwork Performed By:

Signature forthcoming

Glenn Rink

Check here _____ if adding any additional names/signatures, below or on other side of page.

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FIGURES

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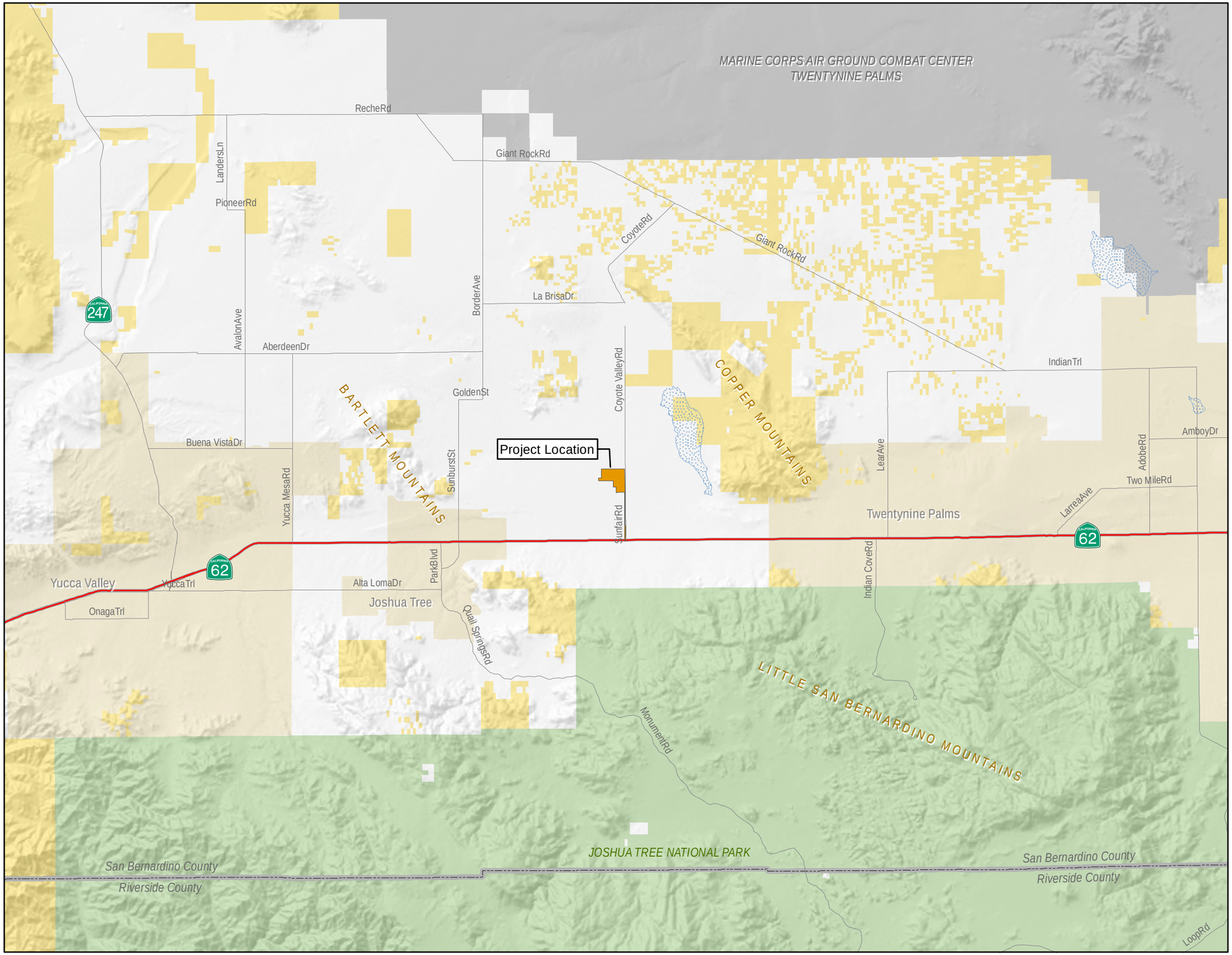
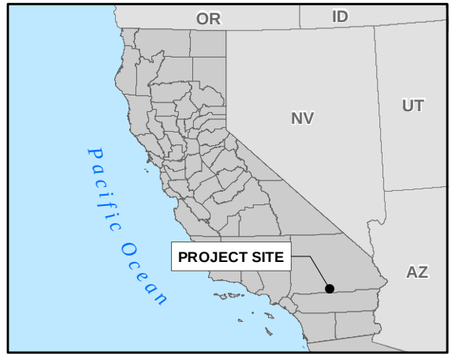


JOSHUA TREE SOLAR FARM
SAN BERNARDINO COUNTY, CA



Legend

- Project Area

Transportation Features

- State Highway
- Major Roads
- County Boundary
- Dry Lakes

Land Jurisdiction

- Bureau of Land Management
- Miitary
- National Park Service
- Towns/Places

0 1 2 4
Miles

FIGURE 1
REGIONAL LOCATION MAP

TETRA TECH

JOSHUA TREE
SOLAR FARM
SAN BERNARDINO COUNTY, CA

Legend

- Project Area
- USGS 1:24,000 Quadrangles

0 1,000 2,000 4,000
Feet

FIGURE 2
PROJECT VICINITY
USGS TOPOGRAPHIC MAP

TETRA TECH

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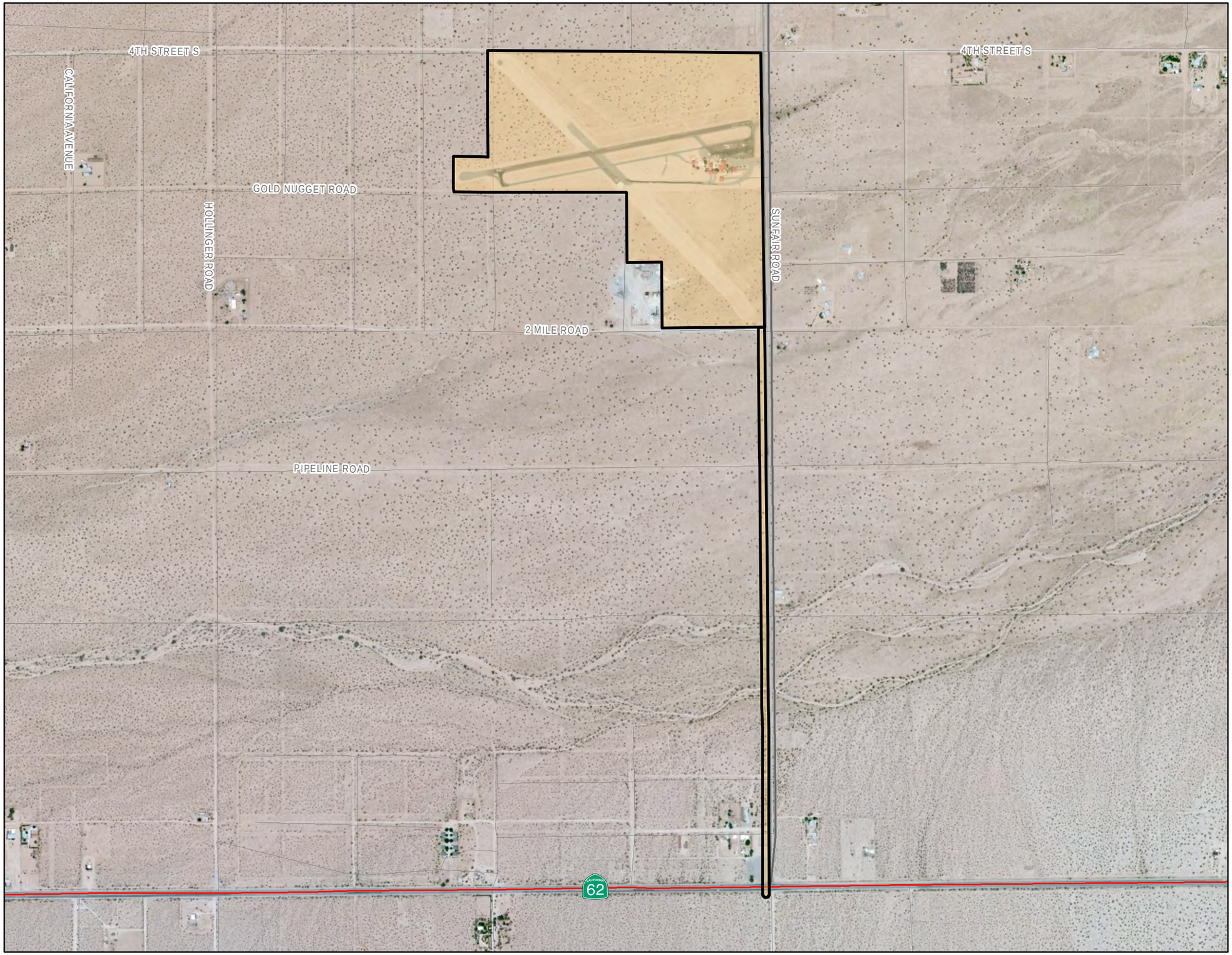
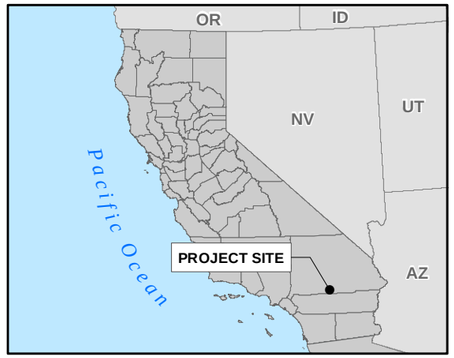


JOSHUA TREE SOLAR FARM SAN BERNARDINO COUNTY, CA



Legend

- Project Area
- 2015 Survey Area (10-meter Transects)

0 450 900 1,800
Feet

FIGURE 3
BIOLOGICAL RESOURCES
SURVEY AREA

TETRA TECH

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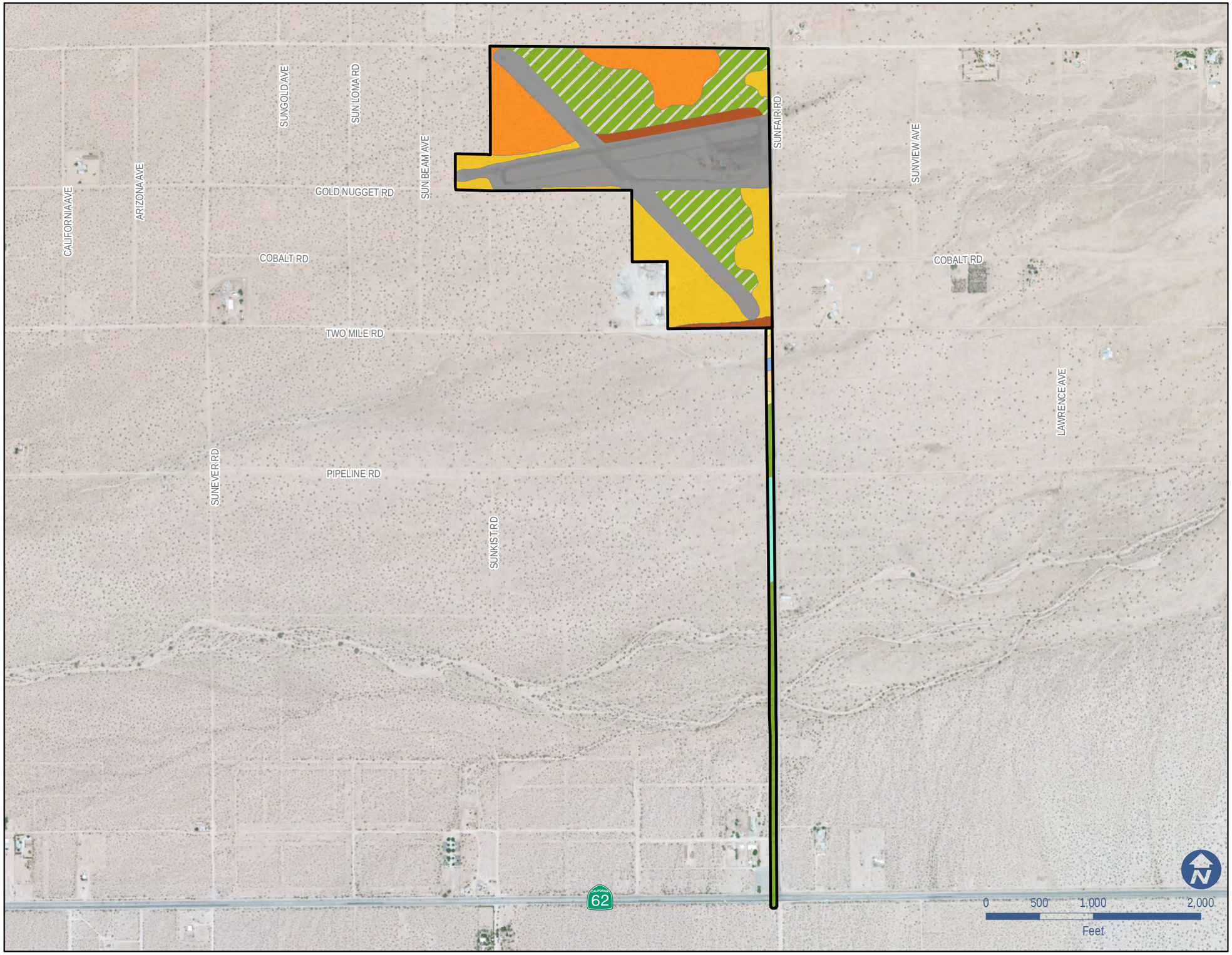
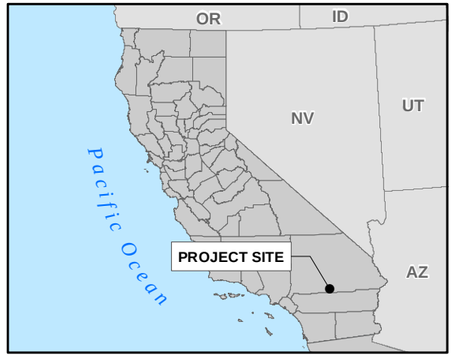


JOSHUA TREE SOLAR FARM SAN BERNARDINO COUNTY, CA



Legend

- Project Area

Cover Type

- Big Galleta Grass-Creosote Bush Scrub Steppe Alliance Disturbed by Adjacent Industry
- Moderately Intact Big Galleta Grass-Creosote Bush Scrub Steppe Alliance
- Previously Cleared, Regrowth of Big Galleta Grass, Indian Rice Grass and Croton
- Bladed (Barren), Developed or Recently Bladed (Early Regrowth)
- Loose - Sandy Soils due to Adjacent Disturbance
- Aeolian Sand Sheets
- Bench of Channel
- Big Galleta - Creosote Bush Shrub Steppe Alliance
- Big Galleta Shrub Steppe Alliance
- Channel of Main Wash Channel

FIGURE 4
PROJECT VEGETATION AND COVER TYPES

TETRA TECH

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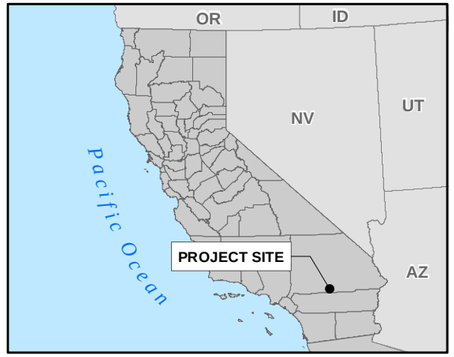
JOSHUA TREE SOLAR FARM SAN BERNARDINO COUNTY, CA



Legend

- Project Area

Plant Observations

- Joshua tree
- Utah vine milkweed

Note: Numbers in figure correspond to table in report text.

0 125 250 500
Feet

FIGURE 5A
SPECIAL-STATUS
PLANT OBSERVATIONS
MAY 2012

TETRA TECH

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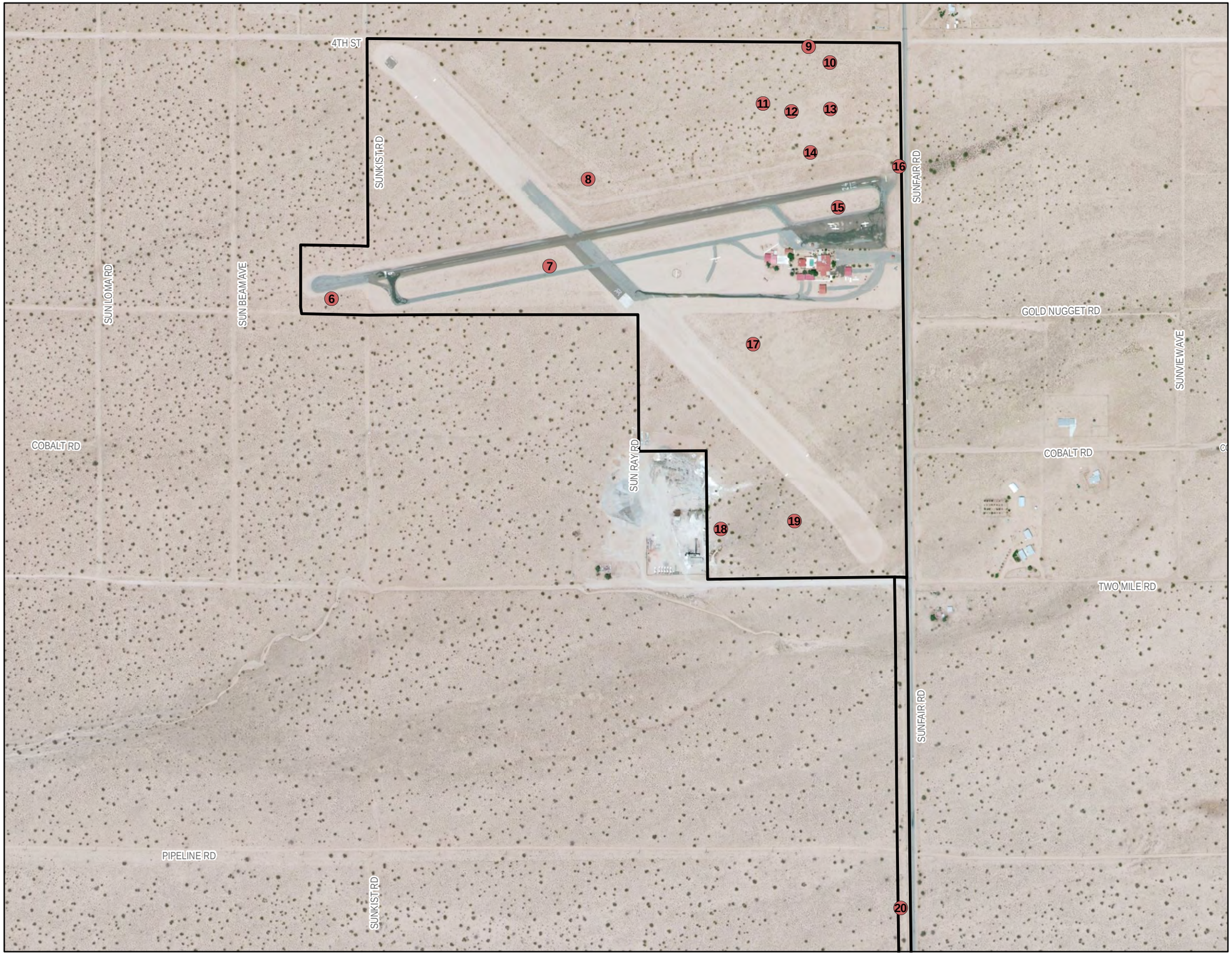
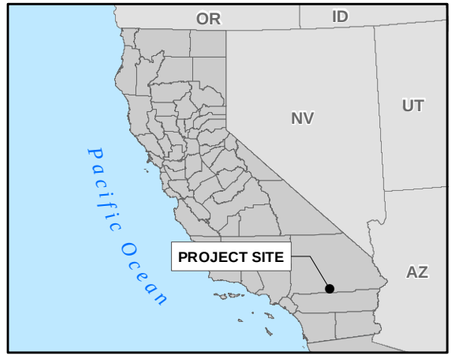


JOSHUA TREE SOLAR FARM SAN BERNARDINO COUNTY, CA



Legend

- Project Area

Plant Observations

- Utah vine milkweed

Note: Numbers in figure correspond to table in report text.

0 250 500 1,000
Feet

FIGURE 5B
SPECIAL-STATUS
PLANT OBSERVATIONS
APRIL 2015

TETRA TECH

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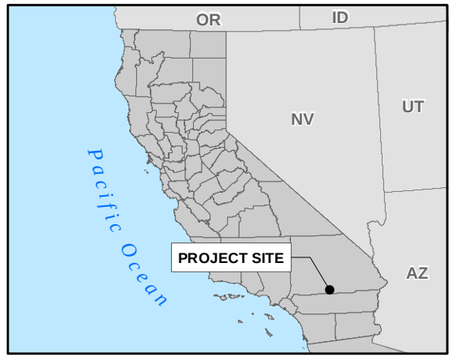
JOSHUA TREE SOLAR FARM SAN BERNARDINO COUNTY, CA



Legend

- Project Area

Wildlife Observations

- Desert kit fox natal den (Active)
- Desert kit fox natal den (Inactive)
- Prairie falcon

Note: Numbers in figure correspond to table in report text.

0 125 250 500
Feet

FIGURE 6A
SPECIAL-STATUS
WILDLIFE OBSERVATIONS
MAY 2012

TETRA TECH

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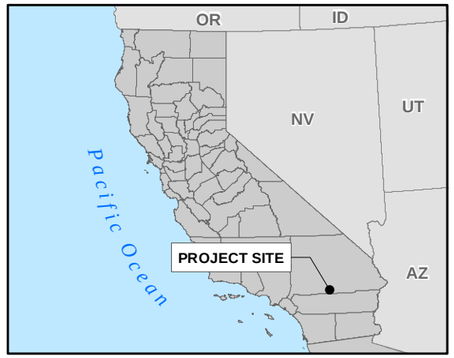
JOSHUA TREE
SOLAR FARM
SAN BERNARDINO COUNTY, CA



Legend

- Project Area

Wildlife Observations

- Brewer's sparrow
- Desert kit fox natal den (Inactive)

Note: Numbers in figure correspond to table in report text.

0 125 250 500
Feet

FIGURE 6B
SPECIAL-STATUS
WILDLIFE OBSERVATIONS
APRIL 2015

TETRA TECH

APPENDIX A

REPRESENTATIVE PROJECT AREA PHOTOGRAPHS

Photograph 1: Northwestern corner of parcel 060723114, facing East.

Photograph 2: Center of 060723112, facing South.

Photograph 3: Center of 060723112, facing Northeast.

Photograph 4: Center of 060723112, facing East.

Photograph 5: Northwestern corner of parcel 060723112, facing South through intact creosote bush scrub

Photograph 6: Depositional area east of the cement plant in 2012 in parcel 060723115, facing East.

Photograph 7: Northeast corner of parcel 060723107, facing South.

Photograph 8: Northeast corner of parcel 060723107, facing West.

Photograph 9: Existing distribution line to be improved on the west side of Sunfair Road. (southeast corner of parcel 060722105), facing South.

Photograph 10: Berm next to cement factory, facing South.

Photograph 11: Dirt runway extension in south of Project site, facing Northwest. Note partial growth of Russian thistle and annual burrweed.

Photograph 12: Facing east toward airplane hangar. Note annual burrweed is the dominant plant.

Photograph 13: Facing west from runway intersection. Note that annual burrweed and Russian thistle are beginning to grow in cracks in runway.

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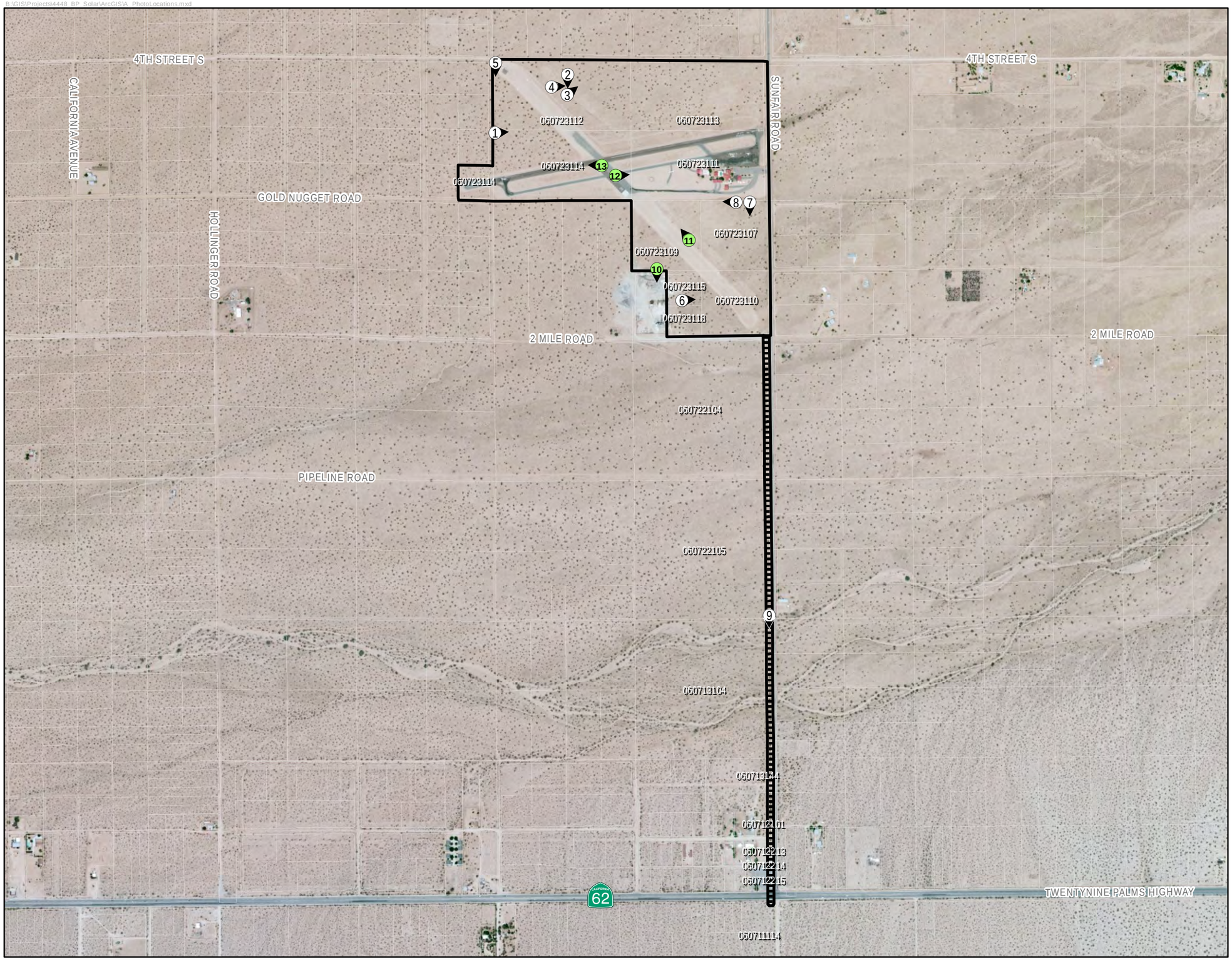
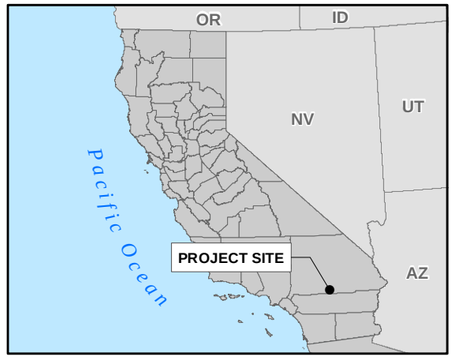


JOSHUA TREE SOLAR FARM
SAN BERNARDINO COUNTY, CA



Legend

- Project site
- Proposed Gen-Tie Route
- Parcels
- 2012 Photo Locations
- 2015 Photo Locations

0 450 900 1,800
Feet

KEY TO PHOTOGRAPHS

TETRA TECH

APPENDIX B

CALIFORNIA NATURAL DIVERSITY DATABASE RESULTS WITHIN 25 MILES OF THE SURVEY AREA

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JOSHUA TREE SOLAR FARM
SAN BERNARDINO COUNTY, CA

Legend

- Project site
- 25-Mile Buffer

CNDDB Special-Status Plant Species

- Alverson's foxtail cactus
- Arizona spurge
- Baldwin Lake linanthus
- Big Bear Valley woollypod
- Booth's evening-primrose
- California ayenia
- Cienega Seca oxytheca
- Coachella Valley milk-vetch
- Coulter's goldfields
- Cushenbury buckwheat
- Emory's crucifixion-thorn
- Fremont barberry
- Johnston's buckwheat
- Latimer's woodland-gilia
- Lincoln rockcress
- Little San Bernardino Mtns. linanthus
- Mecca-aster
- Mojave menodora
- Palmer's mariposa-lily
- Parish's alumroot
- Parish's club-cholla
- Parish's daisy
- Parish's rockcress
- Pioneertown linanthus
- Rau's jaffueliobryum moss
- Robison's monardella
- Rusby's desert-mallow
- San Bernardino Mountains dudleya
- San Bernardino milk-vetch
- Shockley's rockcress
- Wright's jaffueliobryum moss
- alkali mariposa-lily
- appressed muhly
- chaparral sand-verbena
- desert spike-moss
- flat-seeded spurge
- jackass-clover
- pinyon rockcress
- purple-nerve cymopterus
- slender cottonheads
- southern mountain buckwheat
- spear-leaf matelea
- triple-ribbed milk-vetch
- white-bracted spineflower

CNDDB data: February 2015 monthly release.

0 2.5 5 10
Miles

CNDDB SPECIAL-STATUS PLANT OCCURRENCES WITHIN 25-MILES OF THE PROJECT

TETRA TECH

Saved by sierra.marrs on: 2/12/2015 12:22:32 PM
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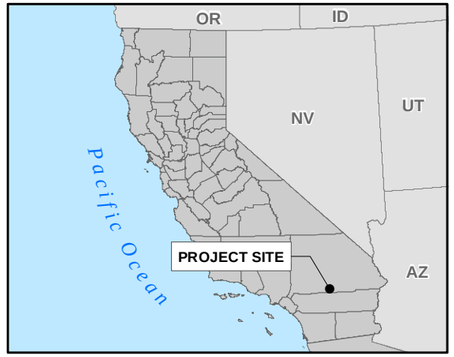
JOSHUA TREE SOLAR FARM
SAN BERNARDINO COUNTY, CA



Legend

- Project site
- 25-Mile Buffer

CNDDB Special-Status Wildlife Species

Birds
- Bendire's thrasher
- Le Conte's thrasher
- burrowing owl
- golden eagle
- least Bell's vireo

Invertebrates
- California cuckoo bee
- Coachella Valley jerusalem cricket
- Morongo (=Colorado) desertsnail
- Roberts' rhopalolemma bee

Reptiles
- Coachella Valley fringe-toed lizard
- Mojave fringe-toed lizard
- coast horned lizard
- desert tortoise
- flat-tailed horned lizard
- red-diamond rattlesnake

Mammals
- American badger
- Earthquake Merriam's kangaroo rat
- Palm Springs pocket mouse
- Palm Springs round-tailed ground squirrel
- San Diego desert woodrat
- Townsend's big-eared bat
- desert bighorn sheep
- long-eared myotis
- pallid San Diego pocket mouse
- pallid bat

CNDDB data: February 2015 monthly release.

0 2.75 5.5 11
Miles

CNDDB
SPECIAL-STATUS WILDLIFE OCCURRENCES WITHIN 25-MILES OF THE PROJECT

TETRA TECH

APPENDIX C

EXAMPLE OF SURVEY DATA SHEETS

PROJECT Joshua Tree Solar
2015 SPECIAL-STATUS SPECIES SURVEYS

DATE 2 April 2015 **Civil Sunrise** NA **SURVEYORS:** Karl
TIME: Start 0832 **PROJECT ELEMENT** Gen Lite. Also did
End 1001 **Civil Twilight** NT from house south in ~~Brg~~ shoulder
~~North Perimeter~~

WEATHER:

	Ta	T 5cm	Cloud Cover	Wind
Start	14.8	15.2	15% Stratus	4.7 mph W gusting to ~25
End	16.2	18.4	<10% scattered	NNW 7 mph
Start				
End				

BUOW: N.A. - included
A.M. Time Stopped: 1001
Ta 16.2
P.M. Time Begun:
Ta

GENERAL SITE DESCRIPTION:
VEGETATION SHRUB LAYER AND BUNCH GRASSES)

Aspect Dominants LATR, HIRI

Common Species HYSA (mostly S segment)
CROCAL (N only)

Occasional Species

% Cover 6
Avg. Height of Dominant Shrub Species LATR are large - to 4 m. Commonly >2 m.

UNDERSTORY
Abundant Species SCBA

Exotics (Map concentrations and describe here relative to population size and geographic breadth)
BRATOU & SCBA are the 2 most abundant plants in road shoulder. Common everywhere else, but not abundant.

TOPOGRAPHY
Landform Bajada (2 bajadas, meeting @ wash ~~#~~ in bottom) SALTRA occa.

Drainage Type A couple of discrete, shallow (<0.3m deep) washes and one wash system w/several washes & flow between.

Elevation (state meters or feet) S soft d.g. loam in S; sl. loamy sand in north

SUBSTRATE
Color Light tan
Coarse Particles (Type, % Cover) D.G. on S end. Occa scatt. fine gravel

Soil Texture and Consistence

PRESENCE OF PREDATORS: Ravens - # Detected Ø **# Nests**
Coyotes – Sign Type Ø **Age** **Comments**
But dog scat & /dens (near residences).
HUMAN-RELATED DISTURBANCES (Onsite and Adjacent) Along Sunfarm Rd. (paved). A few residences, mostly abandoned. Distribution line along road. Gas pipeline crosses. Trash (not much)
SITE PICTURE: Photographer Ø
A - Form ☐
(Describe site pictures)
A –
B

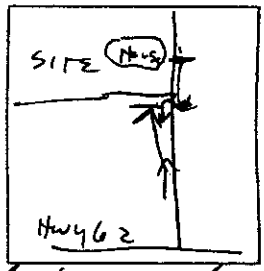
Gentle APR 2 2/3

Sign #	Waypoint I.D.	UTM (NAD 83)	DESERT TORTOISE						
			Sign Type	Class	Size Width (sc, bur, tr) MCL (shell, tort)	Burrow Location	In/Out Burrow? Visible?	Live Tortoise Evidence of Disease?	Photo who's camera

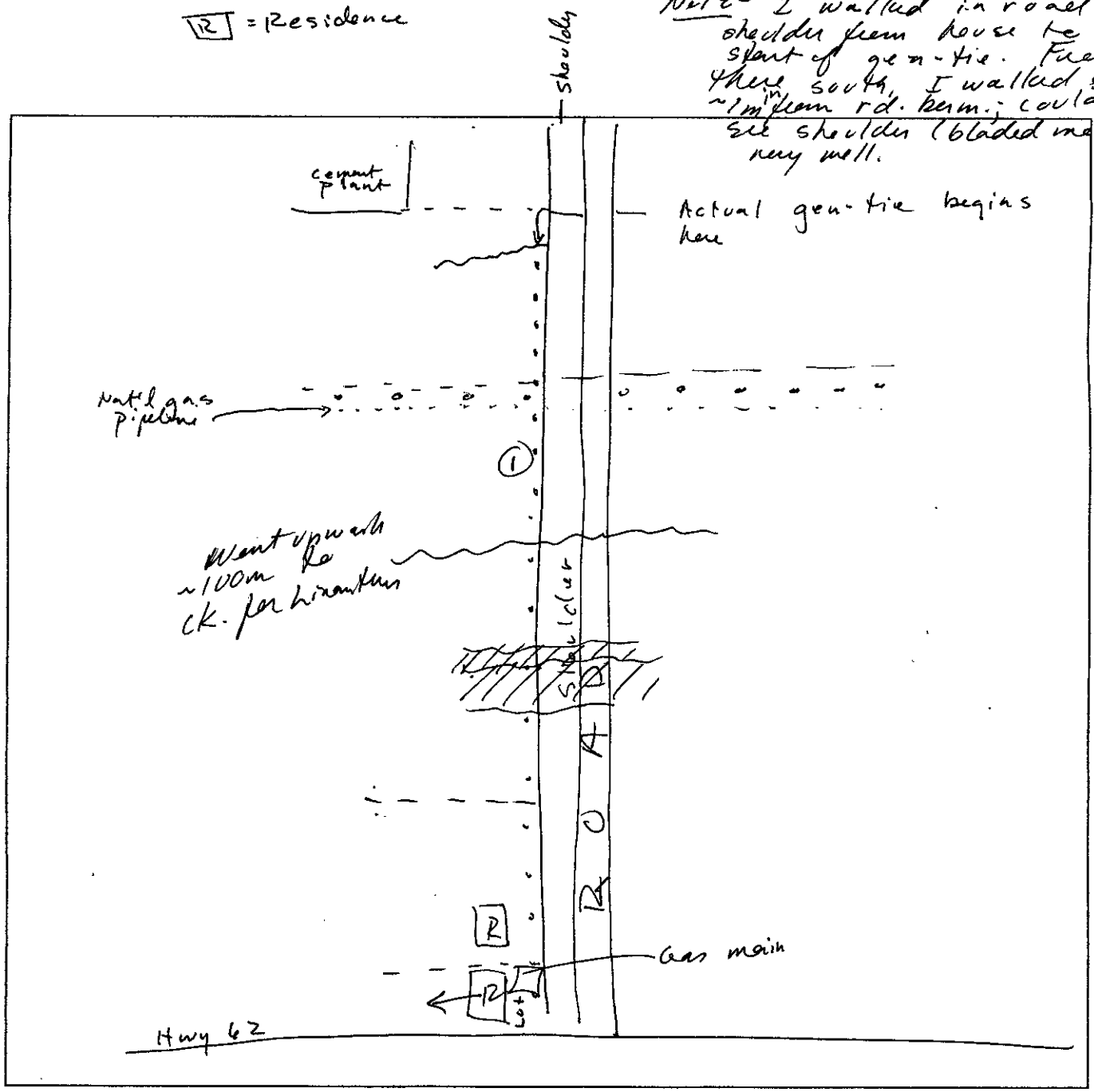
Sign #	Waypoint I.D.	UTM (NAD 83)	OTHER SPECIES Species	Sign Type	Sign Condition	Comments
01	JG01	0569384 3778526	FUN UTA	2	Robust	<1 m². Grazing on HIRY

DATE 2 Apr 2015
LOCATION IN SITE Gen-tie
LEGEND:
- ~~~~ Wash system
- ~~~~ wash
- - - - Dirt road
- o o o = Distribution Line
- [R] = Residence

Transect,s: show start, and end by direction and transect number.
START - 0569384
3779480



NOTE - I walked in road shoulder from house to start of gen-tie. From there south, I walked south ~1 mi in rd. berm; could see shoulder (bladed mostly) new well.



APPENDIX D

KEY TO DESERT TORTOISE SIGN CLASSES

KEY TO DESERT TORTOISE SIGN CLASSES

BURROWS

1 – DEFINITELY TORTOISE – FRESH (TRACKS, TORTOISE INSIDE, FRESHLY DISTURBED SOIL ON MOUND/RUNWAY)

2 – DEFINITELY TORTOISE – USED THIS SEASON (CLEARED OF ANNUALS, BUT NO FRESHLY DISTURBED SOIL)

3 – DEFINITELY TORTOISE – NOT USED THIS SEASON (PROBABLY HAS ANNUALS GROWING IN RUNWAY)

4 – POSSIBLY TORTOISE – IN GOOD CONDITION BUT UNSURE OF SPECIES USING BURROW

5 – DEFINITELY TORTOISE – DETERIORATED SUCH THAT IT WOULD REQUIRE SUBSTANTIAL REMODELING TO BE USABLE

6 – POSSIBLY TORTOISE – DETERIORATED

SCAT

TY1 – WET OR FRESH DARK, ODORIFEROUS

TY2 – DRIED, POSSIBLE GLAZE ON PART; UNEXPOSED SURFACES DARK BROWN; SLIGHT ODOR

TY3 – DRIED, NO GLAZE; AT LEAST PARTIALLY FADED ON EXTERIOR; VERY SLIGHT ODOR

NTY3 – DRIED, NO GLAZE; AT LEAST PARTIALLY FADED ON EXTERIOR; NO ODOR (DISTINGUISHES FROM TY3)

NTY4 – DRIED, LOOSENING, PALE OR BLEACHED

CARCASSES – GENERAL INDICATORS FOR TIME SINCE DEATH

<1 YR – UNEXPOSED SCUTES NORMAL COLOR AND SHEEN, ADHERE TIGHTLY. EXPOSED SCUTES PALING AND MAY BE LIFTING OR OFF. UNEXPOSED BONE WAXY AND SOLID.

1–2 YRS – UNEXPOSED SCUTES NORMAL COLOR WITH SLIGHT SHEEN, MOSTLY TIGHTLY ATTACHED. EXPOSED SCUTES SLIGHTLY PALE WITH NO SHEEN AND NO TO SLIGHT GROWTH RING PEELING. NO ODOR. UNEXPOSED BONE SILKY.

2–3 YRS – UNEXPOSED SCUTES PALE AND WITHOUT SHEEN BUT NO GROWTH RING PEELING. EXPOSED SCUTES PALE WITH SLIGHT PEELING, SCUTES LOOSE, OFF AND/OR TIGHT. BONE SUTURES GENERALLY TIGHT.

4 YRS – UNEXPOSED SCUTES NORMAL COLOR TO SLIGHTLY PALE, NO SHEEN, NO PEELING. EXPOSED SCUTES LOOSE, PALE, DULL, WITH MODERATE PEELING. SUTURES SEPARATING AND BONE SURFACE IS FISSURED, EDGES ARE ROUGHENED (FISSURED UNDER HAND LENS) AND CHIP FAIRLY EASILY.

>>4 YRS – DISARTICULATED AND DISARTICULATING. BONE EDGES CHIP AND CRUMBLE EASILY. SCUTES ARE PEELING AND CURLED.

APPENDIX E

FLORAL AND FAUNAL COMPENDIUM

PLANTS

AGAVACEAE AGAVE FAMILY	
Yucca brevifolia	Joshua tree
Yucca schidigera	Mojave yucca
AMARANTHACEAE AMARANTH FAMILY	
Atriplex canescens	four-winged saltbush
*Salsola tragus**	Russian thistle
APOCYNACEAE DOGBANE FAMILY	
Asclepias erosa	desert milkweed
Funastrum utahense	Utah vine milkweed
ASTERACEAE (Compositae) SUNFLOWER FAMILY	
Ambrosia acanthicarpa	annual burrweed
Ambrosia dumosa	white burr sage
Ambrosia salsola	cheesebush
Artemisia dracunculus	tarragon
Baccharis sarothroides	broom baccharis
Baileya pleniradiata	woolly marigold
Brickellia incana	brickellia
Chaenactis carphoclinia	pebble pincushion
Chaenactis fremontii	Fremont's pincushion
Conyza canadensis	horseweed
Encelia frutescens	rayless encelia
Geraea canescens	desert sunflower
Lepidospartum squamatum	scale-broom
Malacothrix coulteri	Coulter's dandelion

Malacothrix glabrata	desert dandelion
Nicolletia occidentalis	hole-in-the-sand plant
Palafoxia arida var*. arida*	Spanish needle
Rafinesquia neomexicana	chicory
Stephanomeria exigua	annual mitra
Stephanomeria pauciflora	wire lettuce
BORAGINACEAE BORAGE FAMILY	
Amsinckia tessellata	fiddleneck
Cryptantha angustifolia	narrow-leaved forget-me-not
Cryptantha circumcissa	western forget-me-not
Cryptantha dumetorum	flexuous forget-me-not
Cryptantha maritima	white-haired forget-me-not
Cryptantha micrantha	purple-rooted forget-me-not
Tiquilia plicata	plicate coldenia
Pectocarya heterocarpa	comb-burr
Pectocarya penicillata	comb-burr
BRASSICACEAE (Cruciferae) MUSTARD FAMILY	
*Brassica tournefortii**	Sahara mustard
Caulanthus (=*Guillinea*) *lasiophyllus*	caulanthus
Descurania pinnata glabra	yellow tansy mustard
Lepidium lasiocarpum	pepper-grass
Sisymbrium irio	London rocket
Streptanthella longirostris	long-beaked twist-flower
CACTACEAE CACTUS FAMILY	
Cylindropuntia acanthocarpa var. *coloradoensis*	buckhorn cholla
Cylindropuntia echinocarpa	silver cholla

Cylindropuntia ramosissima	pencil cholla
Opuntia basilaris	beavertail cactus
CAROPHYLLACEAE PINK FAMILY	
Achyronichia cooperi	frostmat
CONVOLVULACEAE MORNING GLORY FAMILY	
Cuscuta sp.	dodder
CUCURBITACEAE GOURD FAMILY	
Cucurbita palmata	coyote gourd
EPHEDRACEAE EPHEDRA FAMILY	
Ephedra californica	Mormon tea
EUPHORBIACEAE SPURGE FAMILY	
Croton californicus	croton
Stillingia linearifolia	stillingia
FABACEAE (Leguminosae) LEGUME FAMILY	
Astragalus lentiginosus var. *fremontii*	freckled milkvetch
Astragalus sp. *(cf. laynae)*	milkvetch
Dalea mollis	dalea
Parkinsonia aculeata	Mexican palo verde
Psorothamnus arborescens	indigo bush
Psorothamnus emoryi	Emory dalea
Senegalia greggii	catclaw acacia
Senna armata	desert senna
GERANIACEAE GERANIUM FAMILY	
*Erodium cicutarium**	filaree
HYDROPHYLLACEAE WATERLEAF FAMILY	

Nama demissum	purple mat
LAMIACEAE (Labiatae) MINT FAMILY	
Salvia columbariae	chia
LILIACEAE LILY FAMILY	
Dichelostemma capitatum pauciflorum	blue dicks
Hesperocallis undulata	Ajo lily
LOASACEAE LOASA FAMILY	
Mentzelia sp. (*cf. albicaulis*)	blazing star
Petalonyx thurberi	sandpaper plant
MALVACEAE MALLOW FAMILY	
Eremalche exilis	white mallow
NYCTAGINACEAE FOUR-O'CLOCK FAMILY	
Abronia villosa var. *villosa*	sand verbena
ONAGRACEAE EVENING PRIMROSE FAMILY	
Camissonia campestris	suncup
Tetrapteron (=*Camissonia*) *palmeri*	Palmer primrose
Chylismia (= *Camissonia*) *claviformis*	brown-eyed primrose
Oenothera deltoides	birdcage primrose
PAPAVERACEAE POPPY FAMILY	
Eschscholtzia minutiflora	little gold-poppy
POLEMONIACEAE PHLOX FAMILY	
Eriastrum diffusum	phlox
Gilia sinuata	gilia
Gilia stellata	star gilia
Langloisia setosissima punctata	spotted gilia

Loeseliastrum matthewsii	desert calico
POLYGONACEAE BUCKWHEAT FAMILY	
Chorizanthe brevicornu	brittle spine-flower
Eriogonum baileyi	Bailey buckwheat
Eriogonum inflatum	desert trumpet
Eriogonum maculatum	buckwheat
Eriogonum plumatella	flat-top
Eriogonum pusillum	buckwheat
Eriogonum trichopes	little trumpet
Rumex hymenosepalus	dock
PORTULACACEAE PORTULACA FAMILY	
Calyptridiium monandrum	sand-cress
SOLANACEAE NIGHTSHADE FAMILY	
Datura wrightii	jimson weed
TAMARICACEAE TAMARISK FAMILY	
*Tamarix aphylla**	athel
*Tamarix ramosissima**	tamarisk
ZYGOPHYLLACEAE CALTROP FAMILY	
Larrea tridentata	creosote bush
Tribulus terrestris	caltrops
POACEAE (Gramineae) GRASS FAMILY	
*Bromus madritensis rubens**	red brome
*Bromus tectorum**	cheat grass
Dasyochloa (= *Erioneuron*) *pulchellum*	fluff grass
*Hordeum murinum glaucum**	barley

Hilaria rigida	big galleta grass
Stipa (= *Achnatherum) hymenoides*	rice grass
*Schismus barbatus**	split grass

* Non-native

BIRDS

CATHARTIDAE AMERICAN VULTURES	
Cathartes aura	turkey vulture
FALCONIDAE FALCONS	
Falco mexicanus	prairie falcon
COLUMBIDAE PIGEONS AND DOVES	
Zenaida macroura	mourning dove
Columba livia	rock pigeon
TROCHILIDAE HUMMINGBIRDS	
Archilochus alexandri	black-chinned hummingbird
Calypte anna	Anna's hummingbird
Calypte costae	Costa's hummingbird
TYRANNIDAE TYRANT FLYCATCHERS	
Tyannus verticalis	western kingbird
Myiarchus cinerascens	ash-throated flycatcher
Sayornis saya	Say's phoebe
ALAUDIDAE LARKS	
Eremophila alpestris	horned lark
CORVIDAE JAYS, CROWS, AND RAVENS	
Corvus corax	common raven
TROGLODYTIDAE WRENS	

Campylorhynchus brunneicapillus	cactus wren
EMBERIZIDAE WARBLERS AND SPARROWS	
Amphispiza bilineata	black-throated sparrow
Cardellina pusilla	Wilson's warbler
Dendroica coronata	yellow-rumpedwarbler
Passer domesticus	house sparrow
Zonotrichia albicollis	white crowned sparrow
FRINGILLIDAE FINCHES	
Carpodacus mexicanus	house finch
ICTERIDAE BLACKBIRDS AND ORIOLES	
Quiscalus mexicanus	great-tailed grackle

MAMMALS

LEPORIDAE	
Lepus californicus	black-tailed hare
Sylvilagus audubonii	Audubon cottontail
SCIURIDAE	
Ammospermophilus leucurus	antelope ground squirrel
Spermophilus beecheyi	California ground squirrel
Spermophilus tereticaudus	round-tailed ground squirrel
CRICETIDAE	
Neotoma lepida	woodrat (nests)
CANIDAE	
Canis latrans	coyote (scat)
Vulpes macrotis	desert kit fox (scat, natal dens)

REPTILES

COLUBRIDAE	
Chionactis occidentalis	Western shovel-nosed snake
VIPERIDAE	
Crotalus scutulatus	Mojave green rattlesnake
PHRYNOSOMATIDAE	
Dipsosaurus dorsalis	Desert iguana
Uta stansburiana	side-blotched lizard
Phrynosoma platyrhinos	horned lizard
TEIIDAE	
Aspidocelis trigris	whiptail lizard