

**DOCKET**  
**09-AFC-7**

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January 13, 2010

California Energy Commission  
Docket Unit  
1516 Ninth Street  
Sacramento, CA 95814-5512

Subject: **APPLICATION FOR THE CALIFORNIA ENDANGERED SPECIES  
ACT SECTION 2081 (B) INCIDENTAL TAKE PERMIT AND  
REVISED DESERT TORTOISE TECHNICAL REPORT  
(INCLUDING FALL 2009)  
DOCKET NO. (09-AFC-7)**

Enclosed for filing with the California Energy Commission is the original copy of the **APPLICATION FOR THE CALIFORNIA ENDANGERED SPECIES ACT SECTION 2081 (B) INCIDENTAL TAKE PERMIT AND REVISED DESERT TORTOISE TECHNICAL REPORT (INCLUDING FALL 2009)**, for the Palen Solar Power Project (09-AFC-7).

Sincerely,



Ashley Y. Garner

**Application for the California Endangered Species Act  
Section 2081 (B) Incidental Take Permit  
and  
Revised Desert Tortoise Technical Report (including Fall 2009)**



**PALEN SOLAR POWER PROJECT**

Applicant:

Palen Solar I, LLC  
1625 Shattuck Avenue, Suite 270  
Berkeley, California 94709

January 2010

**AECOM**



January 11, 2010

Ms. Magdalena Rodriguez  
California Department of Fish and Game  
Eastern Sierra-Inland Deserts Region  
3602 Inland Empire Blvd, Suite C220  
Ontario, CA 91764

**Subject: Palen Solar Power Project CESA 2081 (B) Application**

Dear Ms. Rodriguez,

Enclosed for your review and approval is the Application for California Endangered Species Act Section 2081 (B) Incidental Take Permit for the Palen Solar Power Project (PSPP or Project), proposed by Palen Solar I, LLC (the Applicant). An Application for Certification (AFC) for the PSPP was submitted to the California Energy Commission (CEC) on September 1, 2009 (Docket No. 09-AFC-9). The AFC was deemed data adequate by the CEC on November 18, 2009. Under the Warren-Alquist Act, the CEC process is a California Environmental Quality Act (CEQA)-equivalent process for all State permits issued for the Project, including the 2081.

As described in the Biological Resources Technical Report prepared for the Project (see Appendix F of the AFC), unavoidable impacts to species listed under the California Endangered Species Act (CESA) (i.e., the Mojave desert tortoise [*Gopherus agassizii*]) will occur from Project construction and operation. The Project would be located on an approximately 5,212-acre parcel managed by the U.S. Bureau of Land Management (BLM), pursuant to a right-of-way (ROW) grant from BLM. The project facility footprint would occupy approximately 2,974 acres of the ROW. In addition to solar fields and a main power-generating facility, the site would include a main office building and parking lot, a main warehouse with laydown area, onsite access roads, a tie-in switchyard, a bioremediation area, and a transmission line and substation. The total disturbance area for the PSPP would be approximately 3,899 acres.

This package includes the following items: Application for California Endangered Species Act Section 2081 (B) Incidental Take Permit, which is required by the California Department of Fish and Game and summarizes the Project's impacts; and the Revised Desert Tortoise Technical Report, which summarizes in detail the results of spring and fall 2009 surveys. It should be noted that the latter includes results of fall 2009 protocol desert tortoise surveys in the transmission line and substation footprints (not previously reported on in the AFC). In addition to these two hard copy documents, electronic copies of each are provided via CD at the back of the binder.

Please call me at (510) 524-4517 if you have any questions or comments.

Sincerely,

Josef Eichhammer  
Palen Solar I, LLC

cc: Alice Harron, Palen Solar I, LLC  
Rick York, CEC  
Mark Luttrell, AECOM  
Arrie Bachrach, AECOM  
Bill Graham, AECOM  
Erin Riley, AECOM





**PALEN SOLAR POWER PROJECT**

**APPLICATION FOR  
CALIFORNIA ENDANGERED SPECIES ACT  
SECTION 2081(B) INCIDENTAL TAKE PERMIT**

**RIVERSIDE COUNTY, CALIFORNIA**



***Prepared for:***

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January 2010



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## **1. APPLICANT INFORMATION**

### **1.1 Applicant**

Palen Solar I, LLC  
1625 Shattuck Avenue, Suite 270  
Berkeley, California 94709

### **1.2 Applicant Representatives**

#### **Principal Officers**

Josef Eichhammer, Palen Solar I, LLC  
COO  
510-524-4517

#### **Contact Person**

Alice Harron, Palen Solar I, LLC  
Senior Project Manager  
510-524-4517

#### **Consultant**

Erin Riley, AECOM  
Senior Biologist/Project Manager  
619-233-1454

## **2. PROJECT LOCATION**

The proposed Palen Solar Power Project (PSPP or Project) is located approximately 10 miles east of Desert Center, and 0.5 mile north of the Interstate 10 (I-10) corridor in eastern Riverside County, California (Figure 1; see Attachment 1 for all figures). The Project would be located within a 5,212-acre right-of-way (ROW) owned by the Federal government and administered by the Bureau of Land Management (BLM). Use of the Federal land would involve issuance of a ROW grant to Palen Solar I, LLC (the Applicant) by BLM. The Project site is currently undeveloped and vacant.

## **3. PROJECT DESCRIPTION**

Palen Solar I, LLC (the Applicant) is proposing to construct the PSPP, a nominal 500-megawatt (MW) commercial solar thermal electric-power-generating system. The Project is proposed on



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public lands managed by BLM; the Applicant has submitted an application to BLM for a ROW grant. The proposed Project includes installation of two commercial solar thermal electric-power-generating stations, each composed of a main solar field (i.e., unit) and a main power-generating facility (power block), associated office and maintenance buildings, a laydown area, drainage channels, a bioremediation area, leach fields, a transmission line, substations, and onsite access roads (Figure 2).

The Project would use solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation onto a receiver tube located at the focal point of the parabola. A heat transfer fluid (HTF) is heated to a high temperature (approximately 750 degrees Fahrenheit [ $^{\circ}$ F]) as it circulates through the receiver tubes. The heated HTF is then piped through a series of heat exchangers where it releases its stored heat to generate high-pressure steam. The steam is then fed to a traditional steam turbine generator where electricity is produced.

The Project would have a nominal output of 500 MW, produced by two adjacent, identical, and independent 250-MW power-generating facilities (power units). The two power units would share a main office building, main warehouse/maintenance building, parking lot, onsite access roads, bioremediation area for HTF-contaminated soil, and central internal switchyard. Each power unit would have its own solar field, composed of piping loops arranged in parallel groups, and its own power block centrally located within the solar field. Each solar field would cover approximately 1,380 acres. Each power block would have its own HTF pumping and freeze-protection system, solar steam generator, steam turbine generator, an air-cooled condenser (ACC) for cooling, transmission lines and related electrical system, and auxiliary equipment (e.g., water treatment system, emergency generators). The Project would require a new transmission line to interconnect to the regional transmission grid. The transmission line is proposed to extend approximately 1.2 miles south from the Project disturbance area beyond I-10 where it turns west to just past Chuckwalla Road (Figure 2). An associated substation would be constructed in the area immediately west of the southern end of the transmission line (Figure 2).

Access to the Project site would be via a new 1,350-foot-long, 24-foot-wide paved access road from Corn Springs Road off of I-10 at the southwest corner of the Project disturbance area. Only a small portion of the overall disturbance area (i.e., area of anticipated ground disturbance as a result of the Project) would be paved: primarily, the onsite access road, the service roads to the power blocks, and portions of the Project's two power blocks. The remaining portions of the power blocks would be gravel surfaced. In total, each power block would be approximately 18.4 acres, with approximately 6 acres of paved area. The solar fields would remain unpaved and

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without a gravel surface to prevent rock damage from mirror wash vehicle traffic; a dust-suppression coating would be used on the dirt roadways within and around the solar field. The Project solar field and support facilities perimeter would be secured with chain link metal-fabric security fencing, 8 feet tall, with 1-foot-tall barbed wire or razor wire on top. Controlled access gates would be located at the site entrance.

The existing topographic conditions of the PSPP site show an average slope of approximately 1 foot every 330 feet (0.30 percent) toward the northeast, with a series of desert washes traversing the site (i.e., a primary wash and a few secondary washes). Drainage across the undeveloped property is concentrated in these washes until the drainage features disappear and flows fan out across the landscape as sheet flow. During infrequent large precipitation events, runoff through sheet flow may reach Palen Dry Lake, located approximately 1 mile northeast of the site. Development of the site would include intercepting the storm flows in three washes at the Project site boundaries; channelizing and rerouting the flows into three channels on the west side, center, and east side of the site corresponding to the three bridges that direct flow passing under I-10; and then returning the flows to their sheet flow regime on the north side of the site. These channels would intercept flows prior to their entry to the site and convey them in realigned channels to approximately the same locations where they exit the site under existing conditions. Outlets for each channel would end in diffusers. The west and east channels would be located entirely outside of the proposed chain link perimeter fencing. The center channel would be located between and outside of the perimeter fencing associated with the two main solar fields, with the inlet and outlet to the central channel remaining unfenced. The channels would be constructed with native material, and scour protection (i.e., rip rap) would be added to the channel sides and bottoms in stress areas such as curves and slope transitions. No scour protection is proposed for the channel bottom in the straight sections of the channels. This is to allow the low flows to meander across the bottom, replicating as nearly as possible the flow regimes under current conditions. Maintenance of native vegetation on the channel banks would occur to reduce the hydraulic roughness and improve flood conveyance capacity, and also to maintain adequate cover to protect stream banks from erosion. Vegetation cover would be limited to less than 15 inches in height in rerouted channels. The channel segments would be designed to meet Riverside County requirements, as well as biological considerations such as wildlife movement, where feasible.

The power units would be graded generally following the existing contours of the site to minimize the amount of disturbance and allow a balanced distribution of material. Runoff from the units would be collected in a series of swales and small channels that would direct the flow to the appropriate perimeter channel. The power block areas that are centrally located within the two power units would have their own detention/water-quality basins within the block, from

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which flows would be directed to the nearest downstream channel. The basins would be designed to retain water for only a short duration prior to outfall to the nearest downstream channel. The PSPP would employ a comprehensive system of management controls, including site-specific best management practices (BMPs), to minimize storm water contact with contaminants.

Thermal power plants require cooling, which historically has involved large quantities of cooling water. The PSPP would use ACCs in a process commonly referred to as “dry cooling,” thereby dramatically reducing the amount of water needed by the facility. Water would be used principally for solar mirror washing, ancillary equipment heat rejection, feed water makeup, dust suppression, firewater supply, and onsite domestic use. Total water consumption for both units is estimated at approximately 300 acre-feet per year (AFY); this water would be supplied by two onsite groundwater wells. The groundwater would be treated by the reverse osmosis or electro dialysis reversal process in a single treatment unit located on site prior to storage in two 1-million-gallon treated water tanks, one located within each solar field.

To facilitate dust and contaminant removal, treated water would be used to spray-clean the solar mirrors on a periodic basis, determined by a reflectivity monitoring program. This operation is generally done at night and involves a water truck spraying treated water on the mirrors in a drive-by fashion. Solar mirror washing would use approximately 114 AFY of water. Rinsate from the washing operation is expected to evaporate on the mirror surface with no appreciable runoff.

The Project’s lighting system would provide operations and maintenance personnel with illumination in normal and emergency conditions. The Project’s lighting system would provide the minimum illumination required to ensure safety and security objectives, and lighting would be located and oriented to minimize illumination in areas not pertinent to safety and security. All lights would be installed within the perimeter fence of the Project. Where practicable, lights would be shielded and down-directed to illuminate only the needed area. Lights used for a particular operation would be extinguished once that operation is complete, providing they are not required for ongoing safety or security purposes.

Construction activities would be limited to daytime hours, thereby minimizing nighttime noise disturbance. Similarly, the plant’s electric-generating facilities would operate during daylight hours, and nighttime noise from operations would be minimal. Noise from the gas-fired auxiliary boiler would typically only occur during the 2 hours at dawn when the boiler is in operation. Construction and operational noise emissions would comply with applicable laws, ordinances, and regulations (LORS) thresholds for sensitive wildlife receptors.

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Project construction is scheduled to begin in late 2010. Project construction is expected to occur over 39 months. Project construction would require an average of 566 employees per month over the entire 39-month construction period, with manpower requirements peaking at approximately 1,141 workers in month 17 of construction. Temporary construction laydown and parking areas would be located within the power plant facility footprint.

Commercial operation is expected to begin in late 2012 for the first unit and late 2013 for the second unit. While electrical power is to be generated only during daylight hours, the PSPP would be staffed 24 hours a day, 7 days per week. A total estimated workforce of 84 full-time employees would be needed to staff the first phase of the Project (operation of the first of the two units). When the second unit comes online, the full-time staff would increase to 134. The projected operating lifespan of the Project is 30 years. The PSPP would occur within the following parcels:

- APN 8101-100-21
- APN 8101-820-02
- APN 8101-100-30
- APN 8101-100-28
- APN 8102-110-02
- APN 8101-100-01
- APN 8101-100-23
- APN 8101-100-16
- APN 8102-120-01
- APN 8101-100-29
- APN 8101-100-24
- APN 8102-110-01
- APN 8101-700-01
- APN 8101-100-09
- APN 8101-100-26
- APN 8102-020-02
- APN 8101-100-22
- APN 8102-010-01
- APN 8101-100-20
- APN 8101-100-06
- APN 8101-100-05
- APN 8101-820-01
- APN 8101-100-27
- APN 8101-100-07
- APN 8101-900-03
- APN 8101-100-15
- APN 8101-900-04
- APN 8101-900-01

#### **4. PROJECT AREA**

The Project area is defined as all areas to be affected directly or indirectly by full implementation of the Project evaluated in this application. The Project area (Figure 2) is composed of the Project disturbance area (i.e., area of anticipated ground disturbance associated with the Project), totaling 3,899.2 acres, and a buffer area (1-mile buffer of non-linear Project elements [solar fields, power block, etc.] and a 1,000-foot buffer of linear Project elements [i.e., transmission

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line]). The Project area is the equivalent of the Biological Resources Survey Area (BRSA), which was previously evaluated in the Palen Solar Power Project Application for Certification (AFC) (AECOM 2009a) and supporting documents, including the PSPP Biological Resources Technical Report (BRTR) (EDAW AECOM 2009) and the PSPP Supplemental BRTR (AECOM 2009b). The Project area is also identical to the Action Area defined in the Draft Palen Solar Power Project Biological Assessment (AECOM 2009c), which is being submitted to the U.S. Fish and Wildlife Service (USFWS).

## **5. RELEVANT POLICY AND MANAGEMENT DIRECTION**

### **5.1 Desert Tortoise Recovery Plan**

The Mojave population of the desert tortoise (*Gopherus agassizii*; DT), including all tortoises occurring north and west of the Colorado River in Arizona, Utah, Nevada, and California, was listed as federally threatened in 1990. A recovery plan was subsequently developed in 1994 that identified proposed Desert Wildlife Management Areas (DWMA) (USFWS 1994a). Critical habitat was also designated in 1994 for the entire Mojave population (USFWS 1994b). A revised recovery plan was drafted in 2008 to reevaluate the status of the population and threats to the population and to identify measures to reduce uncertainties about species threats and management and improve recovery potential (USFWS 2008). Elements of critical importance identified for DT recovery and persistence include adult survivorship; maintenance of genetic and ecological variability within and among populations; and the long-term persistence of extensive, unfragmented habitat. The Draft Revised Recovery Plan identifies an approach to recovery that is based on the following six strategic elements:

1. Develop, support, and build partnerships to facilitate recovery.
2. Protect existing populations and habitat, instituting habitat restoration where necessary.
3. Augment depleted populations in a strategic manner.
4. Monitor progress toward recovery.
5. Conduct applied research and modeling in support of recovery efforts within a strategic framework.
6. Implement a formal adaptive management program.

The Draft Revised Recovery Plan also provides a list of habitat enhancement and management activities that would support recovery of DT, including the following actions:

- Protect intact DT habitat.

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- Restore DT habitat.
  - Secure lands/habitat for conservation.
  - Connect functional habitat.
  - Reduce excessive predation.
  - Contribute to the DT head-starting program or translocation programs.
  - Monitor DT distribution in each recovery unit.
  - Track changes in quantity and quality of DT habitat.
  - Determine factors that influence the distribution of DT.
  - Conduct research on the restoration of DT habitat.
  - Conduct research on DT diseases and their effects on populations.

## **5.2 Northern and Eastern Colorado Desert Coordinated Management Plan**

The Federal Land Policy and Management Act (FLPMA) of 1976 requires BLM to develop land use plans (i.e., Resource Management Plans) to guide BLM's management of public land. BLM is required to determine conformity of the Project with the California Desert Conservation Area (CDCA) Plan, including the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) (BLM 2002). NECO is a landscape-scale, multiagency planning effort that protects and conserves natural resources while simultaneously balancing human uses of the California portion of the Sonoran Desert ecosystem. This plan was prepared under the regulations implementing the FLPMA. NECO provides reserve management for DT, integrated ecosystem management for special-status species and natural communities for all Federal lands, and regional standards and guidelines for public land health for BLM lands.

The Project area occurs within the Multi-species Wildlife Management Habitat Area (WHMA), and a portion occurs within the Chuckwalla DWMA, as designated by NECO. The objective of the Multi-species WHMA is to protect habitats assumed to be suitable for many species and therefore preserve biodiversity. The Multi-species WHMA is complementary to existing restricted areas within the NECO planning area and DWMA, which also cover other special-status species and habitats (e.g., DT and bighorn sheep [*Ovis canadensis nelsoni*]). No restrictions are designated in the WHMA other than closure of some routes of travel. Management emphasis is placed on active management, specific species and habitats mitigation, and restoration from authorized allowable uses. The objective of the DWMA is to address the

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recovery of DT. DWMAAs encompass much of the designated critical habitat for DT. Some additional use restrictions in these areas apply, but emphasis is placed on minimizing disturbance and maximizing mitigation, compensation, and restoration from authorized allowable uses. Compensation for disturbance of public lands within DWMAAs is required at a 5:1 ratio within DT habitat; compensation is to be directed to the Recovery Unit where the disturbance occurs. Additionally, new surface disturbance on lands administered by Federal agencies within any DWMA would be limited to 1 percent of the Federal portion of the DWMA.

### **5.3 California Desert Conservation Area Plan**

Per Title 43 Code of Federal Regulations (CFR) Section 1610.5-3, BLM must manage the land within its jurisdiction in compliance with a Resource Management Plan. The entire Project site (including the transmission line route) would be located on lands under BLM jurisdiction and managed pursuant to the CDCA Plan (BLM 1980, as amended in 1999). The CDCA Plan serves as a guide for the management of all BLM-administered lands in three desert areas: the Mojave, the Sonoran, and a small portion of the Great Basin. The CDCA Plan covers approximately 25 million acres, of which 12 million are public lands. The primary goal of the CDCA Plan is to provide overall maintenance of the land while planning for multiple uses and balancing the needs of people with the protection of the natural environment. The NECO is an amendment to the CDCA Plan, identifying specific management direction for the area encompassing the northern and eastern Colorado Desert.

### **5.4 Desert Renewable Energy Conservation Plan**

The State of California Governor's office recently signed a Memorandum of Understanding (MOU) with the U.S. Department of Interior to cooperatively develop long-term renewable energy plans and to streamline eligible projects through State and Federal permitting processes. The MOU establishes the Desert Renewable Energy Conservation Plan (DRECP) process, which is a science-based process for reviewing, approving, and permitting renewable energy applications in California. Once the plan is complete (anticipated in late 2010), it will present a regional road map that will provide certainty for renewable energy developers on how and where to site their projects. The DRECP will also create a government-organized habitat mitigation program that consolidates habitat purchases for compensatory mitigation. Depending on when the DRECP mitigation program becomes established, the PSPP Applicant may be eligible to participate in this program.

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## 6. COVERED SPECIES

Coverage for incidental take of Mojave DT is requested. DT is listed as threatened under the California Endangered Species Act (CESA) and Federal Endangered Species Act (ESA).

The following sections provide a brief discussion of the status of DT in the region, current habitat conditions within the Project area for DT, and potential for DT to occur in the Project area. The Applicant is also submitting a biological assessment (BA) for DT to USFWS as part of an ESA Section 7 consultation.

### 6.1 Mojave Desert Tortoise

The Project area occurs within the southern portion of the Colorado Desert DT recovery unit (USFWS 2008). The southern portion of this recovery unit, previously delineated as the Eastern Colorado Desert recovery unit (USFWS 1994a), has been characterized as remote, receiving little use, having extensive but little multiple uses of public lands, and being in a state that is not urbanizing or developing (USFWS 2005). The highest DT densities within this recovery unit occur in Chemehuevi and Ward Valleys (approximately 60 miles north of the PSPP), on the Chuckwalla Bench within the Chuckwalla DWMA (approximately 20 miles south of the PSPP), and in Joshua Tree National Park (approximately 66 miles northwest of the PSPP). The Project area also includes a portion of the Chuckwalla DT critical habitat unit (CHU) (see Section 6.1.1, Critical Habitat, below). Critical habitat within the Colorado Desert recovery unit has generally been described as being in excellent condition; disturbance was estimated at less than 1.3 percent throughout (USFWS 2005).

This widespread and once common species is rapidly declining in numbers due to various factors, including the spread of a fatal respiratory disease; increases in raven populations that prey on juvenile tortoises; mortality associated with roads and off-highway-vehicle use; and habitat destruction, degradation, and fragmentation. Populations have declined precipitously in some parts of the range, including areas within the Colorado Desert recovery unit such as the Chuckwalla Bench within the Chuckwalla DWMA (BLM 2002).

Historic occurrences of DT occur in the vicinity of the Project area; the California Natural Diversity Database (CNDDDB) reports DT occurrences surrounding (but not within) the Project area (Figure 3). The nearest documented population of DT based on CNDDDB records (from 1987) occurs approximately 3.5 miles to the south of the Project area near the Chuckwalla Mountains (CDFG 2009). Other known occurrences are 7 miles to the northwest and 10 miles to



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the west of the BRSA (CDFG 2009). CNDDDB record data are largely incomplete and may not provide an accurate depiction of the actual population size and distribution within the area. However, these data can provide some insight into the distribution of DT here. Additional DT observations exist approximately 27 miles east of the Project area within and adjacent to the proposed Blythe Solar Power Project site (proposed by the same Applicant as for the PSPP), and incidental observations were made to the west of the Project area on an existing dirt road near Desert Center, California.

As a result of Project-related DT surveys conducted during 2009 (see a more detailed discussion below), two DTs were detected in the southwestern corner of the Project area (Figure 3). Additional DT sign was observed scattered throughout the Project area; however, recent DT sign was only found in the Project area south of I-10. A habitat assessment concluded that 3,899 acres of suitable habitat for DT occur within the Project disturbance area; habitat occurring north of I-10 (majority of the Project disturbance area) was characterized as low quality for DT (3,871.6 acres) and habitat south of I-10 was characterized as moderate quality for DT (27.4 acres).

A DT habitat assessment was conducted for the entire Project area on March 10 and 11, 2009, and October 8, 2009, by Project biologists Arthur Davenport, Shelly Dayman, Katie Hall, and Gregg Lukasek (AECOM 2009b, 2009d). It was determined that the majority of the Project area (i.e., disturbance area and surrounding buffer) contains suitable habitat for DT, with the exception of developed land and agricultural land (Figures 4 and 5). A total of 3,899 acres of the Project disturbance area is suitable for DT. Overall, habitat is of low quality for DT north of I-10 and is of moderate quality south of I-10, where water availability is much greater and vegetation quality and quantity are more favorable for DT. However, some areas of slightly higher quality DT habitat do occur north of I-10; they are associated with dry desert wash woodlands in the central and southeastern portion of the Project area, and areas in the northeast portion of the buffer that are closer to the Palen Mountains. Flows entering the Project area from the Chuckwalla Mountains in the south and the Palen mountains in the northeast are likely responsible for supporting these areas of higher quality DT habitat within the Project area. South of I-10, the habitat quality for DT increases rapidly and substantially, as proximity to the Chuckwalla Mountains to the south increases. Of the 3,899 acres of suitable DT habitat in the Project disturbance area (north and south of I-10), only 27.4 acres (south of I-10) are considered moderate quality for DT; the remaining 3,871.6 acres are low quality.

Protocol surveys to determine DT presence/absence in the Project area were conducted between March 17 and May 22, and on October 24 and 25, 2009, by Project biologists Phil Brylski, Scott Cameron, Arthur Davenport, Shelly Dayman, Kim Duncan, Andrew Forde, Michael Gallagher, Charles German, Katie Hall, James Hueslman, James Jennings, Gregg Lukasek, Milo Rivera,

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Rob Wolfson, Erik LaCoste, Rocky Brown, Robert Conohan, Andrew Fisher, Matt Kedziora, and James McMorran (AECOM 2009d). DT protocol surveys (100 percent coverage surveys) were conducted throughout the entire Project disturbance area, including the proposed transmission line and substation (Figure 4). DT protocol surveys were conducted according to the 1992 USFWS protocol.<sup>1</sup> The 1992 protocol requires surveys to be conducted from March 25 to May 31; however, the protocol was revised in 2009 (USFWS 2009), and the period of September through October was added to the protocol survey period. Therefore, Project-related surveys that were conducted on October 24 and 25 meet the USFWS protocol standards and were approved by the resource agencies. The DT protocol survey area extends slightly beyond the boundaries of the current Project disturbance area (Figure 4) as a result of changes in Project design after surveys were completed. In addition, to comply with the recommendations of the California Energy Commission (CEC) Draft Guidelines for Large Solar Projects (dated May 8, 2007), transects at 3,960 feet (0.75 mile) and 5,280 feet (1-mile) out from and parallel to the Project disturbance area associated with non-linear Project elements, and 1,000 feet out from and parallel to Project linear elements (transmission line), were surveyed for presence/absence of DT concurrently with DT protocol surveys described above. Adult DT abundance was not estimated within the Project disturbance area as requested by CEC and the resource agencies because the number of DT detections was too low for valid estimation according to the methodology described in the 2009 DT protocol (USFWS 2009).

Two DTs were observed within the Project area (along the 1-mile buffer to the southwest of the substation) during Project surveys in 2009, both inside the same occupied caliche burrow (Figure 3). No DTs were observed within the Project disturbance area. An additional adult DT was observed in the vicinity of, but outside, the Project area during other non-DT Project surveys during 2009 (Figure 3); this detection occurred within a dry desert wash approximately 0.5 mile south of the Project area in spring 2009 by Project archaeologist Pat Malony. The limited number of live DT observations within the Project area is probably a result of the PSPP's location on the valley floor where water availability is more limited than in the surrounding mountains. Water availability on the PSPP site is not likely sufficient to support the long-lived annual plant population necessary to support a large DT population. A denser population of DTs is more likely to occur within the neighboring mountains and the drainages associated with the mountains than within the Project area.

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<sup>1</sup> Protocol surveys for presence/absence of DT were conducted according to the 1992 USFWS protocol (USFWS 1992) with the following exception: no surveys were conducted of the five zone of influence (ZOI) transects that are typically required outside of and parallel to the disturbance area at 100, 300, 600, 1,200, and 2,400 feet. This modification to the survey protocol was agreed upon prior to survey initiation by USFWS, the California Department of Fish and Game (CDFG), and BLM.

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Additional DT sign was observed scattered throughout the Project area during protocol surveys for DT. Sign was observed somewhat more frequently in the central and southern portion of the Project area; recent DT sign (e.g., fresh scat, active burrows) was only observed in the southwest portion of the Project area (Figure 3). Several confirmed or potential DT burrows (21) were observed during surveys, including two active DT burrows (with sign of recent use) and an additional occupied caliche burrow containing the two DTs mentioned above. All three active/occupied burrows were detected in the southwest corner of the Project area, south of I-10 and outside of the Project disturbance area (Figure 3). Sixteen potential DT pellets were observed in the Project area, none of which showed signs of recent use (i.e., active). Additionally, a few observations of DT tracks (two) and DT scat (four, including three of fresh scat) occurred in the southwest portion of the Project area, in the vicinity of the active/occupied burrows. A total of 31 observations of tortoise shell remains (primarily bone fragments) were made within the Project area (Figure 3). Of all observations of shell remains, 13 were mineralized bone fragments but are still considered modern by paleontological standards (i.e., within the past 100 years), and 14 were non-mineralized. Nineteen of the shell remains mapped were within the Project disturbance area. DT shell remains observed are probably from carcasses that washed down (north) into the Project area over time from adjacent higher elevations to the south where DTs are more likely to occur.

It was not possible to calculate a DT abundance or density estimate within the Project area, because so few DTs were observed during surveys (only two DTs were observed within the Project area). A minimum of 20 DTs must be observed for an estimated abundance calculation to be valid according to the 2009 USFWS protocol. Because no DTs were detected within the Project area north of I-10 during protocol surveys, DTs most likely occur at a very low abundance and density within this area. Only two DT were detected in the Project area south of I-10; however, because a majority of the Project area south of I-10 is composed of buffer areas that were surveyed at very low intensity relative to other areas within the Project area (e.g., the Project disturbance area), DT densities south of I-10 are likely to be much greater than was represented by the survey results. It is possible that DT densities south of I-10 could be more similar to those found at the Chuckwalla Bench approximately 20 miles south of Palen. DT densities at the Chuckwalla Bench in 1992 were estimated at between 22 and 49 adults per square kilometer (approximately 57 to 127 adults per square mile), but have shown declining trends (Tracy et al. 2004; Berry 1997). The PSPP disturbance area covers approximately 6 square miles.

Despite limited observations of use of the Project area by DT (most notably north of I-10), the Project area may be important for DT movements between higher quality habitats in the vicinity

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of the Project site. Higher quality DT habitat exists in the Palen Mountains to the northeast and the Chuckwalla Mountains to the south, and the Project area connects these areas. DTs are known to use low-quality intermountain habitat, such as that present across most of the Project area, as dispersal routes over time, providing connectivity between high-quality habitat areas in the surrounding mountains (Averill-Murray and Averill-Murray 2005). Currently, three large culverts under I-10, occurring along the existing washes in the Project area, provide DT and other wildlife a safe passage under I-10 in a north-south direction across the Project area.

### **6.1.1 Critical Habitat**

The Project area overlaps with a portion of the Chuckwalla DT CHU (Figure 2). The total size of the Chuckwalla CHU is 1,020,600 acres (USFWS 1994b). A total of approximately 3,057 acres of critical habitat for DT (Chuckwalla CHU) occurs in the Project area, 209.5 acres (0.021 percent of the entire CHU) of which overlap with the Project disturbance area (i.e., areas of anticipated ground disturbance associated with the Project) (Figure 2). Although this area is designated as critical habitat, critical habitat boundaries are coarsely mapped and adjusted to match adjacent section lines in order to facilitate legal definitions. Therefore, critical habitat mapping may contain both suitable and unsuitable habitat for the species, as stated in the *Determination of Critical Habitat for the Mojave Population of the Desert Tortoise; Final Rule* (USFWS 1994b). As a result of DT protocol surveys and habitat assessments conducted in 2009 (AECOM 2009b, 2009d), Project biologists characterized DT critical habitat within the Project disturbance area based on the presence and prevalence of the six primary constituent elements (i.e., functions and values) of DT critical habitat (USFWS1994b). According to this Final Rule (USFWS1994b), DT critical habitat consists of the following six primary constituent elements (PCEs):

- Sufficient space to support viable populations within each of the six recovery units (PSPP disturbance area is in Unit #4) to provide for movement, dispersal, and gene flow;
- Sufficient quantity and quality of forage species and the proper soil conditions to provide for the growth of such species;
- Suitable substrates for burrowing, nesting, and overwintering;
- Burrows, caliche caves, and other shelter sites;
- Sufficient vegetation for shelter from temperature extremes and predators; and
- Habitat protected from disturbance and human-caused mortality.

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The functions and values of DT critical habitat occurring within the Project disturbance area are considerably lower north of I-10 and higher south of I-10, and generally increase with proximity to the Palen Mountains to the south. A total of 0.2 acres of critical habitat within the Project disturbance area north of I-10 are developed (paved roadways) and are unsuitable for DT. For the remaining 209.3 acres of critical habitat, all six PCEs are met where the CHU overlaps with the Project disturbance area south of I-10 (26.4 acres), whereas only three PCEs are met where overlap occurs north of I-10 (182.9 acres, see discussion below). However, due to the presence of some human disturbance (a paved road and several transmission line corridors are present within this area) and the influence of regional climate on DT abundances in the Sonoran Desert (higher temperatures and lower rainfall compared to the Mojave Desert generally result in overall lower DT abundances), the area where the CHU overlaps the Project disturbance area south of I-10 is considered to be of moderate quality for DT.

Of the six PCEs of DT critical habitat listed above, only three are firmly associated with the Project disturbance area north of I-10, while the three other elements are not present. First, the PCE of “sufficient quantity and quality of forage species” that could support a large onsite population of DT is not met due to the lack of groundwater necessary to maintain a viable source of forage for the species. Additionally, the Project disturbance area overall has low rainfall, likely due to its position on the valley floor. Within this region, topographic effects associated with the mountains (and other factors) are important for the availability of water for plants. As a result, the availability of water and forage north of I-10 would be limited during critical periods for DT survival.

Second, the PCE for critical habitat that requires sufficient space to provide “movement, dispersal, and gene flow” is absent for the portion of the Project disturbance area that occurs north of I-10. I-10 bisects the portion of critical habitat Unit #4 that overlaps the Project disturbance area north of I-10, with the much larger block of critical habitat to the south of I-10 (Figure 2), and limits the ability of DT to use this area for “movement, dispersal, and gene flow.” Additionally, orchards to the west, and palm farms and an existing single-family residence to the north and northwest, of the Project disturbance area limit connectivity of the disturbance area north of I-10 with adjacent suitable habitats.

The third PCE that is not met for suitable habitat north of I-10 is the requirement that the habitat be “protected from disturbance and human-caused mortality.” Due to the proximity of existing human disturbance along the I-10 corridor, disturbance related to off-highway-vehicle activity, and the associated edge effects of human encroachment, DT habitat within the Project disturbance area north of I-10 is not protected from these types of disturbances. The evidence of

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human disturbance in the area north of I-10 was noted as high and included off-highway-vehicle use, domestic dog use, and trash dumping. Also, vehicles are commonly parked in this area.

Based on the site's characteristics relative to the six PCEs of DT critical habitat, critical habitat in the Project disturbance area north of I-10 is considered low quality for DT (0.2 acres of which is unsuitable for DT); critical habitat south of I-10 is considered moderate quality for DT. Critical habitat in the Project disturbance area north of I-10 is considered similar in conservation function and value as the remainder of the Project disturbance area that occurs north of I-10. Therefore, the Applicant proposes that Project areas north of I-10 be assessed for impacts as low-quality DT habitat, while the remainder of the site (south of I-10) be assessed as moderate-quality DT habitat. Of the 209.5 acres of critical habitat in the Project disturbance area, 183.1 acres are north of I-10 (0.2 acres are unsuitable for DT, 182.9 acres are low quality) and 26.4 acres are south of I-10 (moderate quality).

## **7. PROJECT EFFECTS AND POTENTIAL FOR TAKE**

### **7.1 Biology-Related Design Elements**

The following paragraphs summarize key Project design elements as they relate to the potential effects on covered species.

#### **7.1.1 Solar Array, Access Roads, and Maintenance Facilities**

The two solar fields associated with the Project would occupy approximately 1,380 acres each. The total area occupied by the facility footprint (solar fields, office and maintenance buildings, laydown area, drainage channels, bioremediation area, leach fields, and roads) has been estimated at 2,974 acres. The Project disturbance area (area inside and outside the facility fence line that would be disturbed by the Project) has been conservatively estimated at 3,899.2 acres. It is assumed that the entire 3,899.2-acre Project disturbance area would be directly and permanently impacted by the PSPP.

The minimum number of lights necessary to provide safety and security would be installed in the power block. All lights would be installed within the perimeter fence of the Project. Lights would be focused downward and shielded toward the power block, away from adjacent undeveloped areas when near the perimeter of the site.

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### **7.1.2 Rerouted Desert Washes**

The following summary of existing drainage patterns and planned modifications is based on material described in greater detail in the Hydrology Report prepared for the Project (AECOM 2009a).

As part of the PSPP, the series of desert washes that crosses the Project disturbance area from southwest to northeast would be rerouted into three channels on the west side, center, and east side of the Project disturbance area, corresponding to the three bridges that direct flow passing under I-10. These channels would intercept flows prior to their entry to the site and convey them in realigned channels to approximately the same locations where they exit the site under existing conditions. Outlets for each channel would end in diffusers.

The west and east channels would be located entirely outside of the proposed perimeter fencing. The center channel inlets and outlets would be located outside of perimeter fencing. The remainder of the center channel would be located within the perimeter fence. The channels would be constructed with native material, and scour protection (i.e., rip rap) would be added to the channel sides and bottoms in stress areas such as curves and slope transitions. No scour protection is proposed for the channel bottom in the straight sections of the channels. This is to allow the low flows to meander across the bottom, replicating as nearly as possible the flow regimes under current conditions.

### **7.2 Land Cover Conversion**

Nine vegetation communities and other land cover types were identified within the Project area during Project surveys (Figure 5). The acreages of each vegetation community and cover type within the Project disturbance area, surrounding buffer, and the entire Project area are provided in Table 1. All of the desert dry wash woodland (141.0 acres), unvegetated ephemeral dry wash (161.8 acres), Sonoran creosote bush scrub (3,311.5 acres), and stabilized and partially stabilized desert dunes (284.7 acres) within the Project disturbance area is suitable for DT (3,899 acres within the Project disturbance area). This analysis assumes that all of these habitats in the Project disturbance area would be removed and converted to solar fields and other facilities as a result of Project construction. Of the 3,899 acres of suitable DT habitat that would be lost as a result of the Project, 3,871.6 acres are of low quality and 27.4 acres are of moderate quality for DT (refer to Section 6.1, Mojave Desert Tortoise, for a discussion).

**Table 1**  
**Vegetation Communities and Cover Types (in Acres)<sup>1</sup>**

<b>Vegetation Communities and Other Cover Types</b>	<b>Project Disturbance Area</b>	<b>Buffer</b>	<b>Project Area</b>
<b>Riparian</b>			
Desert Dry Wash Woodland	141.0	458.3	599.3
Unvegetated Ephemeral Dry Wash	161.8	34.5	196.2
<i>Subtotal Riparian</i>	<i>302.8</i>	<i>492.8</i>	<i>795.5</i>
<b>Upland</b>			
Active Desert Dunes	0.0	684.3	684.3
Desert Sink Scrub	0.0	9.4	9.4
Dry Lake Bed	0.0	270.1	291.0
Sonoran Creosote Bush Scrub	3,311.5	6,834.4	10,145.9
Stabilized and Partially Stabilized Desert Dunes	284.7	625.5	910.3
<i>Subtotal Upland</i>	<i>3,596.2</i>	<i>8,423.7</i>	<i>12,020.0</i>
<b>Other Cover Types</b>			
Agricultural Fields	0.0	750.2	750.2
Developed	0.2	149.1	149.4
<i>Subtotal Other Cover Types</i>	<i>0.2</i>	<i>899.3</i>	<i>899.6</i>
<b>Total Acres</b>	<b>3,899.2</b>	<b>9,815.8</b>	<b>13,715.0</b>

<sup>1</sup> Acreages are based on the most recent Project design, as reported in the revised Project Supplemental Biological Resources Technical Report (November 2009) and as shown in Figure 2. Acreages reported in this table may not sum exactly to subtotals or totals due to rounding.

### **7.3 Potential for Species Take**

This section describes the potential impacts of the proposed Project to DT as a result of both Project construction and operations and maintenance. Effects on critical habitat are discussed separately under Section 7.4, Impacts to Critical Habitat.

#### **7.3.1 Construction Impacts**

Direct permanent impacts to DT could potentially occur as a result of the installation of Project facilities, which would affect 3,871.6 acres of low-quality DT habitat and 27.4 acres of moderate-quality DT habitat in the Project area. The presence of three active (including one occupied) burrows indicates that DTs use the Project area; however, it is unknown if these burrows are used by resident or transient DTs. Dispersing juvenile and/or transient DT may use burrows while searching for an area to establish a home range. Higher quality DT habitat exists in the Palen Mountains to the northeast and the Chuckwalla Mountains to the south, and the Project area (a valley floor) connects these areas. DTs are known to use low-quality intermountain habitat such as that present across the majority of the Project area as dispersal



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routes over time, providing connectivity between high-quality habitat areas in the surrounding mountains (Averill-Murray and Averill-Murray 2005).

The Project may adversely impact local movement and reduce habitat connectivity of DT. The drainages that currently flow through the Project area may facilitate DT movement and habitat connectivity across the Project site. These drainages are proposed to be rerouted in channels around and through the Project area. While rerouted channels would remain accessible to DT from adjacent areas (channels would either be constructed outside the facilities perimeter fence or DT would not be completely excluded by the chain link fence), these channels are not expected to retain suitable habitat features for DT, and in the case of the central channel, could create a movement trap for DT. Minimal vegetation cover is anticipated within rerouted channels as a result of Project construction and channel maintenance needs (see Section 3, Project Description). The lack of suitable vegetative cover for DT and increased human presence on site would limit DT from inhabiting or using rerouted channels for successful movement or dispersal through the middle of the Project site over the course of several generations. Additionally, DTs could potentially get trapped and/or lost in the central channel and die because of the lack of resources (vegetation) within the channel and long distance needed to travel along the channel to pass through the Project site. However, to ensure that no DTs perish in the central channel as a result of above-mentioned effects, a permanent DT-proof fence, or similar structure sufficient to exclude DTs from the central channel, would be installed across the inflow and outflow points of the central channel to prevent DT from entering (see Section 10, Conservation Measures and Mitigation).

The highway underpasses (culverts) would remain open and DT could still cross under I-10 when making north to south movements. However, some individuals traveling around the Project disturbance area from the north may attempt to cross I-10 at grade rather than use the underpass as a result of proposed DT-proof fencing along the perimeter of the solar fields (see Section 10, Conservation Measures and Mitigation), which may increase the potential for road-related DT mortality. For example, fencing on the west side of the Project disturbance area could guide DTs directly onto I-10 (Figure 2). This potentially could disrupt DT population dispersal from the Chuckwalla Mountains to the southwest connecting to the Palen Mountains in the northeast and vice versa. Although DT is not a migratory species, opportunities for local movements within its home range and dispersal are important for maintaining viable populations. Impacts to DT in the context of impacting regional population dispersal would be adverse because it is a resident species that generally only moves within its home range, with the exception of juvenile dispersal. Construction of the PSPP may increase the number of DT generations it takes for individuals to be exchanged between populations.

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Temporary direct impacts to DT using the Project area could result from an increase in vehicle traffic while the Project is under construction. The increased vehicular traffic volumes could lead to an increase in vehicular strikes while tortoises attempt to cross roads near the Project area, especially that portion of the Project area south of I-10. To limit direct mortality to individual DTs as a result of construction, the Project disturbance area would be fenced with DT temporary exclusionary fencing and preconstruction DT clearance would occur (see Section 10, Conservation Measures and Mitigation).

Indirect impacts to DT could occur from increased common raven (*Corvus corax*) presence associated with the construction of new elevated perching sites (e.g., new transmission line towers, perimeter fencing). Common ravens were rarely observed within the Project area during surveys in 2009. Also, there would be no standing water on site as a result of the Project, which would reduce the potential for raven occurrence. Therefore, the potential for indirect impacts to DT as a result of common raven occurrence may be reduced. During Project surveys in 2009, only one pair of common raven (with young) was observed in the Project area; the nest was located in a desert ironwood tree (*Olneya tesota*) in the north central portion of the Project disturbance area (EDAW and Bloom Biological 2009). However, development of new elevated perching sites as a result of Project construction could increase raven abundance locally, including the probability that young ravens remain in the area after maturing, which, in turn, could result in increased predation on DT in the vicinity of the Project disturbance area. Additionally, garbage from increased human presence associated with the PSPP could attract common ravens. However, daily trash removal and potential use of perch-deterrent devices would occur as a result of proposed biological resources protection measures (see Section 10, Conservation Measures and Mitigation). These potential impacts are expected to be greater in areas of higher quality DT habitat, such as the northeastern and southwestern portion of the Project area (e.g., two adult DTs were observed in the southwestern portion of the Project area during Project surveys), and along the perimeter of the Project site where perching opportunities on the proposed fence would border adjacent suitable habitat.

Indirect impacts could also result from construction-related introduction of invasive plants that outcompete native plants and reduce foraging habitat for DT, or from increased incidence of accidental wildfires (potentially caused by construction or downed new transmission wires; however, the potential for this is low due to the relatively small length of transmission lines proposed as part of the Project), both of which could reduce adjacent habitat quality for DT. Potential deposition of sediment loads as a result of construction-related sediment mobilization during heavy rain events and flooding downstream would impact existing DT burrows outside of

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the Project disturbance area. Additionally, increased road use near the Project area during Project construction may increase the potential of vehicles crushing DT.

Construction of the PSPP may have permanent indirect effects on DT movement. DT movement may be altered due to edge effects associated with development. Behavioral avoidance of human-made structures and associated edges can decrease movement and deter connectivity. In addition, the Project may indirectly impact movement through DT avoidance of artificial light and increased noise, or they may change daily activities in response to human presence.

### **7.3.2 Operation and Maintenance Impacts**

Direct impacts to DT during operation and maintenance activities of the PSPP could occur from mortality of individuals by crushing or vehicle collisions in areas outside DT exclusionary fencing.

Operation and maintenance of the Project may also result in permanent, indirect impacts to DT, including edge effects, where the operation of Project facilities would lead to increased lighting and increased potential for exotic plant and wildlife invasion. Nighttime lighting could disrupt DT movement and/or cause increased predation rates adjacent to the Project disturbance area. Wildfires caused by downed transmission lines are rare but may occur and would damage adjacent habitat and kill individuals inhabiting adjacent areas.

### **7.4 Impacts to Critical Habitat**

As previously described (refer to discussion in Section 6.1.1, Critical Habitat), DT critical habitat present in the Project disturbance area (209.5 acres) is composed of 26.4 acres of moderate-quality DT habitat south of I-10, in which all six PCEs occur; and 182.9 acres of low-quality DT habitat and habitat that is unsuitable for DT (0.2 acres) north of I-10. The 183.1 acres of critical habitat north of I-10 do not meet three of the six criteria (i.e., PCEs) that define critical habitat (refer to Section 6.1.1, Critical Habitat). Construction and operation of the PSPP would directly and permanently impact low quality DT critical habitat that is present in the Project disturbance area north of I-10. Additionally, direct impacts to DT could occur from mortality of individuals by crushing or vehicle collisions in areas outside DT-exclusionary fencing during construction and operation activities. This would reduce the possibility to ensure that the critical habitat remaining north of I-10 is “habitat protected from disturbance and human-caused mortality,” an element (i.e., PCE) already considered missing north of I-10 (refer to Section 6.1.1, Critical Habitat). Indirect impacts from construction and operation-related introduction of invasive plants that outcompete native plants and reduce foraging habitat for DT could further preclude

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vegetation of “sufficient quantity and quality of forage species” in the critical habitat remaining north of I-10, another element already considered missing north of I-10.

Construction and operation of the proposed transmission line and substation would directly and permanently impact moderate quality DT habitat that is present within critical habitat in the Project disturbance area south of I-10. Additionally, direct impacts to DT could occur from mortality of individuals by crushing or vehicle collisions in areas outside DT-exclusionary fencing during construction and operation activities. The addition of access roads could also increase off-road vehicle activity south of I-10. These activities would reduce the likelihood that habitat south of I-10 would be “habitat protected from disturbance and human-caused mortality”, one of the six PCEs currently present there (refer to Section 6.1.1, Critical Habitat). Indirect impacts include introduction of invasive plants that outcompete native plants and reduce foraging habitat for DT south of I-10. This would reduce the likelihood that there would be a “sufficient quantity and quality of forage species” south of I-10, another PCE currently present there.

Overall, the Project would directly and permanently impact PCEs through loss of critical habitat both north and south of I-10 and would indirectly impact two of the six PCEs (mostly south of I-10); however, these impacts would not significantly impact the CHU as a whole. The impacts would occur primarily to low quality DT habitat at the edge of this CHU and would not be substantial enough (0.021 percent of the CHU) to impact the function of the PCEs in the CHU. The affected CHU would be expected to maintain its current value to DT recovery.

## **8. IMPACTS OF PROPOSED TAKE**

Construction, operations, and maintenance of Project facilities could potentially result in direct take of DTs. As part of clearance surveys to minimize or avoid construction-related mortality or injury of DTs, individuals would be removed from impact areas if they are located during clearance surveys, which would also constitute take. However, based on the low density of DT in the Project area, and no DTs located within the Project disturbance area during protocol surveys conducted in 2009, the level of potential take as a result of mortality or injury is expected to be low. The PSPP would affect 209.5 acres of critical habitat for DT, representing 0.021 percent of the Chuckwalla CHU. However, these impacts are not expected to have a substantial effect on the overall function and value of this CHU because the impacted area is located at the edge of the CHU boundary where some PCEs are not present, the acreage impacted would be small relative to the CHU (0.021 percent), and habitat compensation (potentially within the affected CHU) would occur as a result of implementation of Project avoidance, minimization, and mitigation measures (see Section 10, Conservation Measures and Mitigation).

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Take that could result from direct mortality or injury during construction would be minimized by implementation of the measures described below in Section 10, Conservation Measures and Mitigation. In addition, compensatory mitigation has been incorporated into the Project (described in Section 10, Conservation Measures and Mitigation) to offset the temporary and permanent habitat loss and potential direct take of individuals through implementation of one or more offsite mitigation options. Land acquisition, enhancement, and management would be the primary compensatory mitigation approach, combined with fee programs designated for specific activities that would promote the recovery of DT (see measure BIO-37 in Section 10, Conservation Measures and Mitigation). Importantly, priorities for habitat acquisition include 1) lands in the vicinity of the Project site that are within the Colorado Desert recovery unit, and that contribute to DT habitat connectivity; and 2) high-suitability areas, or lands that could feasibly be enhanced and managed as such, that build linkages between DT designated critical habitat, known populations of DT, and/or other preserve lands. Therefore, as a result of the proposed implementation of Conservation Measures and Mitigation (Section 10) the Project is not anticipated to have an overall adverse effect on regional viability or recovery of DT.

## **9. POTENTIAL TO JEOPARDIZE CONTINUED EXISTENCE**

The level of potential take of DT associated with issuance of an incidental take permit for the proposed Project would not jeopardize the continued existence of DT. The density of DT in the Project area is low, and no DTs were detected in the Project disturbance area during 2009 surveys. The majority of habitat in the Project area is low quality for DT, and this area does not appear to support a core population of DT. Additionally, the measures described in Section 10, Conservation Measures and Mitigation, would reduce and fully mitigate effects of the proposed Project on the DT based on the following rationale:

- Direct impacts to DT would generally be minimized by
  - requiring compliance monitoring by a qualified biologist to ensure DT protection measures are being implemented effectively, and
  - limiting ground-disturbing activities to within the defined Project disturbance area boundaries.
- Direct injury and mortality of DT would be minimized as a result of
  - preconstruction surveys and subsequent installation of permanent tortoise-proof fencing to enclose the Project disturbance area that would remove DT from harm's way prior to and during Project construction, operations, and maintenance; and

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- requiring vehicle speed limits and routine tortoise inspections beneath parked vehicles when accessing the Project site outside of tortoise exclusionary fencing to reduce the potential for vehicle strikes.
  - Indirect impacts to DT and their habitat would be reduced by
    - the implementation of standard construction BMPs, and establishing equipment operations standards that would minimize the likelihood of offsite sedimentation and hazardous fluid spills that could otherwise degrade or destroy adjacent habitat;
    - requiring Project lighting to be directed away from adjacent sensitive habitat that could cause decreased DT activity or increased predation in neighboring habitats;
    - requiring fire-safe and weed-prevention practices to reduce the potential for invasive weed introductions and increased incidence of wildfire that could degrade or destroy adjacent habitat; and
    - requiring trash management, minimal standing water on site, and implementation of a raven monitoring and management plan to reduce the potential for the Project to attract opportunistic predators that prey on DT.
  - The loss of 3,899 acres of suitable habitat for DT, including 27.4 acres of moderate-quality and 3,871.6 acres of low-quality habitat, would be fully mitigated through implementation of one or more offsite mitigation options. Land acquisition, enhancement, and management would be the primary compensatory mitigation approach, combined with fee programs designated for specific activities that would promote the recovery of DT (see measure BIO-37 in Section 10, Conservation Measures and Mitigation). Priorities for habitat acquisition would include lands in the vicinity of the Project area that are within the Colorado Desert recovery unit and that contribute to DT habitat connectivity; and are high-suitability areas, or lands that could feasibly be enhanced and managed as such, that build linkages between DT designated critical habitat, known populations of DT, and/or other preserve lands.
  - The Project would not adversely affect attainment of the goals and objectives of the DT Recovery Plan.
  - With the possible exception of proposed compensatory mitigation ratios for impacts within low-quality DT habitat, the Project is consistent with the NECO, acknowledged by USFWS in the associated Biological Opinion (USFWS 2005) as a plan that ensures that authorized actions “are not likely to reduce appreciably, either directly or indirectly, the

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likelihood of both the survival and recovery of the desert tortoise in the wild by reducing its reproduction, numbers, or distribution.”

## **10. CONSERVATION MEASURES AND MITIGATION**

The measures described below would fully mitigate take of DT that could result from implementation of the proposed Project. These measures include general avoidance and minimization measures for implementation during Project construction and operations, DT-specific avoidance and minimization measures, and compensatory mitigation for residual impacts.

The PSPP AFC document (AECOM 2009a) submitted to CEC includes 63 biological resource protection measures; 44 of these address potential impacts to DT and are applicable to this permit application. Consistent with the requirements of CEC, the Applicant is required to implement mitigation measures as Conditions of Certification. (Note: The CEC licensing process is legally a California Environmental Quality Act [CEQA] equivalent process.) One of the expected Biological Resources Conditions of Certification requires that a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) be submitted for review and approval by CEC. The BRMIMP comprehensively describes avoidance and minimization measures and provides a matrix to document their implementation and monitor their effectiveness.

Biological resource protection measures from the AFC are provided in their entirety in the AFC document (AECOM 2009a). Because many of the measures are applicable to this permit application, they are presented below in their entirety except where revisions were necessary to address specific impacts of the PSPP to DT. Substantial revisions were made to four AFC measures [BIO-21, BIO-22, BIO-37, and BIO-62]. One measure was removed (BIO-28). Two measures have been added (BIO-63 and BIO-64) to address potential common raven impacts during Project construction, and the monitoring and maintenance of DT-proof fencing during Project operation. The numbering and general organization of avoidance and minimization measures shown below follows those presented in the PSPP AFC document (AECOM 2009a) for ease of cross-referencing. In a few cases, the ordering of measures has been rearranged relative to the AFC to improve overall organization of topics addressed; however, the AFC numbering has been retained. A definition of terms and acronyms associated with measures reproduced from the AFC document are presented below:

- **BRSA:** Biological Resources Survey Area. This area is equivalent to the Project area.

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- Project disturbance area: The area of direct ground disturbance associated with implementation of the Project. This area is analogous to the designated Project impact area and Project footprint.
  - BO: Biological Opinion.
  - ITP: Incidental Take Permit.
  - WBO: western burrowing owl (*Athene cunicularia hypugaea*).
  - Facility footprint: The area within the facilities' fence line, including solar fields, office and maintenance buildings, laydown area, bioremediation area, and leach fields.

### **10.1 General Avoidance and Minimization Measures during Construction**

The following is a list of general impact avoidance and minimization measures from the AFC that are applicable to Project construction activities and the DT. These measures are standard practices designed to prevent environmental degradation, and the Project Applicant shall be responsible for implementation of these measures to avoid and minimize impacts to the greatest extent feasible. Those measures include the following:

- BIO-1 The Project proponent shall designate a BLM-, USFWS-, and California Department of Fish and Game (CDFG)-approved Designated Biologist(s). The construction contractor(s)/crew(s) shall be informed about the biological constraints of the Project. All construction personnel who work in the BRSA shall attend a contractor education program, developed and presented by a Designated Biologist prior to the commencement of construction activity. The construction crews and contractor(s) shall be responsible for unauthorized impacts from construction activities to sensitive biological resources that are outside of the areas defined as subject to impacts by CEC and other agencies who issue approvals for the Project.
- BIO-2 The Designated Biologist shall be responsible for overseeing monitoring and compliance with protective measures for the biological resources. A Section 10(a)(1)(A) permit shall be required for the monitoring or handling of Federal listed species. The Designated Biologist shall maintain communications with the appropriate personnel (project manager, resident engineer) to ensure that issues relating to biological resources are appropriately and lawfully managed. The Designated Biologist shall also be present to verify compliance with all conservation measures. The Designated Biologist shall submit reports that document compliance with these measures to BLM, USFWS, and CDFG upon request or, at a minimum,



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included in the end-of-the-year report. In addition, the Designated Biologist shall perform the following duties:

- a. The Designated Biologist shall conduct preconstruction surveys for listed species within 30 days prior to commencement of construction activities in the Project disturbance area.
- b. The Designated Biologist shall be onsite during all vegetation clearing and grubbing, and weekly during Project construction in upland and riparian habitat to be impacted.
- c. A Storm Water Pollution Prevention Plan (SWPPP) and a Drainage, Erosion, and Sedimentation Control Plan (DESCP) shall be prepared to comply with Regional Water Quality Control Board (RWQCB) and CEC requirements; a preliminary DESC (equivalent to a SWPPP but covering both construction and operation phases) is provided as Appendix F to the AFC. The DESC and SWPPP identify the design features and BMPs that shall be used to effectively manage drainage-related issues (e.g., erosion and sedimentation) during construction. Erosion-control measures shall be regularly checked by inspectors, the Designated Biologist, and/or resident engineer. Specific BMP plans shall be reviewed by a Designated Biologist and modified, if necessary, prior to implementation. Fencing and erosion-control measures of all Project areas shall be inspected a minimum of once per week.
- d. Each employee shall participate in a training/awareness program that shall be presented by the Designated Biologist prior to working on the PSPP.
- e. Proper implementation of protective measures developed in coordination with USFWS to avoid all impacts to all encountered sensitive species and nesting birds shall be verified.
- f. The resident engineer shall be immediately notified to halt work, if necessary, and coordinate with USFWS and CDFG to ensure the proper implementation of species and habitat protection measures. The Designated Biologist shall report any breach of the conservation measures within 24 hours of its occurrence.

BIO-3 The anticipated impact zones, including staging areas, equipment access, and disposal or temporary placement of spoils, shall be delineated with stakes and flagging prior to

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- construction to avoid natural resources where possible. No construction-related activities shall occur outside of the designated impact area (i.e., Project disturbance area).
- BIO-4 The Project proponent shall ensure that all construction materials, staging, storage, dispensing, fueling, and maintenance activities are located in upland areas outside of sensitive habitat, and that adequate measures are taken to prevent any potential runoff from entering waters of the U.S. Staging areas shall be located within permanent impact areas or previously disturbed sites within the Project footprint.
- BIO-5 New and existing roads that are planned for either construction or widening shall not extend beyond the Project disturbance area. All vehicles passing or turning around shall do so within the Project disturbance area. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.
- BIO-6 The solar units shall be graded generally following the existing contours of the site in order to minimize the amount of ground disturbance.
- BIO-7 Spoils shall be stockpiled in disturbed areas presently lacking native vegetation. Stockpile areas shall be marked to define the limits where stockpiling can occur.
- BIO-8 Spoils, trash, or any debris shall be removed offsite to an approved disposal facility. A trash abatement program shall be established. Trash and food items shall be contained in closed containers and removed daily to reduce the attractiveness to opportunistic predators such as common ravens, coyotes, and feral dogs that may prey on sensitive species.
- BIO-9 Workers shall be prohibited from bringing pets and firearms to the site.
- BIO-10 If construction activities occur at night, all Project lighting (e.g., staging areas, equipment storage sites, roadway) shall be directed onto the roadway or construction site and away from sensitive habitat. Light glare shields shall also be used to reduce the extent of illumination into adjoining areas.
- BIO-11 BMPs shall be employed to prevent loss of habitat due to erosion caused by Project-related impacts (i.e., grading or clearing for new roads). The Project inspector shall periodically monitor the work area to ensure that construction-related activities do not

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- generate erosion or excessive amounts of fugitive dust. All detected erosion shall be remedied within 2 days of discovery.
- BIO-12 Fueling of equipment shall take place within existing paved roads and not within 300 feet of or adjacent to drainages or native desert habitats. Contractor equipment shall be checked for leaks prior to operation and repaired as necessary.
- BIO-13 Wildfires shall be prevented by exercising care when driving and by not parking vehicles where catalytic converters could ignite dry vegetation. In times of high fire hazard (e.g., high wind or drought conditions), trucks may need to carry water and shovels or fire extinguishers in the field, or high-fire-risk installations (e.g., electric lines) may need to be delayed. The use of shields, protective mats, or other fire-prevention equipment shall be used during grinding and welding to prevent or minimize the potential for fire. No smoking or disposal of cigarette butts shall take place within vegetated areas.
- BIO-14 The introduction of exotic plant species shall be avoided and controlled wherever possible, and may be achieved through physical or chemical removal and prevention. Preventing exotic plants from entering the site via vehicular sources shall include measures such as implementing Trackclean or other method of vehicle cleaning for vehicles coming and going from the site. Earth-moving equipment shall be cleaned prior to transport to the Project site. Weed-free rice straw or other certified weed-free straw shall be used for erosion control. Weed populations introduced into the site during construction shall be eliminated by chemical and/or mechanical means approved by CEC, BLM, CDFG, USFWS, and the California Invasive Plant Council (Cal-IPC). These measures collectively form the Weed Management Plan for the PSPP.
- BIO-15 In addition to the avoidance and minimization measures outlined in this chapter, the Project proponent shall implement any measures required by CEC, BLM, USFWS, and CDFG as a condition of Project certification, such as measures set forth in the USFWS BO and/or CDFG 2081 ITP.
- BIO-63 Project design features (PDFs) shall be employed as detailed in the Common Raven Monitoring, Management, and Control Plan (AECOM 2010a) to prevent raven occurrence on site. PDFs shall include, but are not limited to, the following:
- a. potential use of perch-deterrent devices and locations of their installation,

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- b. measures that might reduce raven presence and nesting activities (e.g., removing food items, garbage, no standing water on site, removal of unoccupied raven nests), and
  - c. adaptive management measures (e.g., hazing, lethal removal) if raven monitoring suggests current PDFs are ineffective.

## **10.2 Resource-Specific Avoidance and Minimization Measures**

Resource-specific impact avoidance and minimization measures from the AFC that are applicable to Project construction, including those specific to DT, are presented below.

### **10.2.1 Special-Status Wildlife**

BIO-20 Mitigation requirements for the Project's permanent impacts to habitats occupied, or presumed occupied, by special-status wildlife species (DT and WBO) shall be mitigated at a ratio or other appropriate mitigation to be determined by the wildlife agencies. Mitigation for permanent impacts to these species is generally provided by acquiring and conserving in-kind habitat of equal value to the habitat impacted. Mitigation lands in the vicinity of the Project disturbance area shall be prioritized in order to provide protection for displaced wildlife and to maintain land connectivity in the area. It is expected that mitigation for WBO shall be coincident with mitigation for DT.

### **10.2.2 Desert Tortoise**

BIO-25 USFWS assigns a single designation for biologists who can be approved to handle tortoises ([http://www.fws.gov/ventura/speciesinfo/protocols\\_guidelines/](http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/)): "Authorized Biologist" (AB). Such biologists have demonstrated to USFWS that they possess sufficient DT knowledge and experience to handle and move tortoises appropriately. The AB shall oversee compliance with the protection measures for DT and other species. The AB shall be on site during fencing activities. The AB shall have the right to halt all activities that are in violation of the DT protection measures. Work shall proceed only after hazards to DT are removed and the species is no longer at risk, or the individual has been moved from harm's way by the AB. The AB shall have in his/her possession a copy of all the compliance measures while work is being conducted on site. The AB is permitted to then approve monitors to conduct specific activities based on the monitor's demonstrated skills, knowledge, and qualifications.

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CDFG must also approve the AB, including individual approvals for monitors approved by the AB.

- BIO-26 The proponent shall submit the names and statement of qualifications of all proposed ABs to CEC, BLM, USFWS, and CDFG for review and approval at least 30 days prior to initiation of any DT handling, clearance, and preactivity surveys. Project activities shall not begin until the AB is approved by the aforementioned agencies. ABs shall be allowed to handle and relocate DT when necessary. Workers shall notify the AB of all DT observations.
- BIO-27 The AB shall be responsible for awareness trainings, surveys, compliance monitoring, and reporting related to DT.
- BIO-21 Prior to the onset of construction, the boundary of the facility footprint would be permanently fenced with an 8-foot-high chain link fence for security purposes. Permanent DT-proof fencing shall either be attached to the base of the security fence or installed immediately outside the security fence. To ensure that no DTs enter the central rerouted channel, a permanent DT-proof fence, or similar structure sufficient to exclude DTs, shall be installed across the inflow and outflow points of the central channel, perpendicular to the direction of water flow. Temporary DT-proof fencing shall be installed prior to clearance surveys around the initial construction startup/primary staging areas, in portions of linear utilities, and in any other areas outside permanent DT-proof fencing where ground disturbance will occur within the Project disturbance area. Temporary DT-proof fencing shall follow guidelines for permanent fencing and supporting stakes shall be sufficiently spaced to maintain fence integrity. The fencing type shall be 1- by 2-inch vertical mesh galvanized fence material, extending at least 2 feet above the ground and buried at least 1 foot. Where burial is impossible, the mesh shall be bent at a right angle toward the outside of the fence and covered with dirt, rocks, or gravel to prevent DT from digging under the fence. DT-proof gates shall be established at all Project site entry points. All fence construction shall be monitored by the AB to verify that no DTs are harmed. Following installation, the fencing shall be inspected monthly and during all major rainfall events, or more often, as necessary. Damage to the fencing shall be repaired immediately.
- BIO-22 A clearance for any DTs shall be conducted throughout the Project disturbance area. A minimum of two clearance passes shall be completed after DT-proof fencing is installed; these shall coincide with heightened DT activity from late March through

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May and during October. This shall maximize the probability of finding all DT. It is anticipated that no or very few DT will be found. Excavation of all potential DT burrows encountered shall occur as a part of clearance surveys. Any DT found shall be moved by an AB to a location outside of DT-proof fencing using the approach and techniques described in the DT Relocation/Translocation Plan (AECOM 2010b) and that are approved by agency representatives. DT shall be moved out of harm's way the minimum distance possible within appropriate habitat to ensure its safety from death, injury, or collection, or to a specified translocation site approved by agency representatives. The DT Relocation/Translocation plan includes an analysis to determine whether relocation or translocation is an appropriate action; the identification and prioritization of potentially suitable locations for translocation; DT handling and transport considerations (including temperature); animal health considerations; a description of translocation scheduling, site preparation, and management; and specification of monitoring and reporting activities for evaluating success of translocation. Once the site is deemed free of DTs after two consecutive clearance passes, then heavy equipment shall be allowed to enter the site to perform construction activities.

- BIO-23 DT shall be monitored during construction activity to avoid direct impacts to individuals, or all DT shall be sought and fenced out of construction zones (see BIO-22, above).
- BIO-24 Following site clearance, a report shall be prepared by the AB to document the clearance surveys, the capture and release locations of all DT found, individual DT data, and other relevant data. Information for each individual would include, at minimum, the location and dates of observations; burrow data; animal gender, carapace length, mass, general conditions, and health; any apparent injuries and state of healing; and diagnostic markings (i.e., identification numbers). This report shall be submitted to agency representatives.
- BIO-29 Personnel shall use established roadways (paved or unpaved) in traveling to and from the survey area and also shall use existing tracks on site whenever possible. Cross-country vehicle and equipment use outside designated work areas shall be prohibited. To minimize the likelihood for vehicle strikes of DTs, a speed limit of 15 miles per hour shall be established for travel within the Project disturbance area outside areas cleared through DT clearance surveys (see BIO-22) and along off-highway access roads to the site.

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- BIO-30 To the greatest extent feasible, parking and storage shall occur within the DT exclusion fencing. Anytime a vehicle or construction equipment is parked in unfenced DT habitat, the ground under the vehicle shall be inspected for the presence of DT before the vehicle is moved. If a DT is observed, it shall be left to move on its own. If it does not move within 15 minutes, the AB shall remove and relocate the DT to a safe location.
- BIO-31 All vehicles and equipment shall be in proper working condition to ensure that there is no potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The AB shall be informed of any hazardous spills within 24 hours. Hazardous spills shall be immediately cleaned up and the contaminated soil shall be properly disposed of at a licensed facility.
- BIO-32 Intentional killing or collection of DT in the survey area and surrounding areas shall be prohibited. The AB shall be notified of any such occurrences immediately and agency representatives shall be notified of any such occurrences within 24 hours.
- BIO-33 For emergency response situations, the AB shall notify the agency representatives immediately. As a part of this response, the agency representatives may require additional measures to protect DT. During any responses related to human health, fire, hazardous waste, or repairs requiring off-road-vehicle and equipment use, agency representatives may also require measures to recover damaged habitat.
- BIO-34 Water shall be applied to the construction ROW, dirt roads, trenches, spoil piles, and other areas where ground disturbance has taken place to minimize dust emissions and topsoil erosion. During the DT active season, a Designated Biologist shall patrol these areas to ensure water does not puddle for long periods of time and attract DTs, common ravens, or other wildlife to the site.
- BIO-35 Upon locating a dead or injured DT, the AB shall make initial notification to the agency representatives within 24 hours of its finding. The notification shall be made by telephone and writing to the nearest USFWS Field Offices. The report shall include the date and time of the finding or incident (if known), location of the carcass, a photograph, cause of death (if known), and other pertinent information. DT fatally injured as a result of Project-related activities shall be submitted for necropsy as outlined in Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming

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Desert Tortoises (Berry 2003). DT with fewer major injuries shall be transported to a nearby qualified veterinarian for treatment at the expense of the proponent. If an injured DT recovers, the agency representatives shall be contacted for final disposition of the DT.

- BIO-36 During construction activities, monthly and final compliance reports shall be provided by the AB to USFWS, CDFG and other applicable resource agencies documenting the effectiveness and practicality of the protection measures that are in place and making recommendations for modifying the measures to enhance species protection, as needed. The report shall also provide information on the overall biological resources-related activities conducted, including the worker awareness training, clearance/preactivity surveys, monitoring activities, and any observed DTs, including injuries and fatalities.

### **10.2.3 Wildlife Movement**

- BIO-52 The Project shall prioritize and acquire land within the vicinity of the Project disturbance area that maintains connectivity to adjacent open spaces and provides corridors between open spaces for wildlife species impacted.
- BIO-53 The Project shall restore degraded habitat within the vicinity of the Project disturbance area that may have formerly served as a wildlife corridor for impacted species and would provide ecological value for overall connectivity. Areas for implementation of these measures shall be prioritized based on proximity to the PSPP and impacted populations. Areas for implementation of these measures shall also be considered for quality of habitat and likelihood of use by species impacted.
- BIO-54 The Project shall restore disrupted connectivity within the vicinity of the Project disturbance area that may have formerly served as a wildlife corridor for impacted species by creating wildlife crossings under or over current barriers such as local roads and highways. Areas for implementation of these measures shall be prioritized based on proximity to the PSPP and impacted populations. Areas for implementation of these measures shall also be considered for quality of surrounding habitat and likelihood of use by species impacted.
- BIO-55 Measures may be taken to contribute to the general knowledge of wildlife movement, edge effects, and the role of dispersal in metapopulation dynamics. Measures may include, but are not limited to, contributing financing for research on species-specific



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movement through telemetry studies and population gene flow as it relates to species dispersal in the region, as well as specific studies on edge effects. Measures to contribute to the general knowledge shall require approval by State and Federal wildlife agencies.

### **10.3 General Avoidance and Minimization Measures during Operation**

General impact avoidance and minimization measures from the AFC that are applicable to Project operation and the DT are presented below.

- BIO-56 All vehicles passing or turning around shall do so within the planned impact area (i.e., Project disturbance area).
- BIO-57 Project design features (PDFs) shall be employed as detailed in the Common Raven Monitoring, Management, and Control Plan (AECOM 2010a) to prevent raven occurrence on site. PDFs shall include, but are not limited to, the following:
- a. potential use of perch-deterrent devices and locations of their installation,
  - b. measures that might reduce raven presence and nesting activities (e.g., removing food items, garbage, no standing water on site, removal of unoccupied raven nests), and
  - c. adaptive management measures (e.g., hazing, lethal removal) if raven monitoring suggests current PDFs are ineffective.
- BIO-58 Fueling of equipment shall take place within existing paved roads and not within 300 feet or adjacent to drainages or native desert habitats. Maintenance equipment shall be checked for leaks prior to operation and repaired as necessary.
- BIO-59 A SWPPP and a DESCPC shall be prepared to comply with RWQCB and CEC requirements; a preliminary DESCPC (equivalent to a SWPPP but covering both construction and operation phases) is provided as Appendix F of the AFC. The Project shall employ a comprehensive system of management controls, including site-specific BMPs, to minimize erosion and storm water contact with contaminants, and thereby reduce exposure of wildlife and plants to pollutants in the storm water. These management controls include erosion and sediment control BMPs; an employee training program; good housekeeping and preventive maintenance programs; structural BMPs, including temporary containment during maintenance activities and

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permanent secondary containment structures at chemical storage and process areas; materials, equipment, and vehicle management practices; spill prevention and response programs; and inspection programs.

- BIO-60 The Project's lighting system shall provide the minimum illumination required to meet safety and security objectives and shall be oriented to minimize additional illumination in areas not pertinent to the facility. If lighting is adjacent to sensitive habitat, it shall be directed or shielded away from the habitat. No permanent lights are proposed to be installed within sensitive habitat. Light glare shields shall also be used to reduce the extent of illumination into adjoining areas.
- BIO-61 During Project operation, the facility footprint shall be maintained free from nonnative invasive species. This can be accomplished through physical or chemical removal and prevention. Application of an approved herbicide (not toxic to wildlife) shall be applied or directly supervised by a State-licensed applicator following the label instructions, including application rates and protective equipment. Herbicide shall be applied only when wind speeds are less than 5 miles per hour.
- BIO-62 Decommissioning of the facility shall include the removal of all improvements within the disturbance area. All surface improvements shall be removed, and all ground-level penetrations and subsurface storage tanks (if any) shall be removed and filled/capped to prevent the access and entrapment of wildlife. The channel realignments may remain in place or be filled and restored to preexisting hydrology. Funding for long-term maintenance or filling and restoration of the realigned channels, whether it is needed at the anticipated facility closure date or it is needed earlier due to untimely closure (i.e., bankruptcy), shall be pursued once a comprehensive decommissioning plan is established.
- BIO-63 To minimize the likelihood for vehicle strikes of DTs, a speed limit of 15 miles per hour shall be established for travel along off-highway access roads to the site. Access roads shall be posted with DT awareness signs. DT-proof gates that roll open and close behind vehicles shall be installed at the entrance of the perimeter fence.
- BIO-64 All DT-proof fencing, or other similar structures intended to exclude DT (e.g., around the facility, at the inflow and outflow points of the central rerouted channel) shall be inspected monthly and during all major rainfall events, or more often, as necessary. Damage to the fencing, or similar structure, shall be repaired immediately (same day)

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and a clearance survey for any DTs that may have entered the excluded area shall be conducted in all areas by the AB within 24 hours of the time the fence is damaged. A minimum of two clearance passes shall be completed by the AB after the fencing, or similar structure, is repaired to ensure that no DTs that may have entered the excluded area become trapped inside. Any DTs found will be moved by the AB to a location immediately outside of the DT-proof fencing, or similar structure, using agency-approved techniques.

#### **10.4 Mitigation for Residual Impacts**

This section presents compensatory mitigation for unavoidable (i.e., residual) impacts of the Project to DT, as revised from the AFC.

BIO-37 In addition to the measures discussed above, the Project Applicant shall compensate for impacts to DT habitat in the disturbance area during construction activities. Direct permanent impacts to 3,899 acres of potential DT habitat, including 27.4 acres of moderate-quality critical habitat, shall be mitigated at a ratio developed in consultation with the resource agencies. Land acquisition, preservation, and enhancement through management shall be the primary compensatory mitigation approach, combined with fee programs designated for specific activities that would promote the recovery of DT. A Preliminary Habitat Mitigation and Monitoring Plan (HMP) has been prepared for the PSPP. The Preliminary HMP describes the proposed approach to compensatory mitigation planning and design, including proposed minimum compensation ratios and criteria for identifying mitigation lands; an implementation plan; monitoring, adaptive management, and contingency measures; and enhancement and long-term management of mitigation lands. The compensatory mitigation approach will be further developed and refined in the Conceptual HMP to be provided once mitigation lands are chosen. The following summarizes the Preliminary HMP's approach to compensatory mitigation of impacts to DT.

The proposed total acreage of compensatory mitigation would be based on the following proposed minimum overall ratios. These ratios are based on the quality of on-site habitats that would be affected by the Project and ratios that have been negotiated on similar projects.

- *Within DT critical habitat.* For acres of moderate-quality habitat impacted within DT critical habitat (27.4 acres), mitigation shall be at 5 acres compensation for

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each 1 acre impacted (i.e., 5:1 ratio). For acres of low-quality DT critical habitat impacted (182.9 acres), mitigation shall be at a 1:1 ratio. [note: an additional 0.2 acres of critical habitat within the Project disturbance area are unsuitable for DT and do not constitute impacts by the Project].

- *Outside DT critical habitat.* For acres of moderate-quality habitat impacted outside DT critical habitat (1 acre), mitigation shall be at a 1:1 ratio. For acres of low-quality habitat impacted (3,688.7 acres), mitigation shall be at a 0.5:1 ratio.

Because opportunities for onsite compensatory mitigation are limited, one or more of the following offsite mitigation options shall be implemented.

1. *Land Acquisition, Enhancement, and Management*

Of the total compensatory mitigation acreage required (based on the overall ratios previously proposed), acquisition of habitat shall be at a ratio of 0.5 acre acquisition for each 1 acre of DT habitat impacted (i.e., 0.5:1), regardless of the suitability of habitat impacted. The remaining mitigation acreage requirement would be met through other mitigation options as part of fee programs (see “Fee Programs,” below). Land acquisition may occur through two primary mechanisms: 1) purchase of private lands or 2) payment of a fee to a third party for the purchase of lands. In either approach, the costs associated with land acquisition would include not only the cost of the land parcels to be acquired, but also fees for the initial enhancement and continued long-term management of those lands by a third party in perpetuity. The location of acquired lands would be determined based on consultation with the resource agencies. Priority lands for acquisition would be identified using one or more of the following criteria:

- **Location and landscape position.** Priorities for acquisition would include 1) lands in the vicinity of the Project site that are within the Colorado Desert recovery unit, and that contribute to DT habitat connectivity; and 2) areas that include or build linkages between DT designated critical habitat, known populations of DT, and/or other preserve lands.
- **Maximize size.** Acquisition parcels shall be as large as possible to maximize ecosystem functions on site, population sizes of DT, and protection of species from adjacent land uses and edge effects. Also, larger preserves allow for greater

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efficiency and effectiveness in implementing large-scale enhancement or restoration actions, and preserve management.

- Protect high-quality habitats. Acquisition efforts shall focus on protecting occupied or high-quality DT habitat and lands where PCEs are present.
- Enhancement opportunities. Lands that are presently limited in habitat value for DT may be considered priorities for acquisition if they can be feasibly enhanced or restored to functional, high-quality DT habitat, and would contribute to regional connectivity of populations or important habitats.
- Goals of the DRECP. The State of California and the U.S. Department of Interior are cooperatively developing the DRECP. The DRECP will establish a science-based process for reviewing, approving, and permitting renewable energy applications in California. Once the plan is complete (anticipated in late 2010), it will present a regional road map that will provide certainty for renewable energy developers on how and where to site their projects. The DRECP will also create a government-organized habitat mitigation program that consolidates habitat purchases for compensatory mitigation. Land acquisition to mitigate for impacts of the PSPP shall focus on parcels that would contribute to DRECP goal attainment.

The process for approval of offsite land acquisition would generally involve the following steps.

- a. Identification of suitable offsite mitigation properties, based on the criteria identified above.
- b. Due diligence of selected mitigation properties, including completion of biological resources assessments and other technical studies.
- c. Consultation with resource agencies and mitigation plan approvals.
- d. Resource agency final approvals, final transfers, and recordation of conservation easement.

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Measures for the management and enhancement of DT habitat will be implemented, as appropriate, depending on the site conditions at the chosen mitigation areas. Such measures may include the following:

- control of raven populations to reduce predation of DT;
- control or elimination of grazing by domestic animals to prevent soil compaction, erosion, and the loss of DT forage plants;
- control of wild horse and burro populations within mitigation areas;
- elimination of off-road-vehicle (ORV) use and other human disturbance through fencing, signage, and patrolling;
- prohibition of any new road construction, paved or otherwise, within mitigation areas;
- installation of DT-friendly barrier fencing, culverts, and/or undercrossings at existing highways;
- prevention of poaching and illegal collection of DT;
- control of invasive species such as Saharan mustard, Mediterranean grass, and other exotic annual grasses and forbs;
- restoration of mitigation areas with native vegetation;
- development and implementation of a fire management plan for mitigation areas where DT habitat may be impacted by fire;
- prohibition of the release of captive DT into mitigation areas to prevent the spread of disease, genetic contamination, and competition with the resident population of DT (agency-authorized relocations may be permitted);
- control and cleanup of illegal dumping;
- removal and remediation of toxicants and unexploded ordnance; and
- control of unleashed and feral dogs that may cause mortality or disturbance to DT.

## 2. *Fee Programs*

The remainder of the compensatory mitigation requirement for the Project is proposed to be achieved through the payment of a fee on a per-acre basis equating to the value of the remaining compensatory mitigation acreage required. The fees

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resulting from the remaining mitigation requirement may be paid to an existing in-lieu fee program or may be donated to a nongovernmental organization (NGO) (e.g., Desert Tortoise Preserve Committee, Inc., Desert Tortoise Council) and would be designated for specific activities that would promote the recovery of DT. These activities include, but are not limited to, the following:

- habitat enhancement of existing preserved lands (e.g., revegetation, invasive plant control),
- exclusion or reduction of key disturbance sources (e.g., livestock grazing, predators, ORVs),
- reduction of mortality sinks (e.g., roadways and linear barriers),
- research studies and monitoring,
- captive breeding and release programs, and
- public information and education programs.

Some potential specific opportunities for the PSPP identified to date are summarized below.

- a. Designate funds for a wildlife movement study along I-10 to identify mortality sinks and develop an implementation plan to minimize and avoid impacts from vehicle collisions. The implementation plan would identify highway crossing locations, type of crossing, and associated features to facilitate their use (i.e., fencing). A study plan would be provided to the agencies for review/approval and would be carried out by any agency-approved qualified biologist.
- b. Designate funds to facilitate and enhance raven monitoring, management, and control through the regional raven management program in development by USFWS and supporting agencies. This fee may be directed to USFWS to be applied as part of a new in-lieu fee program being developed. BLM may also be able to use funds to support raven management at recreational areas that attract ravens and could impact surrounding mitigation lands.
- c. Direct funds to the Riverside Land Conservancy, which now holds lands previously held by the Environmental Land Trust.

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d. The revised draft Desert Tortoise Recovery Plan (USFWS 2008) identifies several recovery actions to facilitate the protection and recovery of the species; however, no firm source of funding has been identified for these actions. Recovery actions outlined in the recovery plan include the following:

- increasing law enforcement,
- closing roads that provide access to DT habitat through fencing,
- excluding and eliminating burros and horses from DT habitat,
- funding monitoring programs (i.e., establish a grant for monitoring), and
- funding applied research that contributes to the long-term viability and conservation of DT.

Funds from the fee-based portion of the proposed mitigation strategy could be used to establish or contribute to funding in perpetuity for any of the above actions. The funds would be earmarked for support of the Desert Tortoise Recovery Plan and specific recovery actions, and provided to a third party (e.g., USFWS, Desert Tortoise Council, Desert Tortoise Preserve Committee, or other NGO) for management as appropriate. Donating funds to a private organization must be individually approved by USFWS and CDFG and supported by a contract or agreement detailing the amount and specific purpose of the funds being donated.

## **11. MONITORING AND MANAGEMENT**

A Mitigation, Management, and Monitoring Plan (MMMP) shall be developed in consultation with CDFG and USFWS. The MMMP could be developed as an element of the BRMIMP, which would be submitted to CEC for review as a Condition of Certification. The MMMP shall comprehensively describe avoidance and minimization measures and provide a matrix to document their implementation and monitor their effectiveness. For lands acquired for compensatory mitigation, the MMMP shall, at a minimum, establish specific success criteria for the habitat components, specify remedial measures to be implemented if success criteria are not met (e.g., adaptive management, physical adjustments, additional monitoring), and describe short- and long-term management and maintenance of the preserve lands. The goal of the MMMP is to ensure that the conservation values of the preserved, enhanced, and/or restored habitats are maintained in good condition in perpetuity. Upon completion of compensatory land acquisition, a Long-term Management Plan (LTMP) shall be developed by the Applicant and approved by the agencies. The LTMP shall describe habitat characteristics of the parcel(s) of land, how the parcel meets the requirements of covered species, and the long-term management



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needs of the parcel for these species. The LTMP shall require annual monitoring reports to be prepared addressing the habitat enhancement and conservancy of the mitigation lands acquired to compensate for impacts to covered species. The resource agencies would also require assurances that the property shall be preserved in perpetuity, managed by a reputable land management entity, and fully funded through an endowment.

## **12. FUNDING**

The Applicant, Palen Solar I, LLC, shall be responsible for all contingency and long-term funding of the MMMP, and shall provide financial assurances to guarantee that an adequate level of funding is available to implement all avoidance, minimization, and compensation measures identified in the CESA Section 2081 permit. These funds shall be used solely for implementation of the measures associated with the Project. If the Applicant transfers any compensatory land acquired to a third party, Palen Solar I, LLC, shall provide adequate financial security, in the form of a permanent endowment fund, for the enhancement and long-term maintenance and management of the compensatory lands.

If security is provided, the Applicant, CDFG, or a third-party entity approved by CDFG and CEC, shall complete the proposed Compensation Lands acquisition within 18 months of the start of Project ground-disturbing activities. A minimum of 3 months prior to Project ground-disturbing activities, the Applicant, or a third-party entity approved by CDFG and CEC, shall submit to CDFG for approval a formal proposal identifying the specific properties comprising the acres that would be placed in the conservation easement. CDFG and CEC shall approve all of the parcels comprising the Compensation Lands in advance of placement of the conservation easement on the Compensation Lands. The Compensation Lands are expected to promote conservation of DT and shall be subject to the conditions listed in the next section below.

### **12.1 Additional Funding and Agreements**

In conjunction with the funding obligations related to the Compensation Land actions and following CDFG's field review and approval of the proposed Compensation Lands, the Applicant, CDFG, or a third-party entity approved by CDFG and CEC, shall comply with the following conditions:

- a) Preliminary Report: Provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary documents for the proposed Compensation Lands (and/or conservation easement). All documents conveying or conserving Compensation Lands and all conditions of title/easement are subject to the

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approval of CDFG, the California Department of General Services, and, if applicable, the Fish and Game Commission.

- b) Title/Conveyance: Transfer fee title to the Compensation Lands to CDFG or an organization approved by CDFG under terms approved by CDFG for in-perpetuity management of the lands. Convey a conservation easement on the Compensation Lands to CDFG or an organization approved by the CDFG under terms approved by CDFG and the Applicant.
  
- c) Enhancement Fund (as necessary): Fund the initial protection and enhancement of the Compensation Lands by providing to CDFG, or a third-party entity approved by CDFG and CEC, an appropriate amount as determined by CDFG, CEC, and the Applicant for field review of the land as discussed above.
  
- d) Endowment Fund: Prior to ground-disturbing expansion Project activities, provide to CDFG, or a third-party entity approved by CDFG and CEC, a permanent capital endowment in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis that shall be conducted for the Compensation Lands. Interest from this amount shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the Compensation Lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action designed to protect or improve the habitat values of the Compensation Lands. The endowment principal shall not be drawn upon unless such withdrawal is deemed necessary by CDFG, or a third-party entity approved by CDFG and CEC, to ensure the continued viability of the species on the Compensation Lands. Monies received by CDFG pursuant to this provision shall be deposited in a special deposit account established pursuant to Government Code §16370. CDFG may pool the endowment with other endowments for the operation, management, and protection of the Compensation Lands for local populations of the covered species.
  
- e) Security Deposit: The Applicant may proceed with ground-disturbing Project activities before fully performing their duties and obligations as set forth above only if the Applicant secure their performance by providing to CDFG funding, or CDFG approves administrative proof of funding, necessary to cover easement costs, fencing/cleanup costs, and, as necessary, initial protection and enhancement of the Compensation Lands. If the security is provided to allow the commencement of Project disturbance prior to completion of compensation actions, the Applicant, CDFG, or a third-party entity approved by CDFG and CEC must complete the required actions no later than 18 months after the start of the

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ground-disturbing activities. The security shall provide that CDFG, or a third-party entity approved by CDFG and CEC, may draw on the principal sum if it is determined that the Applicant have failed to comply with the Conditions of Approval of the CESA 2081 Permit. The security shall be returned to the Applicant upon completion of the legal transfer of the Compensation Lands to CDFG or approved third-party entity, or upon completion of an implementation agreement with a third-party mitigation banking entity acceptable to CDFG and CEC, to acquire and/or manage the Compensation Lands.

- f) Reimbursement Fund: Provide reimbursement to CDFG for reasonable expenses incurred during title, easement, and documentation review; expenses incurred from other State agency reviews; and overhead related to providing Compensation Lands to CDFG.

If all actions for Compensation Lands described above are not completed within 18 months of initial ground-disturbing activity, the Applicant shall consult with CEC and CDFG to develop alternate Compensation Land proposals subject to the above requirements. The Applicant are responsible for all Compensation Lands acquisition/easement costs, including but not limited to title and document review costs, as well as expenses incurred from other State agency reviews and overhead related to providing Compensation Lands to CDFG, escrow fees or costs, toxic waste clearance, and other site cleanup measures.

### 13. CERTIFICATION

*I certify that the information submitted in this application is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to suspension or revocation of this permit and to civil and criminal penalties under the laws of the State of California.*

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Josef Eichhammer, COO  
Palen Solar I, LLC

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## 14. REFERENCES CITED

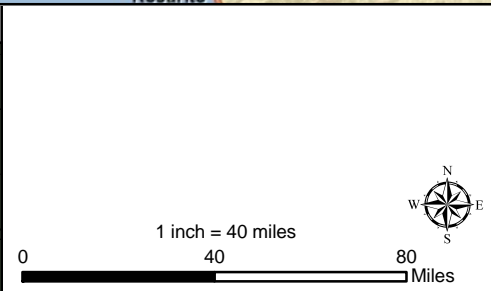
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**ATTACHMENT 1**

**FIGURES**





**Palen Solar Power Project  
CESA 2081 Permit  
Application**

**Figure 1  
Regional Map**

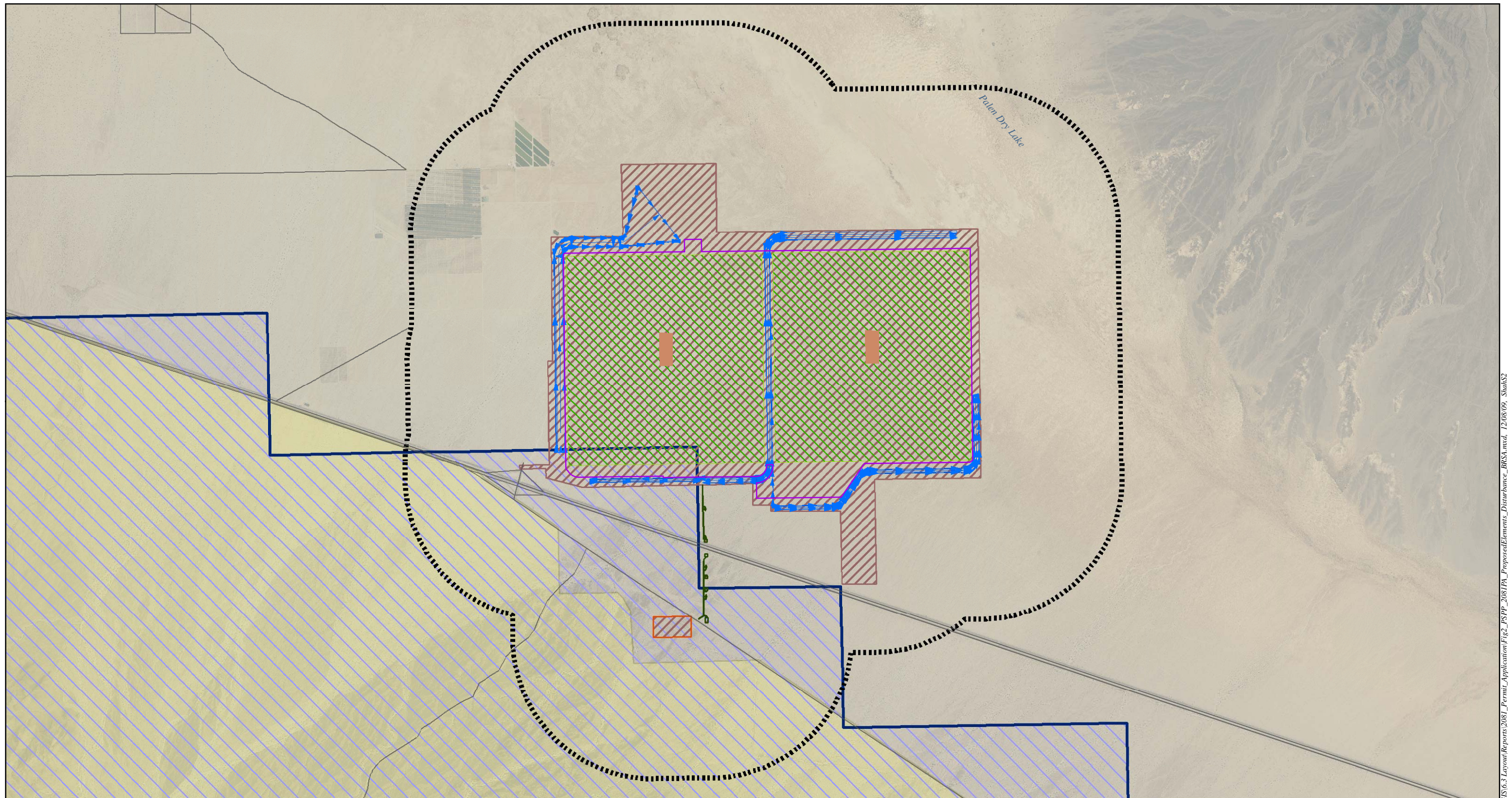
Source: ESRI; AECOM 2009

Date: December 2009



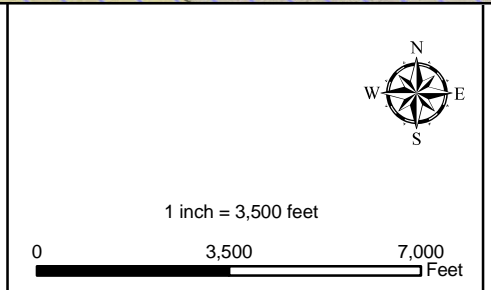








Legend		Proposed Project Elements	
Project Area	Rerouted Drainages	Power Block	Transmission Line
Project Disturbance Area	Perimeter Security Fence	Substation	
Chuckwalla Critical Habitat Unit	Solar Unit		
Chuckwalla DWMA (NECO)			
Paved Roads			

Source: NAIP 2005; USFWS; AECOM 2009



**Palen Solar Power Project  
CESA 2081 Permit Application**

**Figure 2  
Proposed Project Elements  
and Project Area**

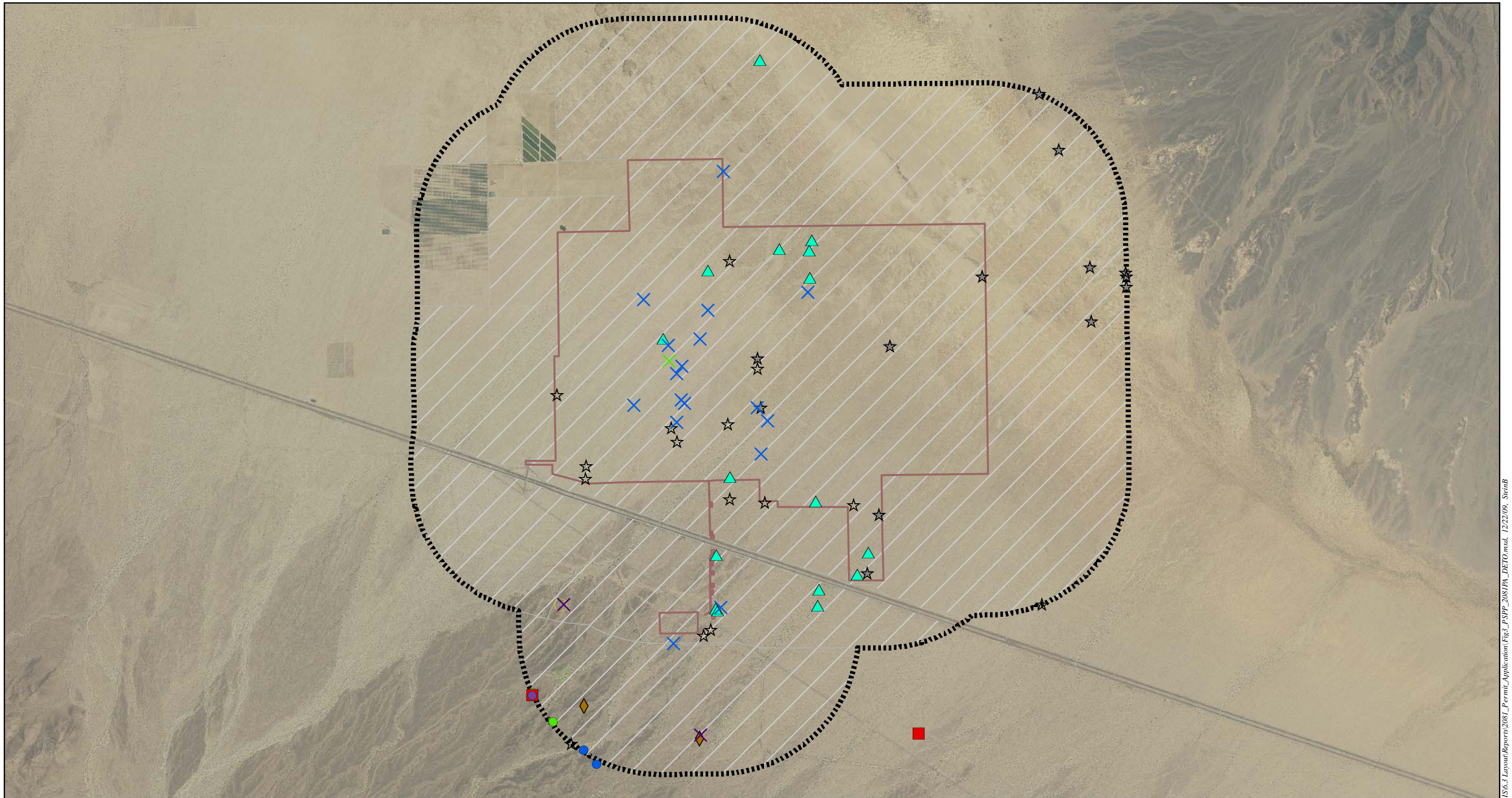



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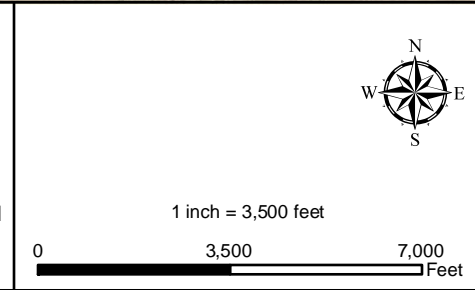






Legend	
Project Area	Tortoise
Project Disturbance Area	Tortoise Burrow - Occupied
Desert Tortoise Suitable Habitat	Tortoise Burrow (Active) - Class 1
Tortoise Burrow - Class 4 or 5	Tortoise Burrow - Class 3
Tortoise Scat - Class 2	Tortoise Scat - Class 3
Tortoise Scat - Class 3	Tortoise Carcass - Class 4
Tortoise Pallet - Class 4 or 5	Tortoise Tracks
Tortoise Bone Fragments - Mineralized	Tortoise Bone Fragments - Not Mineralized

Source: NAIP 2005; AECOM 2009



**Palen Solar Power Project**  
**CESA 2081 Permit Application**

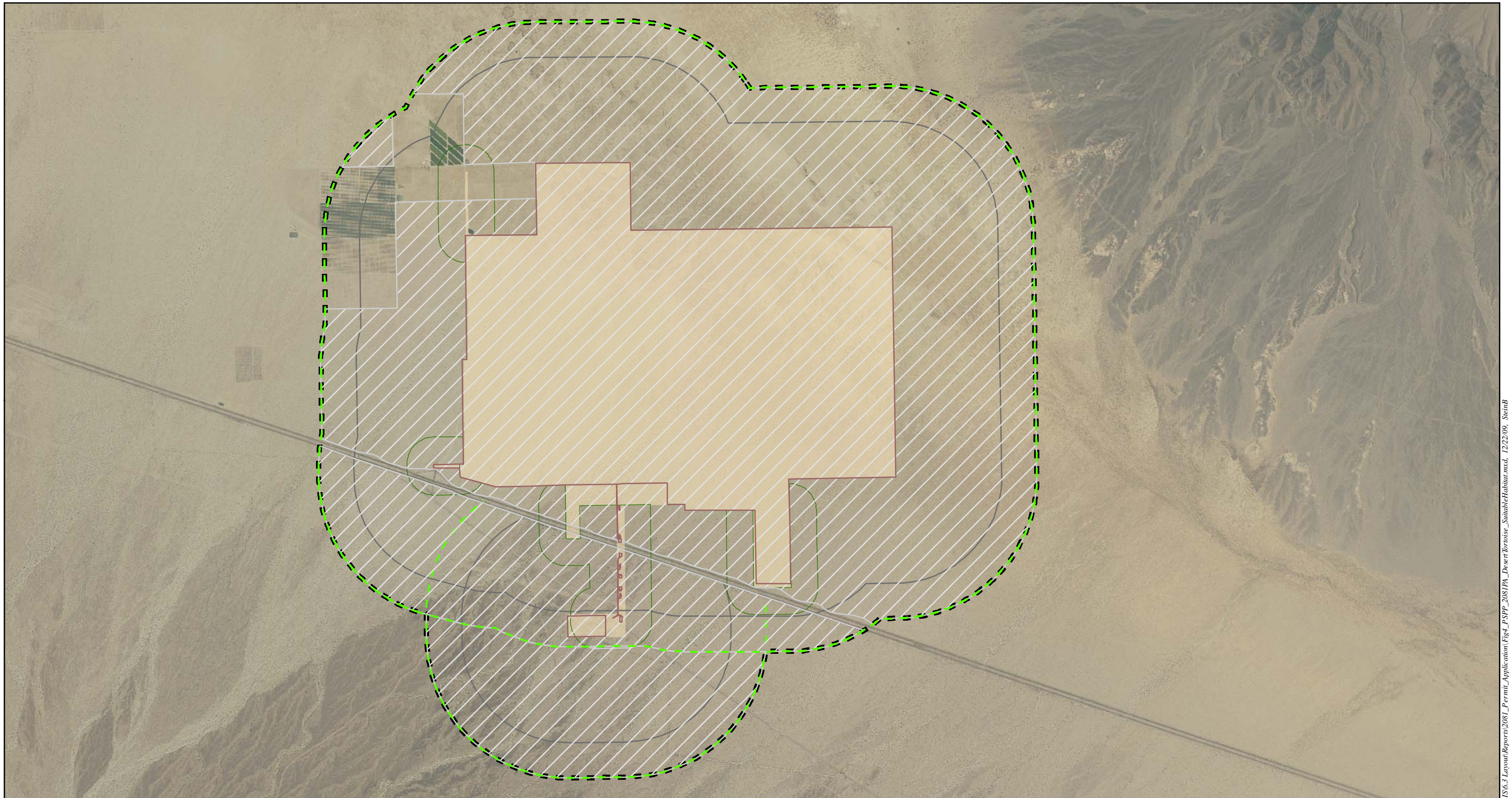
**Figure 3**  
**Recorded Occurrences of**  
**Desert Tortoise Near the**  
**Project Area**

Date: December 2009





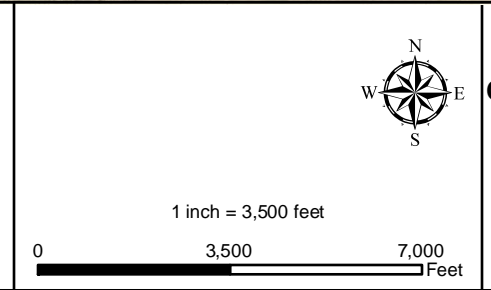




- Legend**
- Project Area
  - Project Disturbance Area
  - Desert Tortoise Suitable Habitat

- Desert Tortoise Survey Area**
- 100% Coverage Survey Area
- CEC Buffer Transects**
- 1-mile Transect
  - 0.75-mile Transect
  - 1,000-foot Transect

Source: NAIP 2005; AECOM 2009



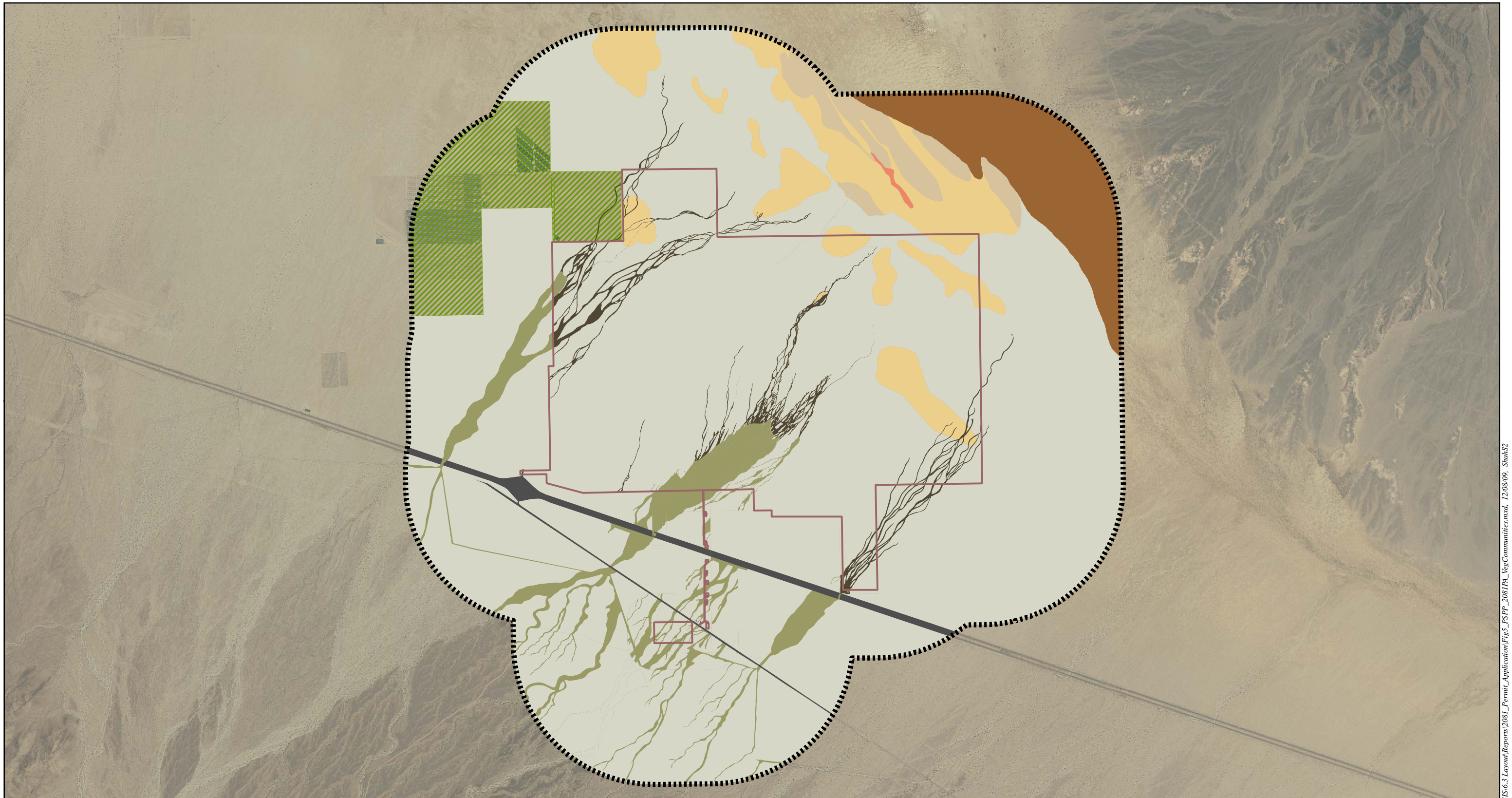
**Palen Solar Power Project  
CESA 2081 Permit Application**

**Figure 4  
Desert Tortoise Surveys and  
Suitable Habitat within the  
Project Area**

Date: December 2009







**Legend**

Project Area  
 Project Disturbance Area

Source: NAIP 2005; AECOM 2009

**Vegetation Communities**

**Riparian**

- Desert Dry Wash Woodland
- Unvegetated Ephemeral Dry Wash

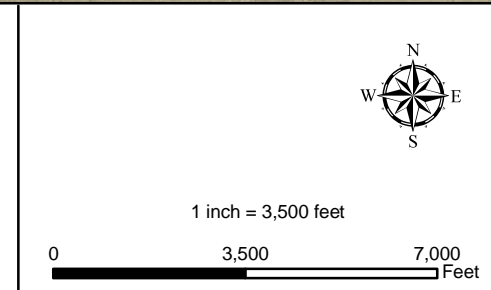
**Upland**

- Active Desert Dunes
- Desert Sink Scrub

- Dry Lake Bed
- Sonoran Creosote Bush Scrub
- Stabilized and Partially Stabilized Desert Dunes

**Other**

- Agriculture
- Developed



**Palen Solar Power Project**  
**CESA 2081 Permit Application**

**Figure 5**  
**Vegetation Communities within**  
**the Project Area**

Solar Millennium

AECOM

Date: December 2009





**DESERT TORTOISE TECHNICAL REPORT  
SOLAR MILLENNIUM PALEN SOLAR POWER PROJECT  
RIVERSIDE COUNTY, CALIFORNIA**



***Prepared for:***

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Revised January 2010



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- 3 Field Datasheets – Fall 2009
- 4 Spreadsheet of Data Collected during Focused Desert Tortoise Surveys – Fall 2009
- 5 Wildlife Species Detected within the Biological Resources Survey Area

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## ATTACHMENT 1 – FIGURES

### **Figure**

- 1 Regional Map
- 2 Facility Footprint, Disturbance Area, and Biological Resources Survey Area
- 3 Vegetation Communities
- 4 Desert Tortoise Surveys and Suitable Habitat within the Biological Resources Survey Area
- 5 Desert Tortoise Observations

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## SUMMARY

AECOM performed biological resources studies for Palen Solar I, LLC, who is the Applicant for the proposed Palen Solar Power Project (Project or PSPP). This report is a revised version of the August 2009 report with the same title. Subsequent to the preparation of the initial report in August, the footprint of the transmission line and the location of the substation were established. Within the original Application for Certification (AFC) prepared in August (AECOM 2009), the acreage for the transmission line and substation footprints was not included in the AFC disturbance area, and the substation had not yet been surveyed. The purpose of this report is to disclose results from desert tortoise (*Gopherus agassizii*; DT) focused surveys within the substation footprint and associated buffers. The Project is proposed on public lands managed by the Bureau of Land Management (BLM) in Riverside County, California, and the Applicant has submitted an application to BLM for a right-of-way (ROW) grant. The PSPP would be a 500-megawatt (MW) nominal solar thermal electricity-generating facility using parabolic trough technology. The Project would be located in eastern Riverside County, California, approximately 10 miles east of Desert Center (Figures 1 and 2 [all figures referred to herein are included in Attachment 1]). The primary solar energy facilities and associated construction and operations footprint are located within an approximate 3,899.2-acre Project disturbance area (Figure 2). This is an increase of 28.4 acres from the acreage originally reported in the AFC; this acreage increase is due to the addition of the transmission line and the substation to the original AFC disturbance area.

As a component of the needed biological resources work, presence/absence surveys for the Federal and State endangered DT within the Project disturbance area were conducted in spring 2009 as reported here and in the original August 2009 report. The transmission line and associated buffer were surveyed in spring 2009. Fall 2009 surveys were conducted within the substation footprint and associated buffer, as the substation component was added to the proposed project after the completion of surveys conducted in spring 2009.

## PROJECT DESCRIPTION

Palen Solar I, LLC (the Applicant) proposes to construct the PSPP, a 500-MW commercial solar thermal electric power generating project. The PSPP would be located in the southern California inland desert, approximately 10 miles east of Desert Center, the majority of which would be located approximately 0.5 mile north of the Interstate 10 (I-10) corridor in Riverside County. The Project would be located on an approximately 5,212-acre ROW owned by the Federal government and administered by BLM. Use of Federal land would involve issuance of a ROW grant to the

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Applicant by BLM. The Project facilities would occupy approximately 3,899 acres of the ROW. The Project would utilize solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation onto a receiver tube located at the focal point of the parabola. A heat transfer fluid (HTF) is heated to a high temperature (approximately 750 degrees Fahrenheit [°F]) as it circulates through the receiver tubes. The heated HTF is then piped through a series of heat exchangers where it releases its stored heat to generate high-pressure steam. The steam is then fed to a traditional steam turbine generator where electricity is produced.

The Project would have a nominal output of 500 MW, produced by two adjacent, identical, and independent 250-MW power-generating facilities (power units). The two power units would share a main office building, main warehouse/maintenance building, parking lot, onsite access roads, bioremediation area for HTF-contaminated soil, and central internal switchyard. Each power unit would have its own solar field, composed of piping loops arranged in parallel groups, and its own power block, centrally located within the solar field. Each solar field would cover approximately 1,380 acres. Each power block would have its own HTF pumping and freeze-protection system, solar steam generator, steam turbine generator, an air-cooled condenser for cooling, transmission lines and related electrical system, and auxiliary equipment (e.g., water treatment system, emergency generators). The Project would include a transmission line to interconnect to the regional transmission grid, with a substation at the terminus of the transmission line. The transmission line is proposed to extend south approximately 1.2 miles from the boundary of the AFC disturbance area across I-10 and turning west for a short distance to just past Chuckwalla Road. The substation is proposed to be constructed immediately west of the southern end of the transmission line.

Access to the Project site would be via a new 1,350-foot-long, 24-foot-wide paved access road from Corn Springs Road. Only a small portion of the overall disturbance area would be paved: primarily, the site access road, the service roads to the power blocks, and portions of the power block. The remaining portions of the power block would be gravel surfaced. The power block would be approximately 18.4 acres, with approximately 6 acres of paved area. The solar field would remain unpaved and without a gravel surface to prevent rock damage from mirror wash vehicle traffic; a dust suppression coating would be used on the dirt roadways within and around the solar field. The Project solar field and support facilities perimeter would be secured with chain link metal-fabric security fencing, 8 feet tall, with 1 foot of barbed wire or razor wire on top. Controlled access gates would be located at the site entrance.

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The following terms will be used throughout this report:

- Facility footprint: The area within the facilities' fence line including solar fields, office and maintenance buildings, lay down area, bioremediation area, and leach fields.
- Spring 2009 survey area (surveys): The area within the original AFC disturbance area and associated buffers of the biological resources survey area (BRSA) as reported in the AFC, including all transmission line features (1.2 miles) and the associated 1,000-foot buffer (which overlaps with the 1-mile buffer surrounding the AFC disturbance area), where focused DT surveys occurred in spring 2009. Also included in the spring 2009 survey area was an additional 60 acres that was later removed from the AFC disturbance area.
- Fall 2009 survey area (surveys): This includes the substation disturbance area and associated 0.75-mile and 1-mile buffers where reconnaissance surveys and focused DT surveys occurred in fall 2009, which were not included in the AFC.
- Transmission line disturbance area: This includes only the areas of disturbance associated with the construction of transmission line features (e.g., crossing structures, pole pads, crane pads, pull sites, splice sites, spur roads, and an access road) and substation at the end of the 1.2-mile transmission line corridor.
- AFC disturbance area: This is the original disturbance area as reported in the AFC.
- Project disturbance area: This is the revised PSPP disturbance area that includes the additional acreage associated with the transmission line disturbance area.
- BRSA (biological resources survey area): The BRSA includes the Project disturbance area and all associated buffers.

During July 2009, following completion of spring 2009 surveys, several changes were made to the disturbance area. First, the final alignment of the transmission line was identified, as was the location of the substation, where the project transmission line will interconnect with the regional grid (Figure 2). The transmission line disturbance area and associated 1,000-foot buffer had been surveyed during spring 2009 surveys (approximately 49.8 acres were surveyed for the transmission line disturbance area and 75.1 acres with the 1,000-foot buffer). However, the substation location had not yet been determined, so surveys within the substation and associated buffer were not conducted in spring 2009. Results for surveys within the substation were therefore not reported in the AFC. While the possible transmission line route was surveyed in spring 2009, the acreage was not included within the disturbance footprint within the AFC. The



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disturbance area for both the transmission line and the substation is 28.4 acres. The transmission line is approximately 1.2 miles long and is located south of the AFC disturbance area boundary, crosses I-10, and turns west for a short distance. The substation would be constructed immediately west of the south end of the transmission line. A habitat assessment and focused DT surveys were conducted within the substation and associated 1-mile buffer area in fall 2009.

In addition, several portions of the AFC disturbance area, totaling approximately 60 acres, are no longer a part of the proposed Project and have been removed from disturbance area calculations (Figure 2). For example, an approximately 0.9-mile-long linear feature was surveyed in spring 2009 and has been subsequently removed from the disturbance area. However, results within the 60 acres are included in this document.

## **SITE DESCRIPTION**

The primary solar energy facilities and associated construction and operations for the proposed Project are located within the approximately 3,899.2-acre Project disturbance area.

Topography in the BRSA is generally flat, with elevations ranging from approximately 425 feet to approximately 650 feet (USGS 1983). The disturbance area consists of largely undisturbed vegetation. To the north of the Project disturbance area is Palen Dry Lake. The Chuckwalla Mountains are present to the south and the Palen Mountains to the northeast. I-10 is 0.5 mile south of the proposed facility footprint.

Seven vegetation communities were mapped within the BRSA: Sonoran creosote bush scrub, active desert dunes, desert sink scrub, desert dry wash woodlands, stabilized and partially stabilized desert dunes, dry lake bed, and agricultural fields. The majority of the BRSA is composed of Sonoran creosote bush scrub and stabilized and partially stabilized desert dunes. Plants indicative of desert dry wash woodlands follow the drainages that flow northeast toward the dry lake bed. Agricultural areas consist of palm tree cultivation and fallow fields. The fallow fields are being reclaimed by Sonoran creosote bush scrub. Vegetation communities are mapped in Figure 3. Vegetation communities are classified according to the Holland Code Classification System (Holland 1986).

The proposed Project site is located on Federal land managed by BLM and designated as Moderate in terms of land use. The Chuckwalla Wilderness Area and the Palen – McCoy Wilderness Area are located to the north and south of the proposed Project site, respectively, and just beyond the 1-mile buffer. Per the Northern and Eastern Colorado Desert Coordinated

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Management Plan (NECO), the disturbance area is within a multiple species Wildlife Habitat Management Area (WHMA). The Chuckwalla Desert Wildlife Management Area (DWMA) is located south of the Project disturbance area and south of I-10 within the southwest section of the buffer. The DWMA does not intersect with the Project disturbance area (Figure 2).

The Project disturbance area overlaps with the federally designated Chuckwalla DT critical habitat unit (CHU [Figure 2]). The total size of the Chuckwalla CHU is 1,020,600 acres. Approximately 183.1 acres of the Project disturbance area overlaps the CHU north of I-10 and 26.4 acres overlaps the CHU south of I-10 for a total of approximately 209.5 acres. In relation to the size of the CHU, the overlap is approximately 0.021 percent of the CHU.

DT CHU boundaries, as stated in the *Determination of Critical Habitat for the Mojave Population of the Desert Tortoise; Final Rule* (USFWS 1994a), are loosely based on DWMA boundaries; however, to facilitate legal definitions, CHU boundaries typically follow adjacent section lines. Therefore, at this coarse scale of mapping, CHU boundaries may contain both suitable and unsuitable habitat for the species (USFWS 1994a).

As a result of DT protocol surveys and habitat assessments conducted in 2009 (see Survey Methodology and Results Section in this report) Project biologists characterized DT critical habitat within the Project disturbance area based on the presence and prevalence of the six primary constituent elements (i.e., functions and values) of DT critical habitat (USFWS1994a). According to the *Endangered and Threatened Wildlife and Plants: Determination of Critical Habitat for the Mojave Population of the Desert Tortoise; Final Rule* (USFWS1994a), DT critical habitat (CH) consists of the following primary constituent elements:

- sufficient space to support viable populations within each of the six recovery units (Palen disturbance area is in Unit #4) to provide for movement, dispersal, and gene flow;
- sufficient quantity and quality of forage species and the proper soil conditions to provide for the growth of such species;
- suitable substrates for burrowing, nesting, and overwintering;
- burrows, caliche caves, and other shelter sites;
- sufficient vegetation for shelter from temperature extremes and predators; and
- habitat protected from disturbance and human-caused mortality.

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The habitat observed south of I-10 is of much higher quality for DT than that observed within the majority of the BRSA north of I-10. This is supported by the observation of both DT and recent DT sign south of I-10, while similar observations were not made north of I-10. All six primary constituent elements are met where the CHU overlaps with the Project disturbance area south of I-10, whereas only three primary constituent elements are met where overlap occurs north of I-10 (see discussion below). However, due to the presence of some human disturbance (a paved road and several transmission line corridors are present within this area) and the influence of regional climate on DT abundances in the Sonoran Desert (higher temperatures and lower rainfall in comparison to the Mojave Desert generally result in overall lower DT abundances), the area where the CHU overlaps the Project disturbance area south of I-10 is considered to be of moderate quality for DT.

Of the six primary constituent elements of DT CH listed above, only three are firmly associated with the Project disturbance area north of I-10, while the three other elements are lacking. First, the primary constituent element of “sufficient quantity and quality of forage species” that could support a large onsite population of DT is not met due to the lack of groundwater necessary to maintain a viable source of forage for the species. Additionally, the entirety of the Project disturbance area has low rainfall as it is within the valley floor. Within this area, topographic effects associated with the mountains (and other factors) are important for the availability of water for plants. The availability of water and forage would be limited here during critical periods for DT survival.

Second, the primary constituent element for CH that requires sufficient space to provide “movement, dispersal, and gene flow” is absent, since I-10 severs the portion of CH Unit #4 overlapping the disturbance area with the much larger block of CH to the south of I-10 (Figure 2) and inhibits the ability of DT to use this area for “movement, dispersal, and gene flow.” Additionally, there are orchards to the west, and palm farms and an existing single-family residence to the north and northwest that limit connectivity.

Third, the primary constituent element of DT CH that is not met is the requirement that it be “protected from disturbance and human-caused mortality,” which it is not, due to the proximity of existing human disturbance along the I-10 corridor, disturbance related to off-highway-vehicle activity, and the associated edge effects of human encroachment. The evidence of human disturbance within this area is high, and includes off-road-vehicle use, domestic dog use, and trash dumping. It is also common for vehicles to be parked in this area. Additionally, a portion of the CHU north of I-10 (0.2 acres) is covered by a paved road and is unsuitable for DT.

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Based on the site's characteristics relative to the six primary constituent elements of DT critical habitat, critical habitat in the Project disturbance area north of I-10 is considered low quality for DT, 0.2 acres of which are unsuitable for DT (i.e., paved road); critical habitat south of I-10 is considered moderate quality for DT. Critical habitat in the Project disturbance area north of I-10 is considered similar in conservation function and value as the remainder of the Project disturbance area that occurs north of I-10. Therefore, the Applicant propose that Project areas north of I-10 be assessed for impacts as low-quality DT habitat, while the remainder of the site (south of I-10) be assessed as moderate-quality DT habitat. Of the 209.5 acres of designated critical habitat in the Project disturbance area, 0.2 acres are unsuitable for DT, 182.9 acres are of low quality (north of I-10) and 26.4 acres are of moderate quality (south of I-10).

## **SPECIES BACKGROUND INFORMATION**

The DT is listed as threatened under the Federal Endangered Species Act, with CH designated by the U.S. Fish and Wildlife Service (USFWS) (1994a). The listing was initially made on August 4, 1989, by emergency rule (USFWS 1989) and by final rule on April 2, 1990 (USFWS 1990). This listing status applies to the entire population of DT except in Arizona south and east of the Colorado River, and in Mexico. An approved recovery plan has been published by USFWS (1994b). The DT was listed as threatened under the California Endangered Species Act on June 22, 1989 (CFGC 1989).

As indicated above, there are 209.5 acres of DT CH present in the southwest portion of the Project disturbance area. Of the 209.5 acres of DT CH, 183.1 acres within the AFC disturbance area are located north of I-10, a barrier to DT dispersal. There are 26.4 acres of DT CH overlapping the Project disturbance area south of I-10. See "Site Description" for a discussion of CH within the BRSA.

The DT is widely distributed in the deserts of California, southern Nevada, extreme southwestern Utah, western and southern Arizona, and throughout most of Sonora, Mexico. However, populations over approximately 50 percent of its U.S. range (30 percent of its overall range) began declining in the late 1960s and early 1970s (USFWS 1990, 1994b). These declines have been attributed to several factors, paramount of which are an upper respiratory tract disease; habitat loss and fragmentation due to urbanization and off-road-vehicular use; illegal collecting and vandalism by humans; and predation on young DTs, especially by ravens. Raven populations, for example, have exploded with the increasing use of the deserts by humans and their discarded garbage, a prime food source for ravens.

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DT home range varies with locality, year, resource availability, and social interactions (Berry 1986; O'Connor et al. 1994). Male DT home range (0.04 to 0.31 square mile) is estimated to be twice the size of that for females (Burge 1977; Berry 1986). DTs use multiple dens throughout individual home ranges and appear to migrate to steeper, rockier slopes in the winter (Barrett 1990).

## **SURVEY METHODOLOGY**

Prior to beginning both spring and fall 2009 field surveys, AECOM (formerly EDAW) biologists consulted the California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDDB) (RareFind Version 3.1.0; CDFG 2009). In addition, the Special Animals list (CDFG 2009) and range maps were consulted to determine historic occurrence of special-status plant and wildlife species and other natural resources within the BRSA. Additionally, USFWS provided a letter detailing special-status species that it requires to be considered.

Surveys for biological resources were conducted within the Project disturbance area, as well as a 1,000-foot buffer around the proposed Project linear features and a 1-mile buffer around the Project disturbance area, as required by the California Energy Commission (CEC) (hereafter collectively defined as the "buffer"). The entire 13,715-acre survey area (formerly 12,510 acres in the AFC), consisting of the Project disturbance area plus the buffer, is referred to as the BRSA.

During the spring 2009 surveys, the AFC disturbance area was surveyed at the same time the transmission line corridor was surveyed, but the acreage for this corridor was not included in the disturbance acreage within the AFC. The substation disturbance area, part of the transmission line disturbance area, was not surveyed in spring 2009, but was in fall 2009. The fall and spring survey areas are shown in Figure 4. The wildlife observations within the transmission line were included in the AFC, but the acreage was not included in the disturbance acreage within the AFC. A habitat assessment and focused DT surveys were performed within the substation disturbance area and the associated buffer area in fall 2009.

A habitat assessment was conducted in spring 2009 to determine which wildlife species identified through the CNDDDB search and a review of the Special Animals list had the potential to occur within the BRSA. Project biologists Arthur Davenport, Shelly Dayman, Katie Hall, and Gregg Lukasek conducted wildlife habitat assessments on March 10 and 11, 2009. Habitat assessments consisted of walking and driving throughout the BRSA. Topographic maps and aerial photographs were used to aid in determining if there were any special habitat types that

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should be assessed. In fall 2009 a similar habitat assessment was conducted for the substation disturbance area and associated buffer area. The habitat assessment was conducted by Shelly Dayman on October 7 and 8, 2009.

Spring 2009 surveys followed the guidelines published in the USFWS *Field Survey Protocol for any Non-Federal Action That May Occur within the Range of the Desert Tortoise* (protocol) (USFWS 1992), with the following exception: no surveys of the five Zone of Influence (ZOI) transects that are typically required outside of and parallel to the disturbance area at 100, 300, 600, 1,200, and 2,400 feet were conducted. This modification to the DT survey protocol was agreed upon by USFWS, CDFG, BLM, and CEC prior to survey initiation per an email communication dated March 10, 2009, from Julie Vance (refer to Section 2.2.1 of the AFC). To comply with the recommendations of the CEC Draft Guidelines, transects outside of and parallel to the disturbance area were surveyed for DT at 3,960-foot (0.75-mile) and 5,280-foot (1-mile) intervals from and parallel to the edge of nonlinear portions of the disturbance area and additionally were surveyed at a 1,000-foot interval from the edge of linear portions of the disturbance area (e.g., transmission line) (see Section 2.2 of the AFC). These transects are more broadly focused than the DT protocol transects and are not a formal part of the DT survey. However, they provide information on DT presence/absence and habitat suitability, as well as other biological resources in the area surrounding the BRSA. Presence/absence surveys for DT were completed between March 17 and May 22, 2009. Project biologists Phil Brylski, Scott Cameron, Arthur Davenport, Shelly Dayman, Kim Duncan, Andrew Forde, Michael Gallagher, Charles German, Katie Hall, James Hueslman, James Jennings, Gregg Lukasek, Milo Rivera, and Rob Wolfson conducted DT focused surveys.

Fall 2009 surveys followed the survey protocol guidelines published in the above-mentioned USFWS 1992 protocol, with the exception that the ZOI transects were not surveyed, and additional CEC buffer transects were surveyed, as described above. The transmission line and associated 1,000-foot buffer were surveyed in spring 2009, so were not surveyed again in fall 2009. The substation disturbance area and associated 1-mile buffer area were surveyed prior to the end of October to comply with survey season guidelines published in the *Preparing for Any Action That May Occur Within the Range of the Mojave Desert Tortoise (Gopherus agassizii)* (USFWS 2009). Focused surveys for DT in fall 2009 were conducted on October 24 and 25, 2009, by project biologists Rocky Brown, Robert Conohan, Shelly Dayman, Andrew Fisher, Charles German, Matt Kedziora, Erik LaCoste, and James McMorran.

The PSPP disturbance area was surveyed according to protocol by spacing transects 32.8 feet apart along north-to-south-oriented transects. The survey was conducted by slowly and

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systematically walking linear transects while surveyors visually searched for DT and sign. Particular emphasis was placed on searching around the bases of shrubs and along the banks of shallow washes. All types of DT sign were recorded using Global Positioning System (GPS) equipment. Surveys were conducted throughout the day. On days when temperatures were above 95°F, surveys were conducted closer to dawn and dusk hours. DTs were measured at middle carapace length (MCL) and evaluated for health. Photographs of DT observations were taken when possible (i.e., animal not deep in burrow). Photographs of large carcasses and/or unusual sign were also taken.

Burrows, scat, and shell remains were classed using the Information Index for Desert Tortoise Sign: Burrows and Dens, Scats and Shell Remains as in the USFWS protocol (USFWS 1992) (Attachment 2). Generally, under this classification system, burrows and pallets coded by the observer as Class 1, 2, or 3 have been identified as DT burrows/pallets with greater confidence than burrows or pallets coded as Class 4 or 5, which have the potential to be DT burrows/pallets but cannot be confirmed as DT. The DT burrow classification system requires that observers determine if the burrows/pallets have been recently used and are therefore active burrows (there is DT sign present, such as scat, tracks, etc.), if the burrows/pallets can be classed as definitely or possibly DT, and if the burrows are in good condition (i.e., could be used by a DT in the current condition) or deteriorated condition (i.e., would need modification by a DT to be used). Height, width, and depth (estimated) measurements of DT burrows/pallets were taken.

DT scat was classified based on qualitative observations of variables that change over time. Fresh DT scat is wet, has odor, is tightly packed, and is dark brown with a glaze. As DT scat ages, it becomes dry, the odor disappears, the color becomes bleached, and the fibers become loosely packed. Qualitative observations of scat (wetness or dryness; obvious odor or odorless; glazed or no glaze; dark brown, light brown, or bleached; loose or tightly packed) were used to classify scat according to the Information Index in Attachment 2. Scat measurements (length and width) were taken whenever possible.

DT shell remains were classed based on qualitative observations regarding the condition of the shell remains. Fresh or putrid shell remains were classified as Class 1 and disarticulated/scattered pieces of DT bone were classified as Class 5. The following characteristics were used to determine the class of shell remains: color of the shell remains, location of scutes (adhering to bone or peeling off), condition of scutes (if scutes were peeling off bone, if growth rings on scutes were peeling), and condition of shell bones (intact or falling apart, if bone fragments are disarticulated and scattered). If bone fragments were observed, notes were taken as to whether

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the bones had begun to mineralize, since mineralization was observed on DT bones within this BRSA. MCL measurements were taken or estimated on DT shell remains whenever possible.

As described in the USFWS survey methodology (USFWS 2009), the estimated abundance of adult DTs within the action area can be calculated using the formula provided within this protocol. (The action area for this calculation is equivalent to the Project disturbance area.) A minimum of 20 DTs within the action area (as defined in the USFWS survey methodology) is necessary to implement the 2009 methodology calculation. Only two DTs were observed within the BRSA and none were observed within the Project disturbance area; therefore, it was determined that this calculation is not appropriate, since a minimum of 20 DTs is necessary to implement the 2009 methodology calculation.

### **Survey Limitations**

Rainfall patterns in this area are typically bimodal, with a peak in the summer monsoon season (July through September) and a second peak that is typically longer and with more variation that occurs in the winter/spring months (November through March). At the Blythe Airport weather station (approximately 35 miles east of the Project site), the total precipitation for the previous year's rainfall was 1.85 inches compared to the historical average of 3.56 inches. In the year preceding the survey, the precipitation during the monsoon season was less than would be expected based on the historical average. Similarly, the rainfall observed in January and the spring months (March to May) was also less than the historical average. The lack of rainfall could have influenced the amount of above-ground DT activity (limited to the observation of live DTs and fresh DT scat) observed during the 2009 season. DTs are long-lived species and the detection of other DT sign including DT burrows and shell remains may not be as heavily influenced by rainfall patterns.

Subterranean termite (*Reticulitermes* sp.) activity was noted on DT scat, so scat observations may have been reduced due to this activity.

Within the drainages, the density of the vegetation (grasses, shrubs, and trees) may have lowered the detection rate of DT and/or DT sign. Additional effort for DT observation was expended in thickly vegetated areas, but the density of vegetation in some areas made visual inspection difficult.

Active DT burrows may be observed (with or without recent sign), but, due to DT activity or the depth of the burrow, the DT may not be observed but still be present.



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## RESULTS

Through a review of the CNDDDB search and the Special-Status Animal list (CDFG 2009), a draft list of special-status wildlife species with the potential to occur within the BRSA was prepared. During the habitat assessments, habitat conditions for special-status species were evaluated with respect to the conditions of the BRSA, and the site conditions precluded the presence of some species. After the habitat assessments, it was determined that habitat for the following wildlife species was present within the BRSA:

### Federal or State-Listed (Federal or California Endangered Species Act [ESA or CESA])

- Desert tortoise (*Gopherus agassizii*) – ESA and CESA threatened
- Gila woodpecker (*Melanerpes uropygialis*) – CESA endangered
- Gilded flicker (*Colaptes chrysoides*) – CESA endangered
- Swainson’s hawk (*Buteo swainsoni*) – CESA threatened; however, migratory only on site

### CDFG Species of Special Concern (SSC), California Code of Regulations (CCR), or BLM Sensitive

- Mojave fringe-toed lizard (*Uma scoparia*) – CDFG SSC, BLM Sensitive
- Northern harrier (*Circus cyaneus*) – CDFG SSC; however, migratory or wintering only on site
- Western burrowing owl (*Athene cunicularia hypugaea*) – CDFG SSC, BLM Sensitive
- Crissal thrasher (*Toxostoma crissale*) – CDFG SSC
- Loggerhead shrike (*Lanius ludovicianus*) – CDFG SSC
- Vaux’s swift (*Chaetura vauxi*) – CDFG SSC; however, migratory only on site
- Purple martin (*Progne subis*) – CDFG SSC; however, migratory only on site
- American badger (*Taxidea taxus*) – CDFG SSC
- Nelson’s bighorn sheep (*Ovis canadensis nelsoni*) – BLM Sensitive, NECO

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- Desert kit fox (*Vulpes macrotis arsipus*) – Protected Fur-bearing Animal (PFM) (per CCR 460)

During habitat assessments in spring and fall 2009, it was determined that the majority of the Project disturbance area and buffer contain suitable habitat for DT, with the exception of agriculture and developed land. Suitable habitat for DT is mapped in Figure 4. Within the Project disturbance area, 3,899 acres is suitable habitat for DT. The majority of the acreage (3871.6) is considered to be low quality (north of I-10), 182.9 acres of which are within DT CH. The only moderate-quality habitat for DT within the Project disturbance area occurs south of I-10 (27.4 acres), 26.4 acres of which are within DT CH.

DT abundance within this region (Sonoran Desert) is generally considered to be low as compared to DT abundance within other areas such as the Mojave Desert. However, it should be noted that while DT abundance is lower here, the importance of these populations for the long-term conservation of the species should not be diminished. The habitat within the area north of I-10 is considered low quality for DT in the region (Sonoran population) and low quality over the range of the species. The habitat south of I-10 is considered to be of moderate quality for DT within the Sonoran population.

Spring 2009 focused DT surveys were initiated in March 2009 and the observations of DT sign and DT occurrences are summarized below and in Table 1. An individual adult DT was incidentally observed walking within a desert dry wash approximately 0.5 mile south of the BRSA (Figure 5). This observation was made by a Project archaeological team member within a linear feature that has since been removed from the Project disturbance area.

During spring 2009 surveys, numerous DT burrows and pellets were observed throughout the BRSA and are displayed in Figure 5. Three observations of DT scat (all fresh sign – Class 2) were made during spring 2009 surveys: one in the buffer along the 0.75-mile transect at the southwestern corner of the BRSA (Table 1, Figure 5), and two that were detected outside of the BRSA in the vicinity of the incidental DT observation described above (Table 1). All tortoise shell remains observed were disarticulated and scattered (Class 5). Of the 25 observations of bone fragments, 13 were mineralized bone fragments. These bone fragments are still considered modern by paleontological standards (i.e., within the past 100 years). One bone fragment was considered to be fossilized turtle bone by paleontological surveyors and this observation is not included in the data presented here. Within the overlap of the Project disturbance area and the DT CH north of I-10, two bone fragments were observed, but no other DT sign was present. To the south of I-10, where the DT CH overlaps with the buffer area, fresh (Class 2) DT scat, an

active burrow, two Class 4 or 5 DT burrows, and four Class 4 or 5 DT pallets were observed. While one burrow within the Project disturbance area was originally classified as an active DT burrow during spring 2009 surveys, it was later determined during geotechnical investigations conducted in September 2009 that this burrow was not an active DT burrow and this burrow has been reclassified as a Class 5 burrow. The single DT observation made in spring 2009 was not within the Project disturbance area, buffer, or DT CH.

**Table 1  
Desert Tortoise Observations within the BRSA during Spring and Fall 2009 Surveys**

Sign	Class*	Description	Number of Observations						Total
			Spring 2009 Surveys			Fall 2009 Surveys			
			Disturbance Area	Buffer	BRSA	Disturbance Area	Buffer	BRSA	
Tortoises		Adult	0	0	0***	0	2	2	2
Tortoise Burrow	1	Active	0**	1	1	0	1	1	2
	1	Occupied	0	0	0	0	1	1	1
	3		1	0	1	0	0	0	1
	4 or 5		16	1	17	0	0	0	17
	Total		17	2	19	0	2	2	21
Tortoise Pallet	4 or 5		15	1	16	0	0	0	16
Tortoise Tracks			0	0	0	0	2	2	2
Tortoise Scat	2		0	1	1****	0	0	0	1
	3		0	0	0	0	1	1	1
Total			0	1	1	0	1	1	2
Tortoise Shell Remains	3		0	0	0	0	2	2	2
	4		0	0	0	0	2	2	2
	5	Mineralized	6	7	13	0	0	0	13
		Not Mineralized	12	0	12	1	1	2	14
Total		18	7	25	1	5	6	31	

\*Classified using the Information Index for Desert Tortoise Sign: Burrows and Dens, Scats and Shell Remains as in the USFWS protocol (USFWS 1992) (Attachment 2).

\*\*During geotechnical investigations in September 2009, it was determined that a burrow previously described as an active DT burrow was not active and was therefore reclassified as a Class 5 burrow.

\*\*\*The DT observed in spring 2009 by the archaeological team is not included in this table as it was not within the BRSA.

\*\*\*\*Two additional observations of fresh (Class 2) scat were observed during spring 2009 surveys are not included in this table as they were not within the BRSA.

Fall 2009 focused DT surveys were conducted within the substation disturbance area and associated 1-mile buffer in October 2009. During fall surveys, two adult DTs were observed within the same caliche burrow on the 1-mile buffer survey transect, in the southwestern portion

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of the BRSA (Figure 5). In addition to this occupied caliche burrow, one active DT burrow was also observed within the buffer area. Two sets of DT tracks, one in association with the aforementioned active burrow, and an additional observation of scat (Class 3) were observed. DT bone fragments and three carcasses were observed within the substation buffer (Figure 5).

Scanned field datasheets and a spreadsheet detailing all observations from the fall 2009 surveys are included in Attachments 3 and 4, respectively (note: original scanned field datasheets and the spreadsheet from spring 2009 surveys are located in Attachment I of Appendix F [Palen Biological Resources Technical Report] to the PSPP AFC document [AECOM 2009]).

It was not possible to calculate a DT abundance estimate using the 2009 USFWS protocol since 20 DTs must be observed for this calculation to be valid and only one DT was observed during the spring 2009 survey (outside of the BRSA) and two DTs were observed during the fall 2009 survey. Because no DTs were detected within the BRSA north of I-10 during protocol surveys, DTs most likely occur at a very low abundance and density within this area. Only two DTs were detected in the BRSA south of I-10; however, because a majority of the BRSA south of I-10 is composed of buffer areas that were surveyed at very low intensity relative to other areas within the BRSA (e.g., the Project disturbance area), DT densities south of I-10 are likely to be much greater than was represented by the survey results. It is possible that DT densities south of I-10 could be more similar to those found at the Chuckwalla Bench approximately 20 miles south of Palen. Adult DT densities at the Chuckwalla Bench in 1992 were estimated between 22 and 49 individuals per square kilometer, but have shown declining trends (Tracy et al. 2004; Berry 1997). PSPP covers approximately 16 square kilometers (or approximately 6 square miles).

Species observed during protocol DT and other wildlife surveys are included in Attachment 5. Other special-status wildlife observed during 2009 surveys described in this report include the American badger (*Taxidea taxus*), western burrowing owl (*Athene cunicularia*), Mojave fringe-toed lizard (*Uma scoparia*), loggerhead shrike (*Lanus ludovicianus*), Vaux's swift (*Chaetura vauxi*), purple martin (*Progne subis*), and northern harrier (*Circus cyaneus*). Nelson's bighorn sheep (*Ovis canadensis nelsoni*) scat and tracks were observed in fall 2009 surveys, and this species is considered BLM sensitive. The Mojave fringe-toed lizard and burrowing owl are also considered BLM sensitive. Desert kit fox (*Vulpes macrotis arsipus*) was also observed and is a CCR 460 PFM.

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## DISCUSSION

The habitat quality observed on site was low within the majority of the Project disturbance area north of I-10, with slightly higher quality habitat associated with the desert dry wash woodlands in the central and southeastern areas. Flow enters the Project disturbance area under I-10 through box culverts from the Chuckwalla Mountains in the south and provides water to support the desert dry wash woodland areas. Habitat quality also increases to the northeast of the BRSA closer to the Palen Mountains (there is an increase in the availability of water near mountainous areas in this area). The desert dry washes just northeast of the BRSA contain large, tall trees. The topography and landscape of the disturbance area are generally flat, with some alluvial fan areas in the southern portion of the disturbance area (generally associated with desert dry wash vegetation) and sandy dune areas becoming more prevalent toward the north and eastern areas. The area on the western side of the disturbance area is flat and is bordered to the north and west by agricultural areas, and to the south by I-10. There are three large culverts under I-10 that provide wildlife a safe passage under I-10 in a north-south direction of travel. No DT or evidence of recent use (e.g., fresh sign) were detected in the BRSA north of I-10, supporting the conclusion of overall low-quality habitat for DT there.

South of I-10, the Project disturbance area includes the transmission line and the substation. The transmission line and 1,000-foot buffer were surveyed in spring 2009, but the substation and 1-mile buffer were surveyed in fall 2009. While no DTs or their sign was observed within the transmission line area, the habitat quality for DT increases quickly and substantially as the distance from I-10 increases. The only DT sign observed within the substation were DT bone fragments, but two adult DTs were observed within the 1-mile buffer surrounding the substation. DT sign including scat, active burrows, tracks, and carcasses were observed within the buffer area. Habitat quality within the buffer area that occurs within the Chuckwalla DWMA to the south of I-10 is moderate for DT. While DT densities here are expected to be low when compared to populations in the west Mojave Desert, the species is expected to be present, with increasing densities associated with areas having a greater availability of water and annual forage. The Sonoran Desert is hotter and has less available water than the Mojave Desert, so, while there is a decrease in DT density in the more Sonoran-type desert associated with this area, the populations here are still important for the long-term viability of the species.

CNDDDB records show DT occurrences surrounding but not on the BRSA. The closest documented established population of DT based on CNDDDB is from 1987 and occurs approximately 3.5 miles to the south of the BRSA in the vicinity of the Chuckwalla Mountains (CDFG 2009). Other known occurrences are 7 miles to the northwest and 10 miles to the west of

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the BRSA (CDFG 2009). CNDDDB record data are largely incomplete and may not accurately depict the actual population size and distribution within the area, but can provide some insight into the distribution of DT here. Incidental observations also were made to the west on an existing dirt road near Desert Center, California.

DTs require soils that are strong enough to support burrows, but soft enough to allow for excavation (Anderson et al. 2000). In some cases, DTs take advantage of existing natural shelters such as rock formations or exposed calcic soils horizons (Nussear et al. 2009). The soils within the disturbance area are very sandy on the northeastern side associated with the dunes and consolidated dunes. Yet soils are firm enough to support excavations, as demonstrated by the presence of large burrows in these areas that appeared to be occupied by coyotes or badgers. Therefore, there are no soils on site that would limit the distribution of DT.

To understand the distribution of DT in this area, it is important to understand the climate in this region. The rainfall patterns here are typical of the Sonoran Desert, rather than the Mojave Desert, and the distribution of DTs is more typical of the Sonoran population than the Mojave population. The lack of DTs observed within the BRSA is not an indication that DTs are not present within this area, but is a result of the location of the BRSA on the valley floor. DT abundance in this area is higher within the mountains and the drainages associated with the mountains.

Habitat suitability for DT is determined by examining vegetation, soils, landscape (topography, terrain, and elevation), and climate. A complex interaction of these variables determines site preference by the species (Nussear et al. 2009). Suitable landscapes for DT are generally defined as alluvial fans and plains and rocky slopes at elevations of 1,969 to 3,937 feet above sea level (USFWS 2008). The most limiting factor in the distribution of DT within the area of the BRSA is probably water. The availability of water here is determined by precipitation and temperature. Precipitation and temperature correlate to elevation, aspect, and geographical location in the desert. Precipitation events such as the monsoon, which are important for DTs in the Sonoran Desert, highly depend on local orographic effects from topographic features such as mountains and vary significantly from one area to another (Nussear et al. 2009). Monsoon events are not typical of the Mojave Desert. In the Mojave, rain occurs in the winter (winter-rainfall) as opposed to the bimodal rainfall pattern with important summer monsoon rains in the Sonoran Desert. In the Sonoran Desert, there is higher precipitation at higher elevations. Also, as elevation increases, temperature decreases. Lower temperatures equate to lower evapotranspiration rates. The higher rainfall and lower evapotranspiration rates associated with higher elevations work in concert to allow for a higher availability of water (for drinking) and

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higher plant production at higher elevations. It is important to note that the higher temperatures in the Sonoran Desert magnify the effect of the evapotranspiration rate when compared to Mojave Desert areas. This is in addition to the differences in rainfall patterns between the Sonoran and Mojave deserts.

Presence of ephemeral plant species is an indicator of habitat suitability for the DT because these species are the primary components of the DT diet (Esque 1994; Jennings 1997; Avery 1998). Generally, DTs prefer creosote bush scrub habitat with a high diversity and cover of perennial plant species and high productivity of ephemeral plants. Less commonly, DT will occur in blackbrush (*Coleogyne ramosissima*), Joshua tree (*Yucca brevifolia*), and juniper (*Juniperus* sp.) at higher elevations, and saltbush (*Atriplex* sp.) at lower elevations (Nussear et al. 2009). The vegetation within the disturbance area consists primarily of Sonoran creosote bush scrub. In spring 2009, high ephemeral plant productivity was observed; however, this productivity occurred somewhat early this year and was short-lived within the majority of the BRSA.

Rainfall in late 2008 and early 2009 within the region was lower than average. Rainfall that typically occurs in the late summer/early fall was lower than the historical average for this area. The high ephemeral plant productivity within the BRSA in early 2009 is likely typical for this site; however, the lack of rains in February and March caused annual plants to dry up more quickly than usual in spring 2009.

DTs should be more abundant in the mountains and alluvial fans and drainages associated with the mountains rather than in the valleys. DTs are typically more abundant in valley areas in the Mojave Desert compared to the Sonoran Desert. This is supported by the distribution of DT and DT sign within the BRSA. Ephemeral plant production was noted to be higher and longer lasting both within the drainages and at higher elevations during the spring 2009 survey season, which supports the supposition that water is more available in the region as elevation increases.

Other factors that may cause a lack of DT observations within the Project disturbance area include the constraints to movement to the west and north (agricultural activity) and to the south (I-10; however, culverts under I-10 reduce this effect on the eastern side); and high nonnative, invasive vegetation cover (e.g., prevalence of Asian [or Saharan] mustard [*Brassica tournefortii*] in some areas of the creosote bush scrub and presence of Russian thistle [*Salsola tragus*] in the dune areas). However, it is most likely that the DT population is low within this site because the BRSA is on the valley floor and, as such, receives less rainfall and has a higher evapotranspiration rate than in higher elevation areas adjacent. While ephemeral plant production was high in 2009, it was also short-lived. It was noted that annual plants were still growing much

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later in the season in the ephemeral washes and in areas at higher elevations than within the valley floor and in areas not associated with drainages. The BRSA does not currently provide the groundwater necessary to support a long-lived annual plant population that could support a large onsite population of DT. It is probable that the DT population in the adjacent mountains and drainages is higher. The DT bone fragments observed on site are probably from carcasses that washed down to the BRSA over time from adjacent higher elevations where DT populations are larger. No intact or partially intact carcasses were observed within the BRSA during spring 2009.

## **CERTIFICATION STATEMENT**

Qualified AECOM biologists who conducted DT surveys for the PSPP certify that the information in this survey report fully and accurately represents the work performed by AECOM biologists. The results of focused surveys for listed species are typically considered valid for 1 year by the resource agencies.

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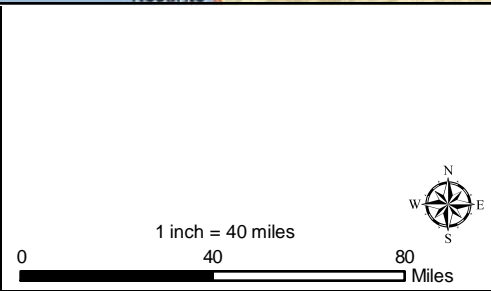
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# **ATTACHMENT 1**

## **FIGURES**





**Palen Solar Power Project  
Desert Tortoise  
Technical Report**

**Figure 1  
Regional Map**

Source: ESRI; AECOM 2009

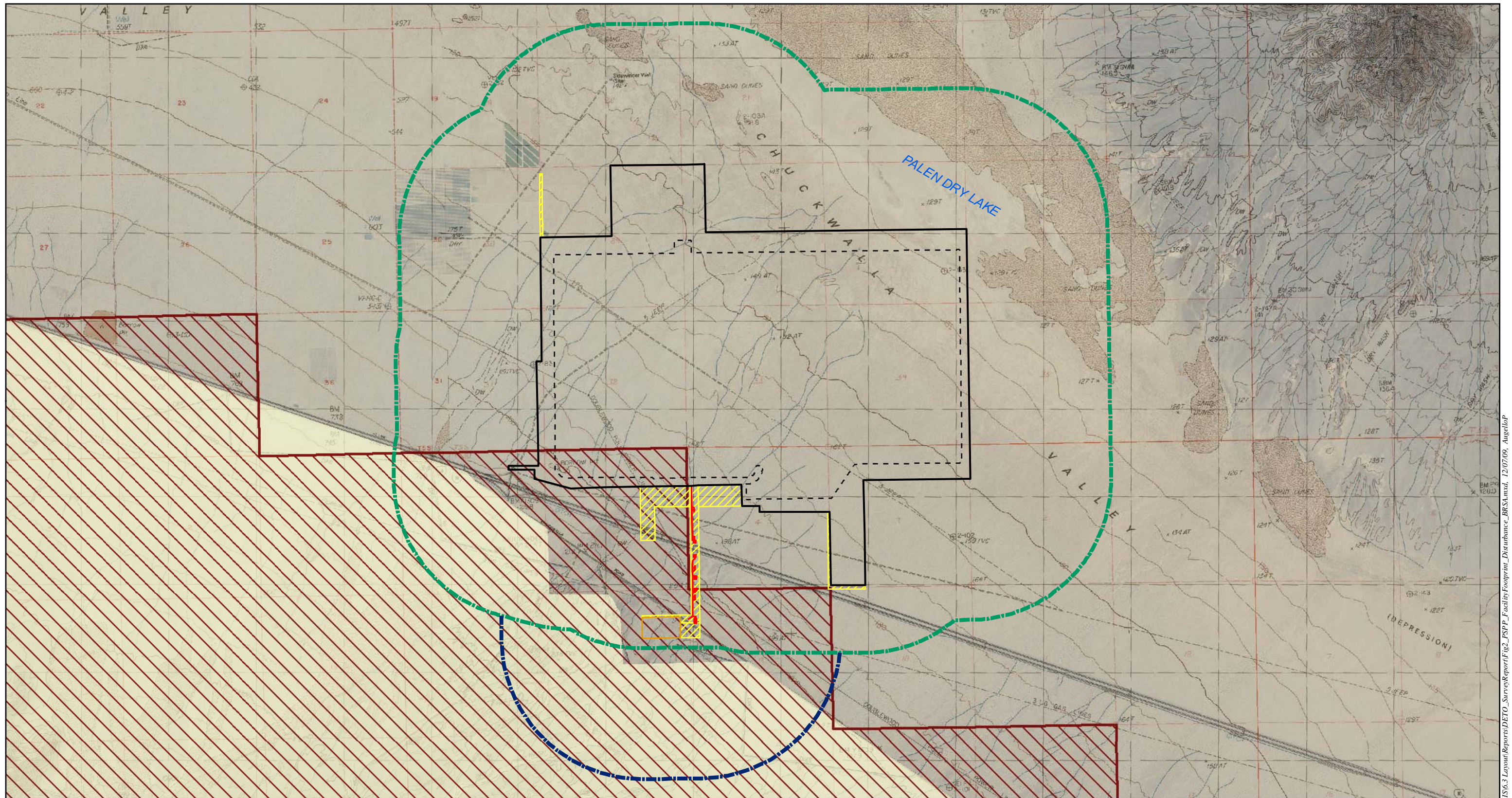
**Solar Millennium**

**AECOM**

Date: December 2009







**Legend**

- Facility Footprint
- Chuckwalla DWMA (NECO)
- Desert Tortoise Critical Habitat (USFWS)
- Biological Resources Survey Area (BRSA)**
- Spring 2009 Survey
- Fall 2009 Survey

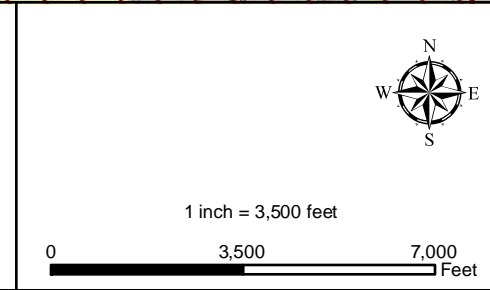
**Project Disturbance Area**

- AFC Disturbance Area
- Former Disturbance Area, No Longer a Part (Spring 2009 Survey)

**Transmission Line Disturbance Area**

- Transmission Line (Spring 2009 Survey)
- Substation (Fall 2009 Survey)

Source: USGS; NAIP 2005; USFWS 1994; AECOM 2009



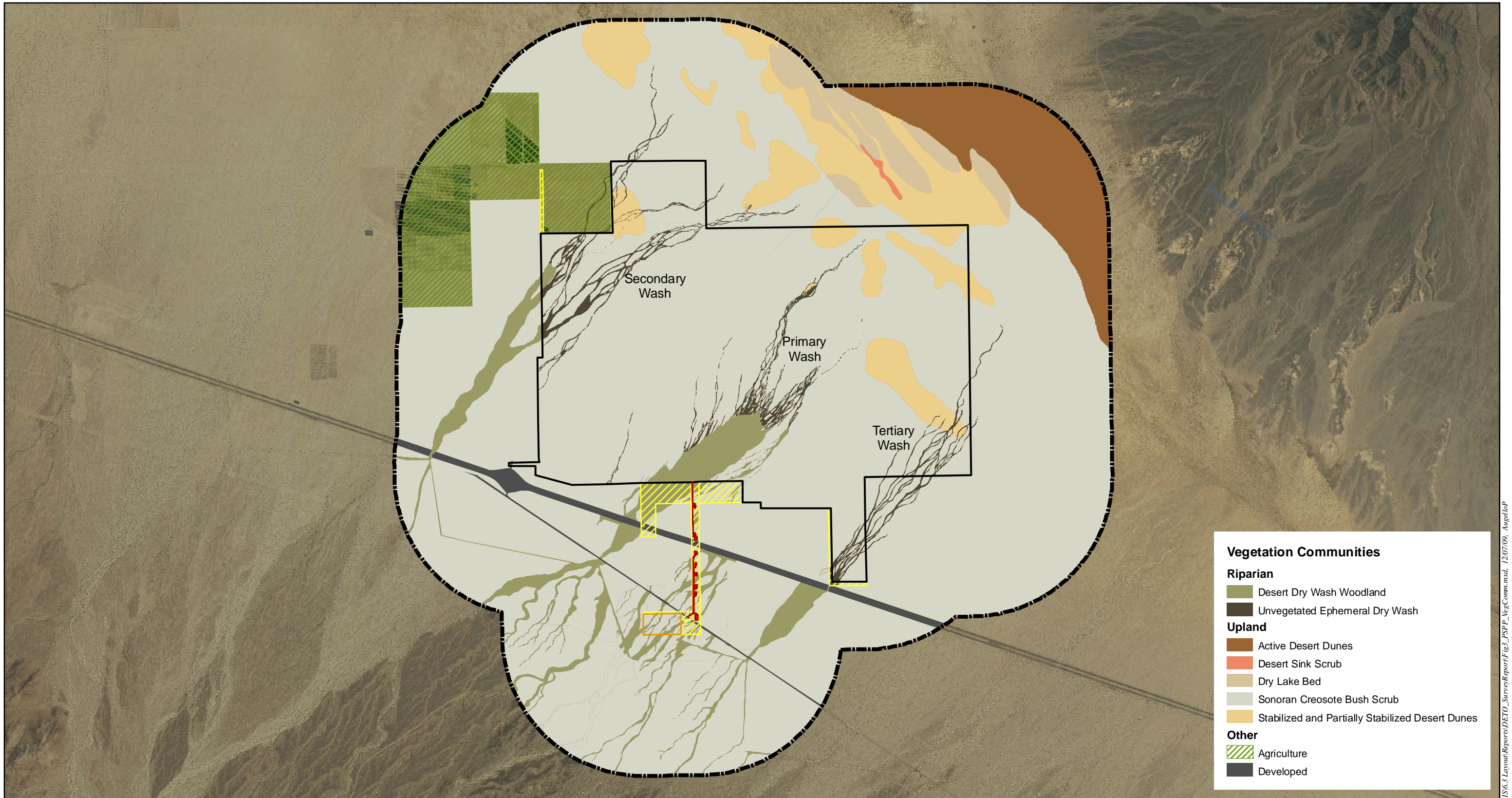
**Palen Solar Power Project  
Desert Tortoise  
Technical Report**

**Figure 2  
Facility Footprint, Disturbance Area  
and Biological Resources  
Survey Area**

Date: December 2009







**Vegetation Communities**

**Riparian**

- Desert Dry Wash Woodland
- Unvegetated Ephemeral Dry Wash

**Upland**

- Active Desert Dunes
- Desert Sink Scrub
- Dry Lake Bed
- Sonoran Creosote Bush Scrub
- Stabilized and Partially Stabilized Desert Dunes

**Other**

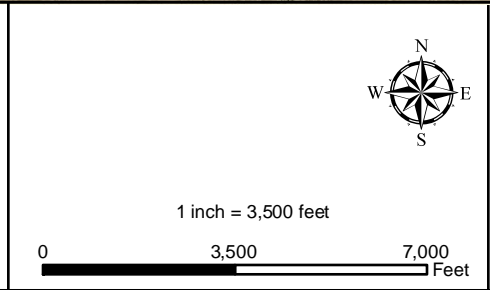
- Agriculture
- Developed



**Legend**

- Biological Resources Survey Area (BRSA)
- Project Disturbance Area
  - AFC Disturbance Area
  - Former Disturbance Area, No Longer a Part (Spring 2009 Survey)
- Transmission Line Disturbance Area
  - Transmission Line (Spring 2009 Survey)
  - Substation (Fall 2009 Survey)

Source: NAIP 2005; AECOM 2009



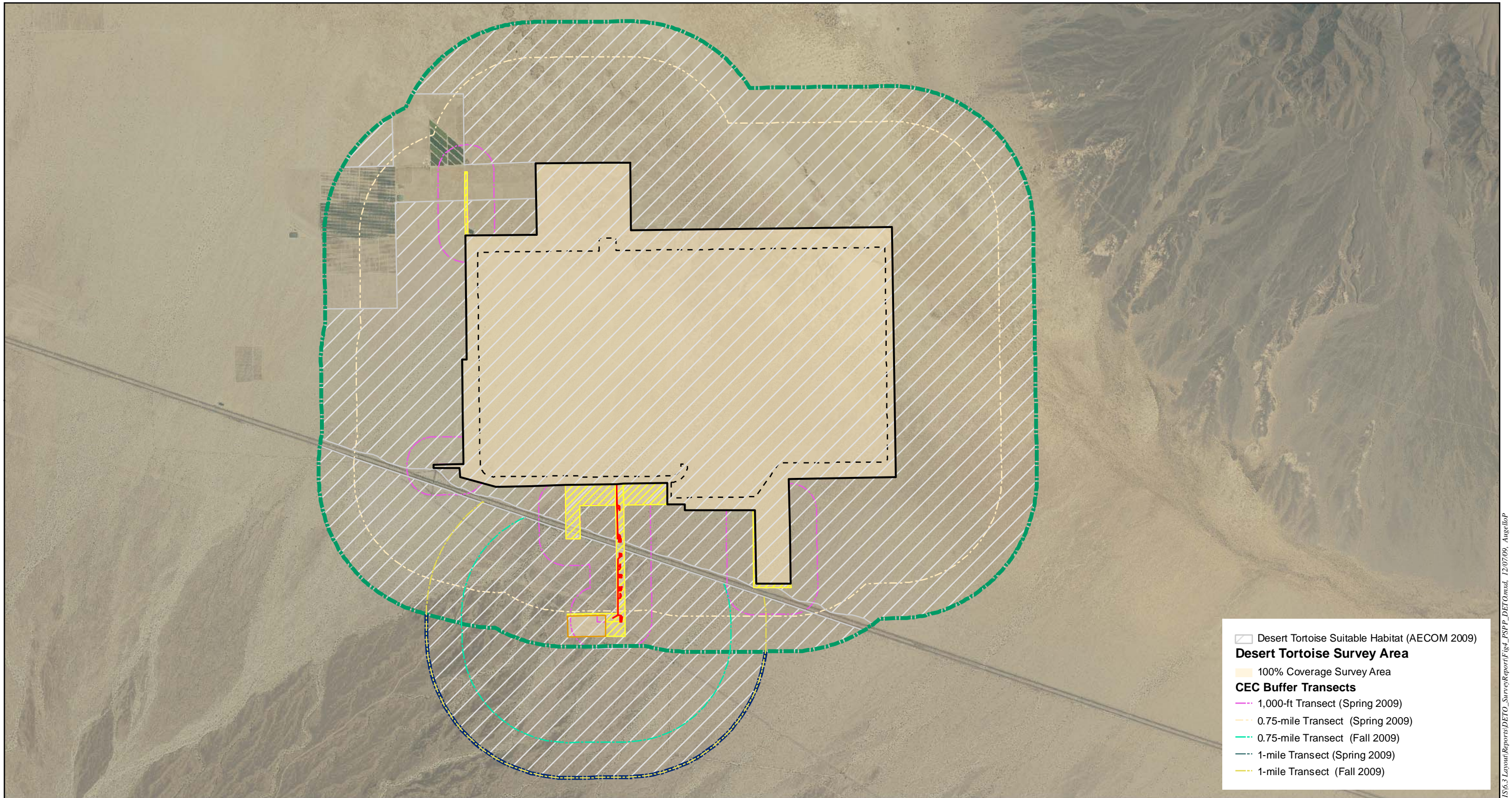
**Palen Solar Power Project  
Desert Tortoise  
Technical Report**

**Figure 3  
Vegetation Communities**

Date: December 2009







Desert Tortoise Suitable Habitat (AECOM 2009)  
**Desert Tortoise Survey Area**  
 100% Coverage Survey Area  
**CEC Buffer Transects**  
 1,000-ft Transect (Spring 2009)  
 0.75-mile Transect (Spring 2009)  
 0.75-mile Transect (Fall 2009)  
 1-mile Transect (Spring 2009)  
 1-mile Transect (Fall 2009)



**Legend**

Facility Footprint  
**Biological Resources Survey Area (BRSA)**  
 Spring 2009 Survey  
 Fall 2009 Survey

**Project Disturbance Area**  
 AFC Disturbance Area  
 Former Disturbance Area, No Longer a Part (Spring 2009 Survey)

**Transmission Line Disturbance Area**  
 Transmission Line (Spring 2009 Survey)  
 Substation (Fall 2009 Survey)

Source: NAIP 2005; AECOM 2009

Note:  
The 1-mile and 3/4-mile CEC Buffer Transects in the Spring 2009 Survey Area are greater than these distances from the facility footprint due to changes in project design.

1 inch = 3,500 feet

0 3,500 7,000 Feet

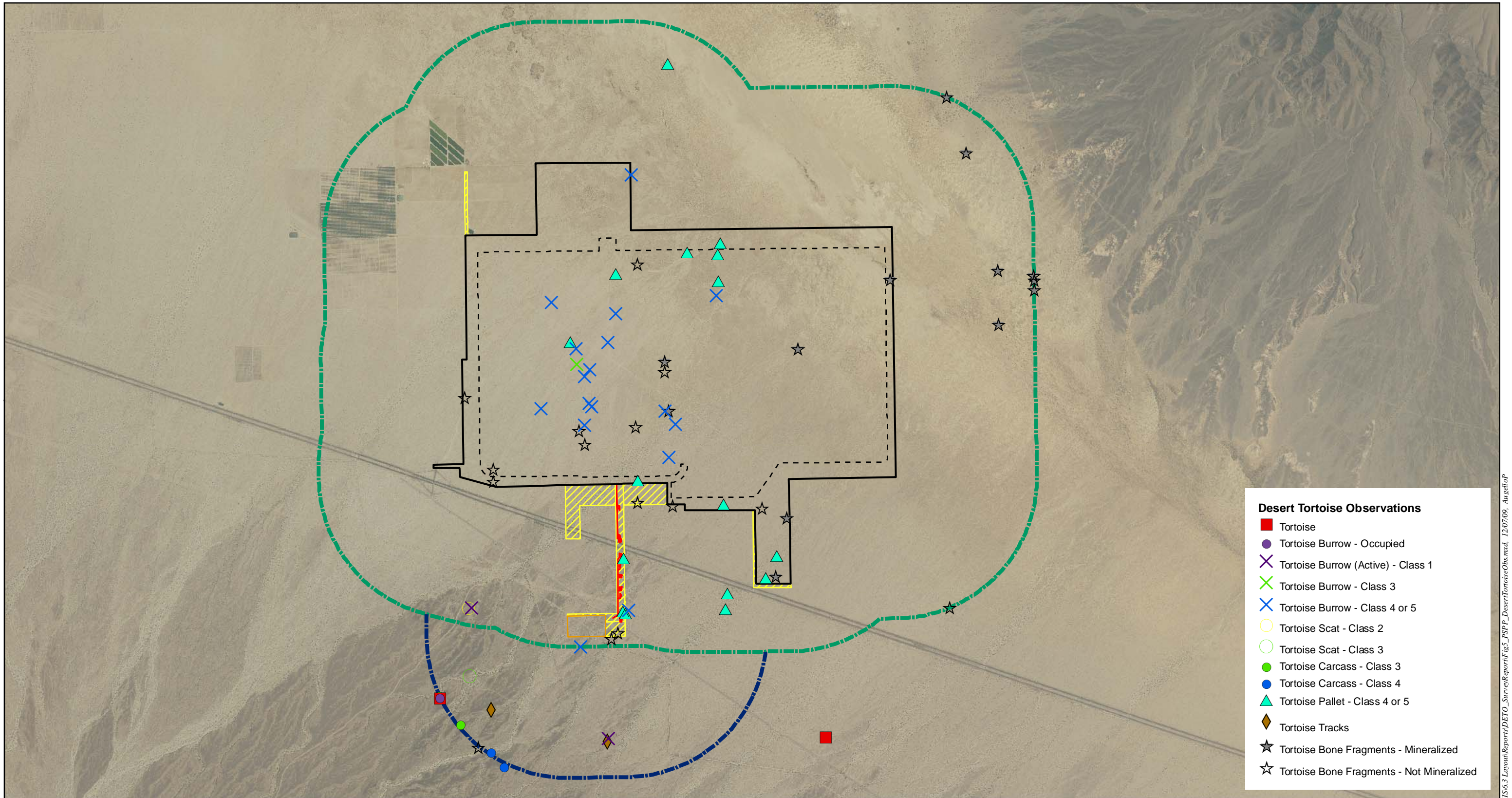
**Palen Solar Power Plant  
Desert Tortoise  
Technical Report**

**Figure 4  
Desert Tortoise Surveys and  
Suitable Habitat within the  
Biological Resources**

Date: December 2009







- Desert Tortoise Observations**
- Tortoise
  - Tortoise Burrow - Occupied
  - ✕ Tortoise Burrow (Active) - Class 1
  - ✕ Tortoise Burrow - Class 3
  - ✕ Tortoise Burrow - Class 4 or 5
  - Tortoise Scat - Class 2
  - Tortoise Scat - Class 3
  - Tortoise Carcass - Class 3
  - Tortoise Carcass - Class 4
  - ▲ Tortoise Pallet - Class 4 or 5
  - ◆ Tortoise Tracks
  - ★ Tortoise Bone Fragments - Mineralized
  - ☆ Tortoise Bone Fragments - Not Mineralized



**Legend**

- Facility Footprint
- Biological Resources Survey Area (BRSA)
- Spring 2009 Survey
- Fall 2009 Survey
- Project Disturbance Area
- AFC Disturbance Area
- Former Disturbance Area, No Longer a Part (Spring 2009 Survey)
- Transmission Line Disturbance Area
- Transmission Line (Spring 2009 Survey)
- Substation (Fall 2009 Survey)

Source: NAIP 2005; AECOM 2009

Note:  
The 1-mile and ¼-mile CEC Buffer Transects in the Spring 2009 Survey Area are greater than these distances from the facility footprint due to changes in project design.

1 inch = 3,500 feet

0 3,500 7,000 Feet

**Palen Solar Power Plant  
Desert Tortoise  
Technical Report**

**Figure 5  
Desert Tortoise Observations**

Date: December 2009

Path: P:\2009\09080081\_Sol Mill\Reports\DETO\_Survey\Report\Fig5\_PSP\_Pal\_Sol\_Mill\Reports\DETO\_Survey\Report\Fig5\_PSP\_DesertTortoiseObs.mxd, 12/07/09, Arget/OP



**ATTACHMENT 2**

**INFORMATION INDEX FOR  
DESERT TORTOISE SIGN**





## ATTACHMENT 2

### INFORMATION INDEX FOR DESERT TORTOISE SIGN Burrows and Dens, Scats, and Shell Remains

**From:** USFWS *Field Survey Protocol for any Non-Federal Action That May Occur within the Range of the Desert Tortoise* (USFWS 1992)

- (1) Burrows and Dens:
1. currently active, with tortoise or recent tortoise sign
  2. good condition, definitely tortoise; no evidence of recent use
  3. deteriorated condition (please describe); definitely tortoise
  4. deteriorated condition; possibly tortoise (please describe)
  5. good condition; possibly tortoise (please describe)
- (2) Scats:
1. wet (not from rain or dew) or freshly dried; obvious odor
  2. dried with glaze; some odor; dark brown
  3. dried; no glaze or odor; signs of bleaching (light brown), tightly packed material
  4. dried; light brown to pale yellow, loose material; scaly appearance
  5. bleached, or consisting only of plant fiber
- (3) Shell Remains:
1. fresh or putrid
  2. normal color; scutes adhere to bone
  3. scutes peeling off bone
  4. shell bone is falling apart; growth rings on scutes are peeling
  5. disarticulated and scattered



**ATTACHMENT 3**

**FIELD DATASHEETS – FALL 2009**



5000 ✓ 4960 ✓ 4900 ✓ 4970 ✓ 830 ✓ 4770 ✓ 50 ✓ 710 ✓ 670 ✓  
 4990 ✓ 4950 ✓ 4910 ✓ 490 ✓ 20 ✓ 80 ✓ 40 ✓ 700 ✓ 660 ✓  
 4980 ✓ 4940 ✓ 4900 ✓ 50 ✓ 10 ✓ 70 ✓ 30 ✓ 690 ✓ 650 ✓  
 4910 ✓ 4920 ✓ 4890 ✓ 47 ✓ 4800 ✓ 60 ✓ 20 ✓ 680 ✓ 640 ✓

Site: PALEN Date: 10-14-09 Page 1 of 2

DESERT TORTOISE FIELD SURVEY DATA SHEET

Type of Survey	GPS Unit	Map #	Surveyor	Additional Surveyors	Start	Time	Temp	Wind Sp/Dir	Weather & % Cloud
Full Survey	10		AFI JMC SDA MIKE			1:13 PM	90°F	2 to 4 mph	0% CE

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (include comments)		
							Burr	Scat	Shell
PK6MKS001	0664642 3726710	KFOX?	A J U	M F U	Y N	- potential KFOX burrow, burrow tracks, potential fox track, turns to left, could see to end, no scat			
PDPD001A	0664648 3726680	DETO?	A J U	M F U	Y N	mammal dig that could be used as the DETO pellet	4		
PMAAF001	0664631 3726719	mammal	A J U	M F U	Y N	- mammal dig, kit-fox scat, could be used as pellet			
PMAAF001	0664487 3726654	mammal	A J U	M F U	Y N	- potential fox was by burrow, very steep fox DETO			
PMAAF002	0664389 3726732	mammal	A J U	M F U	Y N	- mammal burrow, turns to right, potential for burrow/DETO			

\*See Reverse

630 ✓ 620 ✓ 610 ✓ 600 ✓ 590 ✓ 580 ✓ 570 ✓ 560 ✓ 550 ✓ 40 ✓ 30 ✓ 20 ✓ 510 ✓ 500 ✓ 490 ✓ 480 ✓ 470 ✓ 460 ✓ 450 ✓ 440 ✓ 430 ✓ 420 ✓ 410 ✓ 400 ✓

deer, bobcat, zebra-tail, red winged black bird, side blotch, whiptail, coyote  
 390 ✓ 380 ✓ 370 ✓ 360 ✓



DESERT TORTOISE FIELD SURVEY DATA SHEET\*

Site: P Allen

Date: October 25-09

Page 1 of 1

Type of Survey	GPS Unit	Map #	Surveyor	Additional Surveyors
<u>Failed Survey</u>	<u>11</u>		<u>Clayton</u>	<u>MKE</u>

Start	Time	Temp	Wind Sp/Dir	Weather & % Cloud
<u>9:15</u>		<u>76°</u>	<u>S W</u>	<u>Hght 4178/4182</u>
Mid-day				
End				

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (include comments)		
							Burr	Scat	Shell
<u>PMAMK001</u>	<u>0662763, 3726989</u>		<u>AJU</u>	<u>MFU</u>	<u>YN</u>	<u>POSS CANYON/LARGE TALL 30/30 CM</u>	<u>-</u>	<u>-</u>	<u>-</u>
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>	<u>POT DETO GSTATE</u>			
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>	<u>ZOPENINGS</u>			
<u>PMACG001</u>	<u>0663583, 3727806</u>		<u>AJU</u>	<u>MFU</u>	<u>YN</u>	<u>POTENTIAL BUOWL</u>	<u>5</u>		
<u>PMAMK002</u>	<u>0663124, 3727036</u>		<u>AJU</u>	<u>MFU</u>	<u>YN</u>	<u>POTENTIAL DETO 15cm/10cm</u>			
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>	<u>DEPTH (RUMWOOD) (2)</u>			
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>	<u>POT. DETO (1) 20cm X 10cm</u>	<u>5</u>		
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>	<u>(2) 20cm X 20cm</u>	<u>5</u>		
<u>PKOCG001</u>	<u>0666222, 3726529</u>		<u>AJU</u>	<u>MFU</u>	<u>YN</u>	<u>MULTIPLE ENTRANCES (5)</u>			<u>X not too fresh</u>
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>	<u>KIT FOR ACTIVE BURROW</u>			
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>	<u>MANY TRACKS, OLD SCAT</u>			
<u>PKBMK001</u>	<u>0666085, 3726032</u>		<u>AJU</u>	<u>MFU</u>	<u>YN</u>	<u>MULTIPLE ENTRANCES (4)</u>			<u>X old</u>
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>	<u>MANY TRACK, OLD SCAT</u>			
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>	<u>KIT FOR ACTIVE BURROW</u>			
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>				
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>				
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>				
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>				
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>				
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>				
			<u>AJU</u>	<u>MFU</u>	<u>YN</u>				

(2)

\*See Reverse



DESERT TORTOISE FIELD SURVEY DATA SHEET\*

Site: Palen 3/4 mi buffer  
around Sub Station

Date: 10-25-2009

Page 1A of 2A

Type of Survey	GPS Unit	Map #	Surveyor	Additional Surveyors	Start	Time	Temp	Wind Sp/Dir	Weather & % Cloud
DETO	Spr 13		ELA	JWC, AFI	Mid-day	0814	74	3-5 W	0%
					End				

*fall tortoise*

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (include comments)		
							Burr	Scat	Shell
PMAE1001	0665856 3725748	Mammal Burrows	AJU	MFU	Y	Multiple large burrows - deep kitt fox scat all over.			
P55E1001	0665089 3725382	big haw scat	AJU	MFU	Y	Tracks + scat of Big Hawk			
PDE1001	0664795 3725387	DETO Tracks	AJU	MFU	Y	Large Deto Tracks Circumferential 9 ft, over 5 ft			
PDBE1001	0664807 3725423	DETO Burrow	AJU	MFU	Y	Tracks up to, in, & out of Burrow			I
PMAE1002	0664061 3725408	Mammal Burrow	AJU	MFU	Y	Potential for Smal DETO Scat & burrow			
PFlaw	0663735 03725534	Flaw	AJU	MFU	Y	Pics Taken			
PDE1002	0663472 3725754	DETO Tracks	AJU	MFU	Y	Tracks in 18 phos 9 ft inside, 4 ft pseudo			

\*See Reverse



DESERT TORTOISE FIELD SURVEY DATA SHEET\*

Site: PALEN

Date: 10-25-09

Page 16 of 28

Type of Survey	GPS Unit	Map #	Surveyor	Additional Surveyors	Start	Time	Temp	Wind Sp/Dir	Weather & % Cloud
<i>(Handwritten)</i>	10		SDA RBR	RCO	8:13 AM	70°F	2 mph		0% CL
					Mid-day				
					End				

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (include comments)		
							Burr	Scat	Shell
PDCR001	0663619 3725043	DETO	AJU	MFU	YN	5' MCL juvenile DETO carcass Several pieces, skulls attached, vertebrae impaled some broken 1/2" to 1" thick go plastic pieces, in bush @ edge of deep drainage			5
PDCR002	0663468 3725257	DETO	AJU	MFU	YN	adult DT carcass ♀ 10 1/2" <del>10 1/2</del> MCL skulls follow off but in large pieces bones still intact, pieces of bones still together			4
PDCSD0101	0663325 3725332	DETO	AJU	MFU	YN	5 pieces, largest ~ 2" x 2 1/2" smallest ~ 1/4" x 1/2" curved,			5

\*See Reverse

black throated sparrow

DESERT TORTOISE FIELD SURVEY DATA SHEET\*

Site: PAIGN Date: 10-25-09 Page 28 of 28

Type of Survey	GPS Unit	Map #	Surveyor	Additional Surveyors	Start	Time	Temp	Wind Sp/Dir	Weather & % Cloud

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (include comments)		
							Burr	Scat	Shell
PDCRC001	0662519 3725571	DETO	AJU	MFU	YN	10" MCL ♀ adult DE small hole in 1st ventral most scutes except some ventrals & costals (on carapace) still intact some spine holes small, tall still present			3
PDLSD002	0662882 3725872	DETO	AJU	MFU	YN	two adult DETOS in caliche burrow scat in burrow & in tank, 3 caliches could be use by DETO two as burrows, one as pellet.			
PDCRC002	0662879 3725845	DETO	AJU	MFU	YN	- adult DE carcass <del>of</del> most scutes attached ♀ 9" MCL leg bone still present			3

\*See Reverse

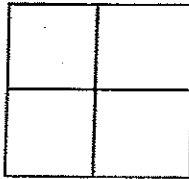
Do not abbreviate

### Data Sheet for Live Desert Tortoises

Write on this side only

Located by S Dayman  
 Processed by S Dayman  
 Study site name Palen - SM  
 Township \_\_\_\_\_ Range \_\_\_\_\_  
 Section \_\_\_\_\_ Quadrat \_\_\_\_\_  
 Coordinates (Reference SW corner)  
 \_\_\_\_\_ meters North \_\_\_\_\_ meters East  
 UTM's 0662882 3725872  
 Elevation \_\_\_\_\_ m Accuracy ± \_\_\_\_\_ m  
 County Riverside State CA  
 On Plot  Off Plot

Tortoise ID # PDLSD002  
 Year first marked \_\_\_\_\_  
 Verification of ID   
 Capture type \_\_\_\_\_ Sex U  
 Date (dd/mm/yy) 10/25/09  
 Time (PST): Start \_\_\_\_\_ End \_\_\_\_\_  
 Frequency \_\_\_\_\_ Transmitter # \_\_\_\_\_  
 Transmitter type \_\_\_\_\_  
 Transmitter attached \_\_\_\_\_  
 Transmitter to be replaced on \_\_\_\_\_  
 PIT # \_\_\_\_\_



Show location of tortoise in quadrat

#### Tortoise Location

Cover site type:  burrow  
 pallet  
 shrub  
 caliche cave  
 rock shelter

At cover site:  entering  
 exiting  
 on mound  
 inside

Not at cover site:  in open  
 other

#### Burrow Data

ID # \_\_\_\_\_  
 Orientation West facing  
 Length 15" U Height 12"  
 Width 15" Soil cover caliche  
 Location in side of deep wash

#### Survey Type

Radio track  
 Burrow search 100% coverage  
 Coverage 1  
 Coverage 2  
 Incidental  
 Other

#### Tortoise Activity

resting  
 basking  
 walking  
 feeding

Interacting with other tortoise  
 Interacting with other animals

ID & sex of other tortoise unknown  
 Species GOKG

Describe interaction:

Burrow was in caliche, two other burrows present, one very deep, other a pallet

\* Two DT's observed in one burrow

Plants/items eaten (specific):

Color (shell & skin) HV Hue Value Chroma Color

V1 (center)  
 V4 (center)  
 LC1,2&V2 (seam)  
 LM5,6 & LC2 (seam)  
 Foreleg  
 Hindleg


Are you color blind?  Yes  No

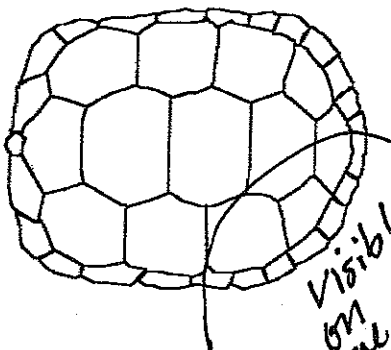
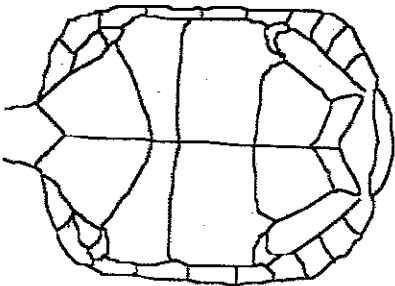
Type of blindness \_\_\_\_\_

#### Body Measurements

MCL (mm) ~ 250mm  
 PLN (mm) for both  
 Weight (g) \_\_\_\_\_  
 Void (g) \_\_\_\_\_  
 Total wt (g) \_\_\_\_\_  
 New growth  
 present  absent  
 Epoxy #  
 present  legible

#### Behavior

Both tortoises were resting & did not move during observations



Visible on one tortoise

#### Other notes

Two adult DTs present, could see rear (left) of one DT, very flared marginals, possible female and top of shell of other DT

Photos; roll \_\_\_\_\_ frames \_\_\_\_\_

Draw locations of notches (old and new), chips, and anomalies, etc.

Describe anomalies in numbering of marginals and any identification problems.

Entered by \_\_\_\_\_ date \_\_\_\_\_ on computer \_\_\_\_\_

Modified by \_\_\_\_\_ on \_\_\_\_\_

Do not abbreviate

### Health Profile Form for Desert Tortoises

Write on this side only

Located by S. Dayman

Processed by \_\_\_\_\_

Study site name Palen-SM

Township \_\_\_\_\_ Range \_\_\_\_\_

Section \_\_\_\_\_ Quadrat \_\_\_\_\_

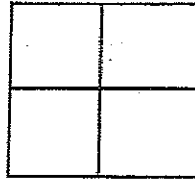
Coordinates (Reference SW corner)

\_\_\_\_\_ meters North \_\_\_\_\_ meters East

UTM's 0662882 n 3725872

County \_\_\_\_\_ State \_\_\_\_\_

On Plot  Off Plot



Show location of tortoise in quadrat

Tortoise ID #

PDLSD002

Year first marked \_\_\_\_\_

Verification of ID

Capture type \_\_\_\_\_

Date (dd/mm/yy) 10/25/09

Time (PST): Start \_\_\_\_\_ End \_\_\_\_\_

Shell wear class \_\_\_\_\_

Process time \_\_\_\_\_ hours

Frequency \_\_\_\_\_

Transmitter # \_\_\_\_\_

Sex 4

10/25/09

(two DIs in one burrow)

#### BEAK & NARES

- Beak/nares wet  Yes  No  Unk
- Beak/nose damp  Yes  No  Unk
- Nasal exudate present  Yes  No  Unk
- Exudate color  clear  cloudy  white  yellow  green
- Bubble(s) from nares  Yes  No  Unk
- One nare occluded  Yes  No  Unk
- Both nares occluded  Yes  No  Unk
- Dirt on nose/beak  Yes  No  Unk
- Dirt in nares  Yes  No  Unk

#### FORELEGS (adjacent to face)

- Dried dirt on forelegs  Yes  No  Unk
- Moisture on forelegs  Yes  No  Unk
- Dried exud. on scales  Yes  No  Unk
- Scales cracking  Yes  No  Unk

#### BREATHING

- Smooth  Yes  No  Unk
- Wheezing  Yes  No  Unk
- Rasping, clicking  Yes  No  Unk

#### EYES, CHIN GLANDS Circle eyes or lids:

- Eyes/lids whitened or discolored  Yes  No  Unk
- Eyelids swollen  Yes  No  Unk
- Eyes/lids wet  Yes  No  Unk
- Discharge from eyes  Yes  No  Unk
- Eyes sunken  Yes  No  Unk
- Eyes clear, bright  Yes  No  Unk
- Eyes dull, cloudy  Yes  No  Unk
- Chin glands draining  Yes  No  Unk

#### INTEGUMENT

- Integument dull  Yes  No  Unk
- Integument glossy  Yes  No  Unk
- Normal elasticity  Yes  No  Unk
- Abnormal skin peeling  Yes  No  Unk

#### POSTURE/BEHAVIOR

- Alert, responsive  Yes  No  Unk
- Lethargic  Yes  No  Unk
- Can withdraw tightly into shell  Yes  No  Unk
- Limbs, head hanging loose  Yes  No  Unk

Other notes \_\_\_\_\_

#### ORAL

- CAVITY Observed  Yes  No  Unk
- Discharge present  Yes  No  Unk
- Membranes pink  Yes  No  Unk
- Membranes pale, white  Yes  No  Unk
- Smells/mouth rot  Yes  No  Unk

#### EVIDENCE OF SHELL DISEASE

- Lesions present  Yes  No  Unk
- Lesions active  Yes  No  Unk
- Lesions healed  Yes  No  Unk
- Scute laminae peeling  Yes  No  Unk
- Scutes missing/peeling  Yes  No  Unk
- Pitting  Yes  No  Unk
- Scutes depressed/concave  Yes  No  Unk
- Fungal areas  Yes  No  Unk

#### EVIDENCE OF TRAUMA

- Head  Yes  No  Unk
- Gular  Yes  No  Unk
- Forelimbs  Yes  No  Unk
- Hindlimbs  Yes  No  Unk
- Shell  Yes  No  Unk
- Scute/bone replacement  Yes  No  Unk

Describe: No trauma observed

Soil dryness:  wet  damp  dry  
Last precipitation (dd/mm/yy) July 09

Urine (vol) \_\_\_\_\_  
Color \_\_\_\_\_  
Viscosity \_\_\_\_\_

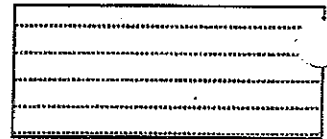
Particulates \_\_\_\_\_  
Color \_\_\_\_\_

Nasal wash collected \_\_\_\_\_  
Amt. blood/lymph taken (cc) \_\_\_\_\_

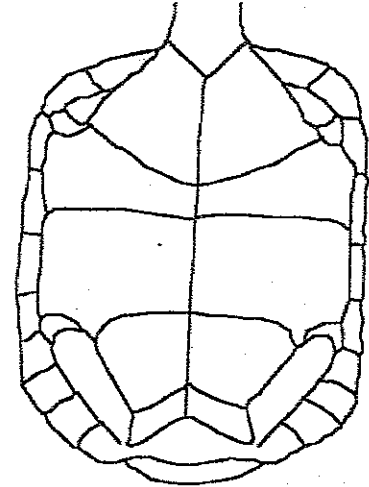
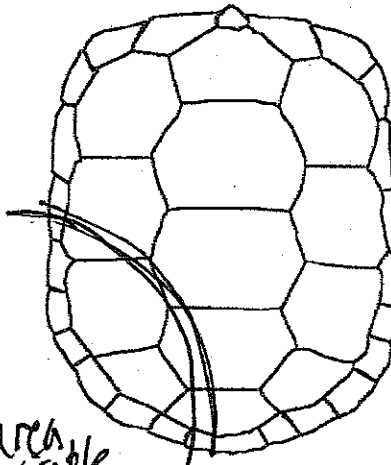
# of needle sticks \_\_\_\_\_  
Time (min) of needle sticks \_\_\_\_\_

Location \_\_\_\_\_  
PCV% \_\_\_\_\_

Other samples taken \_\_\_\_\_  
Describe/draw parasites



DRAW: shape of gulars, location of notches; chips, chews, shell damage, lesions; shell disease; shell abnormalities; scute concavities. Make new drawing at least once per year (spring).



arch visible



**ATTACHMENT 4**

**SPREADSHEET OF DATA COLLECTED DURING  
FOCUSED DESERT TORTOISE SURVEYS  
FALL 2009**





Map ID	IDENT	Y_PROJ	X_PROJ	DATE	COMMENTS	Class
Bighorn Sheep Scat	PSSEL001	3725381	665090	25-OCT-09 9:08:33AM	Bighorn sheep tracks and scat	
Kit Fox Complex	PKBCG001	3726529	666224	25-OCT-09 12:03:33	Kit fox complex, multiple entrances (5), kit fox active burrow, many tracks, old scat	
Kit Fox Complex	PKBMK001	3726709	664643	24-OCT-09 2:58:32PM	Potential kit fox complex, tracks, potential for tortoise and burrowing owl, turns to left, can't see to end, no scat	
Kit Fox Complex	PKBMK001	3726032	666086	25-OCT-09 12:17:43	Kit fox complex, multiple entrances, old scat, kit fox active burrow	
Kit Fox Complex	PMAEL001	3725747	665856	25-OCT-09 8:22:02AM	Kit fox complex (?), multiple large burrows, deep, kit fox scat all over	
Mammal Burrow	PDPD001A	3726679	664619	24-OCT-09 3:12:35PM	Mammal dig that could be used as tortoise pallet	4
Mammal Burrow	PMAAF001	3726718	664633	24-OCT-09 3:16:34PM	Mammal dig, kit fox scat, ends, could be used as tortoise pallet	
Mammal Burrow	PMAAF002	3726732	664391	24-OCT-09 4:23:26PM	Mammal burrow, turns to right, potential for burrowing owl and tortoise (low)	
Mammal Burrow	PMACG001	3727805	663584	25-OCT-09 9:50:03	Potential for burrowing owl and tortoise, 15 cm x 10 cm	5
Mammal Burrow	PMAEL002	3725408	664061	25-OCT-09 10:27:09AM	Mammal burrow, potential for small tortoise, deep and turns	
Mammal Burrow	PMAMK001	3726989	662764	25-OCT-09 8:41:22	Possible coyote burrow, large/tall 30/30 cm, potential use by tortoise, 2 openings	
Mammal Burrow	PMAMK001A	3726654	664487	24-OCT-09 4:23:26PM	Potential for use by burrowing owl, very steep for tortoise	
Mammal Burrow	PMAMK002	3727035	663125	25-OCT-09 10:25:55	beneath ironwood (2), potential tortoise, 20 cm x 10 cm, 20 cm x 20 cm	5

Map ID	IDENT	Y_PROJ	X_PROJ	DATE	COMMENTS	Class
Mammal Burrow	PMASD001	3726666	664355	24-OCT-09 4:33:30PM	Potential use by burrowing owl, narrows to small mammal hole, could be used as pallet for tortoise	
Tortoise Bone Fragments - Class 4	Pdcrb001	3725093	663620	25-OCT-09 10:02:55AM	Tortoise carcass, 5" MCL juvenile DT, scutes still shiny, several pieces, scutes attached, vertebrae, marginals, some costals, 1/2" to 1" widths, no plastron pieces, in bush at edge of deep drainage	4
Tortoise Bone Fragments - Class 5	Pdcsd100	3726556	664842	08-OCT-09 5:04:06PM	Desert tortoise bone fragments, many pieces (>10), bone is beginning to erode and flake, marginals, costals	5
Tortoise Bone Fragments - Class 5	PDCSD101	3725332	663325	25-OCT-09 10:28:51AM	Tortoise bone fragments, 5 pieces, largest ~ 2" x 2 1/2", smallest ~ 1/4" x 1/2", carapace, bones not shiny	5
Tortoise Burrow (Active) - Class 1	PDBEL001	3725422	664808	25-OCT-09 9:45:43AM	Tortoise burrow, tracks up to, in and out of burrow	1
Tortoise Carcass - Class 3	Pdcrc001	3725571	663120	25-OCT-09 10:41:18AM	Tortoise carcass, 10" MCL, adult female DT, small hole in 1st vertebral, most scutes except some vertebrae and costals (on carapace) still intact, some skin inside shell, tail still present, scutes and bones dull	3
Tortoise Carcass - Class 3	Pdcrc002	3725894	662880	25-OCT-09 11:29:18AM	Tortoise carcass, adult, most scutes attached, female, ~9" MCL, leg bone still present	3

Map ID	IDENT	Y_PROJ	X_PROJ	DATE	COMMENTS	Class
Tortoise Carcass - Class 4	PDCRB002	3725257	663469	25-OCT-09 10:13:59AM	Tortoise carcass, adult female, 10 1/2" MCL, scutes fallen off, but in large pieces, pelvis still intact, pieces of bone still together, bones and scutes dull	4
Tortoise Scat	PDSEL001	3726129	663227	25-OCT-09 10:56:23AM	Tortoise scat, small ~ 1 1/2" scat, pictures taken	3
Tortoise Tracks	PDTEL001	3725386	664796	25-OCT-09 9:32:06AM	Tortoise tracks, large, outer width 9 3/4", inner 5 1/2"	
Tortoise Tracks	PDTEL002	3725754	663473	25-OCT-09 10:43:47AM	Tortoise tracks, older, in wash, 9 1/2" outside, 4 3/4" inside	
Tortoises (2)	PDLSD002	3725872	662883	25-OCT-09 11:11:26AM	Live Tortoises, two live adult tortoises in caliche burrow, scat in burrow and in front of burrow, 3 caliches in area could be used by tortoise, two as burrows, one as pallet	



**ATTACHMENT 5**

**WILDLIFE SPECIES DETECTED WITHIN THE  
BIOLOGICAL RESOURCES SURVEY AREA**





## ATTACHMENT 5

### Wildlife Species Detected within the Biological Resources Survey Area

Scientific Name	Common Name
<b>INVERTEBRATES</b>	
Order Coleoptera	
Family Tenebrionidae	Beetles
<i>Eleodes</i> sp.	darkling beetle
Order Isoptera	
Subterranean termites	
Order Lepidoptera	
Insects and Butterflies	
Family Pieridae	
<i>Nathalis iole</i>	dainty sulphur
<i>Pontia protodice</i>	checkered white
Family Lycaenidae	
<i>Brephidium exilis</i>	pigmy blue
Family Nymphalidae	
<i>Vanessa cardui</i>	painted lady
<i>Vanessa virginiensis</i>	Virginia lady
Order Orthoptera	
Grasshoppers and Crickets	
Family Rhaphidophoridae	
<i>Macrobaenetes</i> sp.	giant sand treater cricket
<b>REPTILES</b>	
Order Squamata	
Lizards and Snakes	
Family Crotaphytidae	
<i>Gambelia wislizenii</i>	long-nosed leopard lizard
Family Eublepharidae	
<i>Coleonyx variegatus</i>	western banded gecko
Family Iguanidae	
<i>Dipsosaurus dorsalis</i>	desert iguana
Family Phrynosomatidae	
<i>Uta stansburiana</i>	side-blotched lizard
<i>Callisaurus draconoides</i>	zebra-tailed lizard
<i>Uma scoparia</i> *	Mojave fringe-toed lizard
<i>Sceloporus magister</i>	desert spiny lizard
<i>Urosaurus graciosus</i>	long-tailed brush lizard
<i>Phrynosoma platyrhinos</i>	desert horned lizard
Family Teiidae	
<i>Cnemidophorus tigris</i>	western whiptail
Family Colubridae	
<i>Chionactis occipitalis</i>	western shovel-nosed snake
<i>Salvadora hexalepis</i>	patch-nosed snake
Family Viperidae	
<i>Crotalus cerastes</i>	sidewinder
Order Testudines	
Turtles	
Family Testudinidae	
<i>Gopherus agassizii</i> <sup>1 2</sup>	desert tortoise
<b>BIRDS</b>	
Order Ciconiiformes	
Herons, Storks, Ibises, and Relatives	
Family Ardeidae	
<i>Butorides virescens</i>	green heron
Family Cathartidae	
<i>Cathartes aura</i>	turkey vulture

Scientific Name	Common Name
<b>Order Falconiformes</b>	<b>Diurnal Birds of Prey</b>
Family Accipitridae	
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Buteo swainsoni</i> <sup>2</sup>	Swainson's hawk
<i>Circus cyaneus</i> *	northern harrier
Family Falconidae	
<i>Falco mexicanus</i> <sup>+</sup>	prairie falcon
<b>Order Galliformes</b>	<b>MPheasants, Grouse, Quail and Relatives</b>
Family Odontophoridae	
<i>Callipepla gambelii</i>	Gambel's quail
<b>Order Charadriiformes</b>	<b>Shorebirds, Gulls and Relatives</b>
Family Charadriidae	
<i>Charadrius vociferus</i>	killdeer
Family Scolopacidae	
<b>Order Columbiformes</b>	<b>Pigeons and Doves</b>
Family Columbidae	
<i>Zenaida macroura</i>	mourning dove
<b>Order Caprimulgiformes</b>	<b>Goatsuckers and Relatives</b>
Family Caprimulgidae	
<i>Chordeiles acutipennis</i>	lesser nighthawk
<b>Order Cuculiformes</b>	<b>Cuckoos and Relatives</b>
Family Cuculidae	
<i>Geococcyx californianus</i>	greater roadrunner
<b>Order Strigiformes</b>	<b>Owls</b>
Family Strigidae	
<i>Athene cunicularia</i> *	burrowing owl
<b>Order Apodiformes</b>	<b>Hummingbirds and Swifts</b>
Family Apodidae	
<i>Chaetura vauxi</i> *	Vaux's swift
Family Trochilidae	
<i>Calypte costae</i>	Costa's hummingbird
<b>Order Passeriformes</b>	<b>Song birds</b>
Family Tyrannidae	
<i>Myiarchus cinerascens</i>	ash-throated flycatcher
<i>Sayornis nigricans</i>	black phoebe
Family Laniidae	
<i>Lanus ludovicianus</i> *	loggerhead shrike
Family Corvidae	
<i>Corvus corax</i>	common raven
Family Alaudidae	
<i>Eremophila alpestris</i>	horned lark
Family Hirundinidae	
<i>Hirundo rustica</i>	barn swallow
<i>Petrochelidon pyrrhonota</i>	cliff swallow
<i>Tachycineta bicolor</i>	tree swallow
<i>Progne subis</i> *	purple martin
Family Remizidae	
<i>Auriparus flaviceps</i>	verdin
Family Regulidae	
<i>Regulus calendula</i>	ruby-crowned kinglet
Family Mimidae	
<i>Mimus polyglottos</i>	northern mockingbird
<i>Toxostoma lecontei</i>	Le Conte's thrasher
Family Ptilonotidae	
<i>Phainopepla nitens</i>	phainopepla
Family Parulidae	
<i>Dendroica coronata</i>	yellow-rumped warbler
<i>Dendroica occidentalis</i>	hermit warbler

Scientific Name	Common Name
<i>Vermivora celata</i>	orange-crowned warbler
<i>Wilsonia pusilla</i>	Wilson's warbler
Family Emberizidae	
<i>Amphispiza bilineata</i>	black-throated sparrow
<i>Spizella breweri</i>	Brewer's sparrow
Family Icteridae	
<i>Agelaius phoeniceus</i>	red-winged blackbird
<i>Quiscalus mexicanus</i>	great-tailed grackle
<i>Icterus bullockii</i>	Bullock's oriole
Family Fringillidae	
<i>Carpodacus mexicanus</i>	house finch
<b>MAMMALS</b>	
Order Lagomorpha	Rabbits, Hares, and Pikas
Family Leporidae	
<i>Sylvilagus audubonii</i>	Audubon's cottontail
<i>Lepus californica</i>	black-tailed jackrabbit
Order Rodentia	Rodents
Family Heteromyidae	
<i>Dipodomys deserti</i>	desert kangaroo rat
<i>Dipodomys merriami</i>	Merriam's kangaroo rat
<i>Perognathus longimembris</i>	pocket mouse species
<i>Chaetodipus sp.</i>	pocket mouse species
Family Scuriidae	
<i>Spermophilus tereticaudus</i>	round-tailed ground squirrel
<i>Ammospermophilus leucurus</i>	antelope ground squirrel
Order Carnivora	Carnivores
Family Canidae	
<i>Vulpes macrotis arsipus</i>	desert kit fox
<i>Canis latrans</i>	coyote
Family Mustelidae	
<i>Taxidea taxus*</i>	American badger
Family Felidae	
<i>Lynx rufus</i>	bobcat
Order Artiodactyla	Even-toed Ungulates
Family Bovidae	
<i>Ovis canadensis nelsoni</i>	Nelson's bighorn sheep
Family Cervidae	
<i>Odocoileus hemionus</i>	mule deer

<sup>1</sup>Federally threatened or endangered species

<sup>2</sup>State threatened or endangered species

<sup>3</sup>State fully protected species

\*State species of special concern

+State special animal/CDFG watch list





BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT  
COMMISSION OF THE STATE OF CALIFORNIA  
1516 NINTH STREET, SACRAMENTO, CA 95814  
1-800-822-6228 – [WWW.ENERGY.CA.GOV](http://WWW.ENERGY.CA.GOV)

**APPLICATION FOR CERTIFICATION  
FOR THE *PALEN SOLAR POWER  
PLANT PROJECT***

**Docket No. 09-AFC-7**

***PROOF OF SERVICE***  
(Revised 12/28/09)

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**DECLARATION OF SERVICE**

I, Ashley Y. Garner declare that on January 13, 2010, I served and filed copies of the attached **APPLICATION FOR THE CALIFORNIA ENDANGERED SPECIES ACT SECTION 2081 (B) INCIDENTAL TAKE PERMIT AND REVISED DESERT TORTOISE TECHNICAL REPORT (INCLUDING FALL 2009)**, dated **January 2010**. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [\[http://www.energy.ca.gov/sitingcases/solar\\_millennium\\_palen\]](http://www.energy.ca.gov/sitingcases/solar_millennium_palen)

The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

**(Check all that Apply)**

**FOR SERVICE TO ALL OTHER PARTIES:**

sent electronically to all email addresses on the Proof of Service list;

by personal delivery or by depositing in the United States mail at with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses **NOT** marked "email preferred."

**AND**

**FOR FILING WITH THE ENERGY COMMISSION:**

sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);


**OR**

depositing in the mail an original and 12 paper copies, as follows:

**CALIFORNIA ENERGY COMMISSION**

Attn: Docket No. **09-AFC-7**  
1516 Ninth Street, MS-4  
Sacramento, CA 95814-5512  
[docket@energy.state.ca.us](mailto:docket@energy.state.ca.us)

I declare under penalty of perjury that the foregoing is true and correct.

  
Ashley Y. Garner