

DOCKET
09-AFC-6

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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-6)**

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 Blythe Solar Power Project (09-AFC-6).

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)**



BLYTHE SOLAR POWER PROJECT

Applicant:

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

January 2010

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: Blythe 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 Blythe Solar Power Project (BSPP or Project), proposed by Palo Verde Solar I, LLC (the Applicant). An Application for Certification (AFC) for the BSPP was submitted to the California Energy Commission (CEC) on August 24, 2009 (Docket No. 09-AFC-66). 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 9,405-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 5,952 acres of the ROW. In addition to solar fields and a main power generating facility, the site would include 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 7,067 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
Palo Verde Solar I, LLC

cc: Alice Harron, Palo Verde Solar I, LLC
Rick York, CEC
Mark Luttrell, AECOM
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Erin Riley, AECOM
Cecilia Meyer Lovell, AECOM

BLYTHER 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

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1.2 Applicant Representatives

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Contact Person

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

Consultant

Cecilia MeyerLovell, AECOM
Senior Biologist/Project Manager
619-233-1454

2. PROJECT LOCATION

The proposed Blythe Solar Power Project (BSPP) is located approximately 8 miles west of the town of Blythe and to the north of the Interstate 10 (I-10) corridor in Riverside County, California (Figure 1; see Attachment 1 for all figures). The BSPP is proposed on a contiguous area within a 9,405-acre right-of-way (ROW) owned by the Federal government and administered by the Bureau of Land Management (BLM), with the exception of a 160-acre private parcel. Use of the Federal land would involve issuance of a ROW grant to the Applicant by BLM. The proposed BSPP site is currently undeveloped open space.

3. PROJECT DESCRIPTION

Palo Verde Solar I, LLC (the Applicant) is proposing to construct the BSPP, a nominal 1,000-megawatt (MW) commercial solar thermal electric power-generating project. The Project is

proposed on public lands managed by BLM; the Applicant has submitted an application to BLM for a ROW grant.

The Project would have a nominal output of 1,000 MW, produced by four adjacent, identical, and independent 250-MW commercial solar thermal electric power units, each comprising a main solar field and a main power-generating facility (power block), and shared support facilities (Figure 2). Shared support facilities would include associated office and maintenance buildings, a parking lot, a laydown area, drainage channels, a bioremediation area, water treatment and storage facilities, leach fields, a transmission line, substation, and onsite access roads (Figure 2).

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 on a receiver tube located at the focal point of the parabola. A heat transfer fluid (HTF) is heated to 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.

All four power units would share a main office building, a main maintenance facility and laydown area, a 200-vehicle parking lot, onsite access roads, and two land treatment units for bioremediation or land farming HTF-contaminated soil. Unit 1 and Unit 2 would share water treatment systems and water storage tanks for dust control, and Unit 3 and Unit 4 would share an identical set of water treatment and storage facilities. A central internal switchyard to serve all four power units would be located just outside the southwest boundary of the solar field of Unit 4. 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).

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 power block would have its own HTF pumping and freeze protection system; solar steam generator; steam turbine generator; an 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 (see below for a description of the proposed transmission line).

Access to the BSPP site would be on a new road heading north from the frontage road along I-10. Only a small portion of the overall Project disturbance area (i.e., areas of anticipated

ground disturbance associated with the Project) would be paved, primarily the onsite access road, the service roads to the power blocks, and 6 acres of each of the 18-acre power blocks. The solar fields would remain unpaved and without a gravel surface to prevent mirror damage. The Project solar fields and support facilities perimeter would be secured with chain-link metal-fabric security fencing and controlled access gates.

The existing topographic conditions of the proposed BSPP facility show an average slope of approximately 1.25 percent toward the east on the west side of the facility and approximately 0.50 percent toward the southeast on the east side of the Project area (defined under “Project Area” below). The general stormwater flow pattern is from the higher elevations in the McCoy Mountains, located approximately 3 miles west of the Project area, to the lower elevations in McCoy Wash, located east of the Project area. Runoff from the mountains discharges into shallow moderately defined channels at the base of the mountains and passes through the Project area in a southeasterly direction and is intercepted off site by irrigation canals before reaching McCoy Wash. The development of the site would include intercepting the storm flows at the BSPP boundaries, channelizing and rerouting the flows into five channels along the north, southeast, south, west, and through the central portion of the site and then returning the flows to their sheet flow regime in the east and southeast portions of the Project area (Figure 2). 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. All of the drainage channels would be located outside of the facility's security fence. The drainage channels traversing the solar units would be located between and outside of the security fence associated with the solar units, with the inlets and outlets to the drainage channels remaining unfenced. The channels would be constructed with native material, and scour protection (i.e., riprap) 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. Channels would also collect onsite stormwater flows and direct them off site to the east and southeast. Maintenance of native vegetation on the channel banks would occur to reduce the hydraulic roughness and improve flood conveyance capacity, but to also maintain adequate cover to protect stream banks from erosion. Vegetation cover would be limited to less than 15 inches in height in rerouted channels. Channels would be designed to meet Riverside County requirements, as well as biological considerations such as wildlife movement, where feasible.

The Project also includes an electrical transmission system. The Project's gen-tie transmission line route (which terminates at the substation site), is approximately 7 miles long and extends south from the Project disturbance area identified in the Project's Application for Certification

(AFC) document (AECOM 2009a) to a point south of I-10, and then turns west to the substation site (Figure 2). The substation would be constructed immediately west of the southern end of the transmission line (Figure 2). Features associated with the 7-mile transmission line and a substation that would be impacted by construction activities include crossing structures, pole pads, crane pads, pull sites splice sites, spur roads, and an access road.

Thermal power plants require cooling, which historically has involved large quantities of cooling water. The BSPP would use ACCs in a process commonly referred to as “dry cooling,” which would dramatically reduce the amount of water needed by the facility. Water would be used for solar mirror washing, feedwater makeup, ancillary equipment heat rejection, dust suppression, firewater supply, and onsite domestic use. Total consumption for the facility is estimated at approximately 600 acre-feet per year (AFY) supplied by onsite groundwater wells. Sanitary wastewater would be collected for treatment in septic tanks and disposed of via leach fields.

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 would generally be done at night and would involve a water truck spraying treated water on the mirrors in a drive-by fashion. Solar mirror washing would use approximately 260 AFY. Rinsate from the washing operation would be 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. 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 has been completed, 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 electricity-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, regulations, or standards (LORS) thresholds for sensitive wildlife receptors.

Project construction is scheduled to begin in late 2010 on the first unit and continue for a total of 69 months. Project construction would require an average of about 600 employees, peaking at

approximately 1,000 workers in month 16 of construction. Commercial operation of the first completed Unit 1 would begin in mid-2013, with subsequent units coming online in 6- to 12-month intervals. The BSPP would occur within the following parcels:

- 818160012
- 818150003
- 818150005
- 818180015
- 818180012
- 818160004
- 818210006
- 821050010
- 818150006
- 818160006
- 818180018
- 818241019
- 818170001
- 818160002
- 818242026
- 818180021
- 818180013
- 879090031
- 821020021
- 818210001
- 818180010
- 818210014
- 818210005
- 818160011
- 818210007
- 818241021
- 821020008
- 818180003
- 818242027
- 821050001
- 818180009
- 818180008
- 821050011
- 818150002
- 818160014
- 818160007
- 818180014
- 879080020
- 818160009
- 818180011
- 818210002
- 818160008
- 818160010
- 818160013
- 818180020
- 821020011
- 879080025
- 879080021
- 818160003
- 818160005
- 818242025
- 879090032

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 7,076.6 acres, and a buffer area (1-mile buffer of nonlinear Project elements [e.g., solar fields, power block, etc.] and a 1,000-foot buffer of linear Project elements [i.e., transmission line]). The Project area is the equivalent of the Biological Resources Survey Area (BRSA) for the Project, as shown in Figure 1 of the revised Project Supplemental Biological Resources

Technical Report (AECOM 2009b). The Project area is also identical to the Action Area defined in the Draft Blythe 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 (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 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 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.
- 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 DTs.
 - 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 Habitat Management Area (WHMA), 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 Desert Wildlife Management Areas (DWMAs), 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 habitat mitigation, and restoration from authorized allowable uses.

5.3 California Desert Conservation Area Plan

Per Title 43 CFR Section 1610.5-3, BLM must manage the land within its jurisdiction in compliance with a Resource Management Plan. The entire Project area (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), excluding a 160-acre privately owned parcel in two locations within the Project area. 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 acres 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 on BLM lands within 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 BSPP Applicant may be eligible to participate in this program.

6. COVERED SPECIES

Coverage for incidental take of 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 Colorado Desert recovery unit but does not overlap with DT critical habitat (USFWS 2008) or with any DWMA (BLM 2002). The southern portion of this recovery unit, previously delineated as the Eastern Colorado Desert recovery unit (USFWS 1994a) in which the Project area occurs, 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). Critical habitat within this recovery unit has been described as being in excellent condition despite declines over the past several decades; disturbance was estimated at less than 1.3 percent throughout (USFWS 2005). The highest DT densities within this recovery unit occur in Chemehuevi and Ward valleys (approximately 60 miles north of the BSPP), on the Chuckwalla Bench within the Chuckwalla DWMA (approximately 35 miles southwest of the BSPP), and in Joshua Tree National Park (approximately 90 miles northwest of the BSPP). DT densities at the Chuckwalla Bench in 1992 were estimated between 22 and 49 adults per square kilometer (approximately 57–127 adults per square mile) but have shown declining trends (Tracy et al. 2004; Berry 1997).

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; California Native Diversity Database (CNDDDB) records show DT occurrences surrounding (but not within) the Project area (Figure 3). The nearest documented DT based on the CNDDDB occurs approximately 0.2 mile from the Project area (CDFG 2009). CNDDDB record data are largely incomplete and likely do not provide an accurate depiction of the actual population size and distribution within the area but can provide some insight into the distribution of DT. The next closest DT observation occurs approximately 35 miles to the west of the Project area, south of the study area for the proposed Palen Solar Power Project (proposed by the same Applicant as for the BSPP).

As a result of Project-related DT surveys conducted during 2009 (see more detailed discussion below), three DTs were detected along the western side of the Project area. Numerous additional DT sign was detected throughout the Project area and concentrated primarily within the western half of the Project disturbance area north of I-10. Additionally, it was determined that 7,075.8 acres of suitable habitat for DT occur within the Project disturbance area; habitat occurring on

the eastern side of the Project disturbance area and south of I-10 was characterized as low quality for DT (3,342.6 acres), and habitat on the west side was characterized as moderate quality for DT (3,733.3 acres).

A DT habitat assessment was conducted for the entire Project area on February 15 and 16, 2009, and on October 7, 2009, by Project biologists Arthur Davenport, Shelly Dayman, Charles German, Katie Hall, Gregg Lukasek, and Milo Rivera (AECOM 2009b, 2009d). It was determined that the majority of the Project disturbance area and buffer contains suitable habitat for DT, with the exception of agriculture and developed land (Figures 4 and 5). A total of 7,075.8 acres of the Project disturbance area are suitable for DT. Habitat is of moderate quality for DT on the western side of the Project area and is of low quality for DT on the east side and along the transmission line corridor south of I-10. Variations in habitat quality within the Project area are primarily a result of greater water availability associated with mountainous areas and large drainages west of the Project area. The drainages that flow from the mountains to the west provide areas of relatively higher productivity of forage for DT in the western portion of the Project area. Additional factors that contribute to lower quality habitat for DT on the eastern (lower elevation) side of the Project disturbance area include constraints to movement in the east and southeast due to residential, commercial (airport), and agricultural use, and the I-10 freeway to the south. Higher quality DT habitat also occurs in the northeast near McCoy Wash (a drainage associated with mountainous areas to the north), primarily outside of the Project disturbance area, where water availability and forage productivity increase.

Protocol surveys to determine DT presence/absence in the Project area were conducted between March 11 and June 4, and on October 23 and 24, 2009, by Project biologists Rocky Brown, Robert Conohan, Scott Cameron, Arthur Davenport, Shelly Dayman, Kim Duncan, Elias Elias, Andrew Fisher, Andrew Forde, Michael Gallagher, Charles German, Katie Hall, James Huelsman, James Jennings, Matt Kedziora, Ed LaRue, Gregg Lukasek, James Luttrell, Milo Rivera, Ellen Schafhauser, Patricia Seamount, Nicole Stephens, Brent Vickers, and Rob Wolfson (AECOM 2009b, 2009d). DT protocol surveys (100 percent coverage surveys) were conducted throughout the entire Project disturbance area, including the proposed transmission line corridor, including the substation (Figure 4). DT protocol surveys were conducted according to the 1992 USFWS protocol with the exception of the zone of influence surveys (ZOI)¹. 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

¹ 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 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 the USFWS, CDFG, and BLM.

survey period. Therefore, Project-related surveys that were conducted on October 23 and 24 met 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 (CEC) Commission 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 disturbance area (excluding the transmission line) and at 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.

Three DTs were observed in the Project area during Project surveys in 2009; one was located in the southwest corner of the Project disturbance area (adult male) and two were along the west side of Project area within the buffer (Figure 3). No active burrow was noted to be associated with the DT detected in the Project disturbance area. The two DTs observed in the buffer were each observed in association with caliche burrows, comprising two occupied burrow records (Figure 3).

Additionally, numerous observations of DT sign were recorded in the Project area during surveys conducted in 2009; sign indicating recent use by DT was primarily concentrated in the western portions of the Project area (Figure 3). A total of 81 burrows were detected in the Project area, of which eight were active (showing sign of recent use) and an additional two were occupied (see above). All eight active burrows were detected on the west side of the Project area, six of which were located in the Project disturbance area on the west side (Figure 3). Additionally 151 pallets or shallow depressions under low shrubs were detected in the Project area (five of which were active [class 1 or 2]; one in the buffer and four in the Project disturbance area); all five active pallets were observed on the west side of the Project area. Remaining sign observed in the Project area included 49 observations of scat (11 observations were fresh and occurred on the west side of the Project area; 10 of these occurred in the Project disturbance area), 32 carcasses, and 366 observations of bone fragments (many of which may have been washed down drainages from the west side of the Project area). The presence of only carcasses in some portions of the Project area may indicate recent die-offs of DT (Tracy et al. 2004). However, this is unlikely to be the case for the entire BSPP Project area because of the numerous observations of recent DT scat and active burrows, particularly on the west side of the Project disturbance area and buffer, suggesting that there may be more live DTs using this area than were observed.

The concentration of DT sign in the western portion of the Project area is consistent with the assessment of generally higher quality habitat for DT on the west side of the Project area (due to the proximity to mountains and greater availability of water and forage associated with related

drainages). The lack of recent DT sign on the east side of the Project area and along the transmission line corridor south of I-10 is consistent with the assessment of low-quality habitat for DT in these areas and suggests that DT has a lower probability of occurrence there. Detections on the east side consisted primarily of disarticulated and scattered bone fragments that may have washed east along drainages from carcasses originating in the west. Despite the low-quality habitat and low potential for DT use of the eastern portion of the Project area and transmission line corridor, it should be noted that all portions of the Project area may be important for dispersal, with the western areas and northeastern areas within the buffer near McCoy Wash potentially being used more frequently by DT than the eastern areas. DTs are known to use low-quality intermountain habitat, such as that present on the east side 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).

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 one DT was 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, or any recent DT sign, were detected on the east side of the Project area during protocol surveys, DTs most likely occur at a very low abundance and density within this area. Only three DTs were detected on the west side of the Project area; however, an abundance of recent DT sign was additionally observed throughout this portion of the Project area. Therefore, DT abundance and density on the west side of the Project area are low, but probably slightly greater than in the east. The west side of the Project area is also located closer to the neighboring mountains, is of higher quality for DT (e.g., contains higher forage productivity), and would be expected to support a greater number of DT than the east side of the Project area.

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

Two of the four solar fields associated with the BSPP would occupy approximately 1,600 acres each, while the other two would occupy 1,200 acres each. The total area occupied by facility footprint (i.e., area within the fence line, including the solar fields, office and maintenance

buildings, laydown area, drainage channels, bioremediation area, leach fields) is approximately 5,952 acres.

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.

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).

The proposed drainage modifications to the Project site seek to replicate as nearly as possible the existing flow patterns for the drainages as they exit the site. For this reason, five channels have been proposed adjacent to, through, or across the site: a north, southeast, central, south, and west channel. 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 following portions of the drainage channels would be located outside of the facility's security fence: the entire north channel, including the end diffuser; the entire south channel; and the portions of the west channel located west of the northwest power unit (Unit 2) and southwest power unit (Unit 3). The portions of the drainage channels that would be located inside of the security fence include the entire central channel, except for a small portion immediately before the junction with the north channel; the entire southeast channel; and portions of the west channel traversing Unit 3, south of the southeast power unit (Unit 4), and the area between Unit 3 and Unit 4.

The channels would be constructed with native material, and scour protection (i.e., riprap) 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

Eight 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 (175.3 acres), unvegetated ephemeral dry wash (7.5 acres), creosote bush–big galleta grass (367.4 acres), stabilized and partially stabilized desert dunes (37.1 acres), and Sonoran creosote bush scrub (6,488.4 acres) within the Project disturbance area is suitable for DT (7,076 acres total 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 7,076 acres of suitable DT habitat that would be lost as a result of the Project, 3,342.6 acres are of low quality and 3,733.3 acres are of moderate quality for DT (see Section 6.1, Mojave Desert Tortoise, above).

Table 1
Vegetation Communities and Cover Types (in Acres)¹

Vegetation Communities and Other Cover Types	Project Disturbance Area	Buffer	Project Area
Riparian			
Desert Dry Wash Woodland	175.3	554.9	730.2
Unvegetated Ephemeral Dry Wash	7.5	1.3	8.8
Creosote Bush– Big Galleta Grass	367.4	42.1	409.6
<i>Subtotal Riparian</i>	<i>550.3</i>	<i>598.3</i>	<i>1,148.6</i>
Upland			
Stabilized and Partially Stabilized Desert Dunes	37.1	649.8	686.9
Sonoran Creosote Bush Scrub	6,488.4	13,249.9	19,738.4
<i>Subtotal Upland</i>	<i>6,525.6</i>	<i>13,899.7</i>	<i>20,425.2</i>
Other Cover Types			
Agriculture	0.8	1,621.6	1,622.3
Developed	0.0	147.3	147.3
Disturbed Habitat	0.0	16.2	16.2
<i>Subtotal Other Cover Types</i>	<i>0.8</i>	<i>1,785.0</i>	<i>1,785.8</i>
Total Acres	7,076.6	16,282.9	23,359.6

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

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.

7.3.1 Construction Impacts

Project implementation would result in direct permanent impacts to 7,075.8 acres of suitable DT habitat as a result of construction grading and vegetation removal in the Project disturbance area; this includes 3,733.3 acres on the west side that are of moderate quality for DT and 3,342.6 acres on the east side and south of I-10 that are of low quality for DT. A single adult male DT was observed on the west side of the Project disturbance area and would be directly affected by Project construction. No active burrow was noted to be associated with this DT during this observation; however, six active burrows are known to occur in the western portion of the Project disturbance area. These DT burrows and associated foraging habitat for the single male DT would be directly impacted by construction activities.

The Project may adversely impact local movement and reduce habitat connectivity for DT. Although DT is not a migratory species, opportunities for local movements within their home ranges and juvenile dispersal are important for maintaining viable populations. These impacts would result from construction of the perimeter security fence and DT exclusion fence that would surround the Project facility. The fence would create a permanent barrier and generally prevent movement across the site by DT. The five rerouted channels located between and around the solar fields would be fenced off from the solar fields but would remain open at the ends, thereby leaving a 150-foot-wide corridor 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 channels passing through the Project site, could create a movement trap for DT. 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, DT could potentially get trapped and/or lost in the central channels and could end up dying because of the lack of resources (i.e., vegetation) within the channel and the long distance needed to travel along the channels to pass through the Project site. To ensure that no DTs perish in the central channels as a result of the above-mentioned effects, a permanent DT-proof fence, or similar structure sufficient to exclude DTs from rerouted channels passing through the Project site, would be

installed across the inflow and outflow points of the respective channels to keep DT from entering (see Section 10, “Conservation Measures and Mitigation,” below).

Impacts to DT in the context of impacting local 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. Areas suitable for DT, but that are low density or occasionally not occupied, can be important for DT, as this species is likely distributed in metapopulations (Tracy et al. 2004). Metapopulations are groups within a population that are typically confined to specific regions as a result of resource availability. If a metapopulation becomes fragmented it may no longer be sustainable because individuals are not exchanged between metapopulations. The mountains on the western side of the Project area within the buffer and just outside the buffer probably have significantly more DTs present than observed within the Project disturbance area (e.g., two DTs were observed during Project surveys in this portion of the buffer). DTs are likely present more frequently in the montane areas within this region due to the Sonoran climatic influence. The development of intervening valleys could preclude the natural dispersal of DTs between these montane populations. Habitat connectivity would be reduced because the large Project disturbance area would contribute to fragmentation of the surrounding large and contiguous desert landscape. DT home ranges are small (25–200 acres) relative to the 7,076.6-acre Project disturbance area, and Project construction there may increase the number of DT generations it takes for individuals to disperse (i.e., reduce rates of dispersal) across the valley floor between areas of higher quality habitat to the west and to the northeast of the Project area.

Temporary direct impacts to DTs 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 in the western portion of the Project area. 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. However, development of new elevated perching sites as a result of Project construction could increase raven numbers locally, which, in turn, could result in increased predation on DTs in the vicinity of the Project

disturbance area. Additionally, garbage from increased human presence associated with the BSPP would attract common ravens. However, daily trash removal and potential use of perch-deterrent devices would occur as a result of proposed biological resource protection measures (see “Conservation Measures and Mitigation,” below) and would reduce the potential for these indirect impacts to occur. These potential impacts are expected to be greater in areas of higher quality DT habitat, such as in the western portion of the Project area (three adult DTs were observed there 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, or from increased incidence of accidental wildfires (potentially caused by construction or downed new transmission wires, but 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 during heavy rain events and flooding downstream of the Project disturbance area would potentially impact existing DT burrows in the Project area. Additionally, increased road used to the construction site may increase the potential of vehicles crushing DT.

Construction of the BSPP 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 take of DT during Project operation and maintenance activities could occur from mortality of individuals by crushing or vehicle collisions. Operation and maintenance of the Project would not result in any additional direct impacts to DT movement already described in “Construction Impacts” above.

Operation of the Project may also result in permanent, indirect impacts to DT including edge effects, where 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 could occur as a result of Project operations and would damage adjacent habitat and could harm individuals inhabiting adjacent areas. Operation of the

Project would not result in any additional indirect impacts to DT movement already described in “Construction Impacts” above.

8. IMPACTS OF PROPOSED TAKE

Construction, operations, and maintenance of Project facilities could 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, which would also constitute take. Based on the overall low density of DT in the Project area, and few DTs located within the large Project disturbance area during protocol surveys conducted in 2009, the level of potential take as a result of mortality or injury is not expected to be high. The proposed Project would result in the loss of 7,075.8 acres of suitable DT habitat, including 3,733.3 and 3,342.6 acres of moderate- and low-quality habitat, respectively. As previously discussed, habitat is generally of higher quality for DT in the western portion of the Project area (moderate quality) than in the east or along the transmission line corridor (both areas are low quality).

Take that could result from direct mortality or injury during construction would be minimized by implementation of the measures described 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 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) 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 BSPP 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 (ITP) for the proposed Project would not jeopardize the continued existence of DT. The density of DT in the Project area is low, 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
 - 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 Best Management Practices (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 7,075.8 acres of suitable DT habitat, including 3,733.3 acres of moderate-quality and 3,342.6 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 under “Conservation Measures and Mitigation” below). 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 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 authorized actions “are not likely to reduce appreciably, either directly or indirectly, the 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 BSPP AFC document (AECOM 2009a) submitted to CEC includes 60 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 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 are necessary to

address specific impacts of the BSPP to DT. Revisions were made to three AFC measures (BIO-21, BIO-22, and BIO-37). Two measures have been added (BIO-61 and BIO-62) 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 follow those presented in the BSPP 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.
- 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 the 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, 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 on site 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 DESCP (equivalent to a SWPPP but covering both construction and operation phases) is provided as Appendix F to the AFC. The DESCP 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 BSPP.

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- 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 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 off site 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.

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- 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 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 the CEC, BLM, CDFG, USFWS, and the California Invasive Plant Council. These measures collectively form the Weed Management Plan for the BSPP.

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- BIO-15 In addition to the avoidance and minimization measures outlined in this chapter, the Project proponent shall implement any measures required by the 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-61 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.

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 (http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/) assigns a single designation for biologists who can be approved to handle tortoises:

“Authorized Biologist” (AB). Such biologists have demonstrated to USFWS that they possess sufficient desert tortoise 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. 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 shall 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 rerouted channels traversing the site, a permanent DT-proof fence, or similar structure sufficient to exclude DTs, shall be installed across the inflow and outflow points of these channels, 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 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 the 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 shall 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.
- 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 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-49 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-50 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 BSPP 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-51 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 BSPP 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-52 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 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-53 All vehicles passing or turning around shall do so within the planned impact area (i.e., Project disturbance area).

BIO-54 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-55 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.

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- BIO-56 A SWPPP and a DESCP shall be prepared to comply with RWQCB and CEC requirements; a preliminary DESCP (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 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-57 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-58 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-59 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-60 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-62 All DT-proof fencing, or other similar structures intended to exclude DT (e.g., around the facility, at the inflow and outflow points of rerouted channels that traverse the site) shall be inspected monthly and during all major rainfall events, or more often if necessary. Damage to the fencing, or similar structure, shall be repaired immediately (same day) 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 chapter 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 7,075.8 acres of suitable DT habitat, including 3,733.3 acres of moderate quality 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 BSPP. 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 onsite habitats that would be affected by the Project and ratios that have been negotiated on similar projects.

- *Moderate- to high-quality habitat.* For acres of moderate-quality habitat impacted (3,733.3 acres), mitigation shall be at 1 acre compensation for each 1 acre impacted (i.e., 1:1 ratio).
- *Low-quality habitat.* For acres of low-quality habitat impacted (3,342.6 acres), mitigation would be at 0.5 acre compensation for each 1 acre impacted (i.e., 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 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 BSPP 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.

Measures for the management and enhancement of DT habitat shall 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;

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- 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 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),

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- 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 BSPP 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.
- 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

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- 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 the CEC for review as a Condition of Certification. The MMMP shall comprehensively describe avoidance and minimization measures and provides 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, 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 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, Palo Verde Solar I, LLC, would 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, Palo Verde Solar I, LLC, would 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 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 its duties and obligations as set forth above only if the Applicant secures its 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 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 has 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 is 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.

Josef Eichhammer, COO
Palo Verde Solar I, LLC

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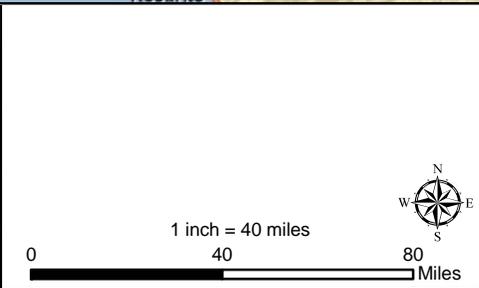
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ATTACHMENT 1

FIGURES



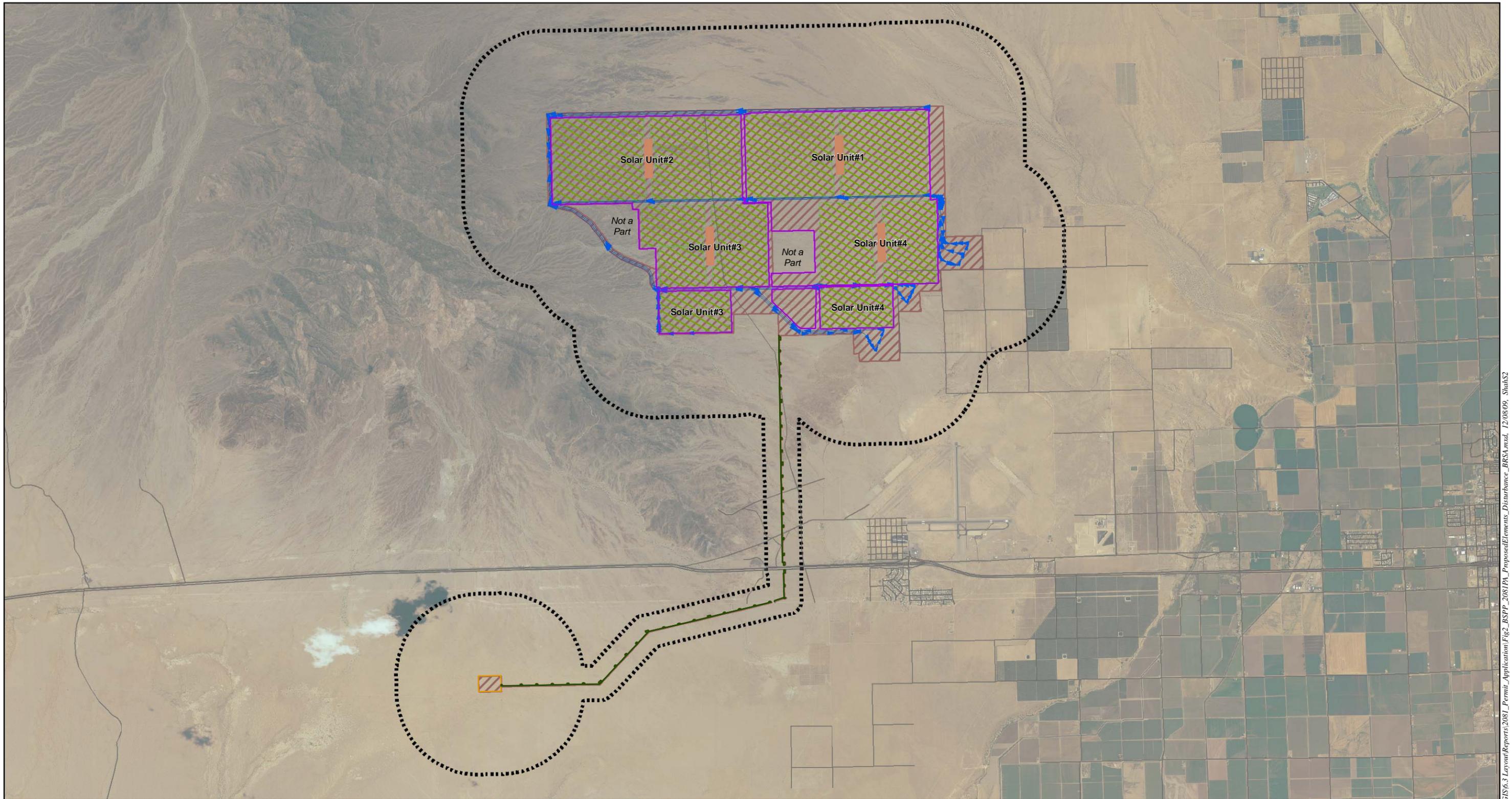
**Blythe Solar Power Project
CESA 2081 Permit
Application**

**Figure 1
Regional Map**

Source: ESRI; AECOM 2009

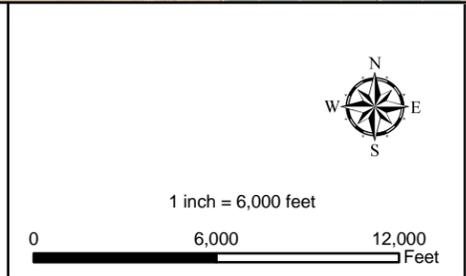


Date: December 2009



Legend		Proposed Project Elements	
	Project Area		Perimeter Security Fence
	Project Disturbance Area		Power Block
	Paved Roads		Transmission Line
	Solar Unit		Substation
	Rerouted Drainages		

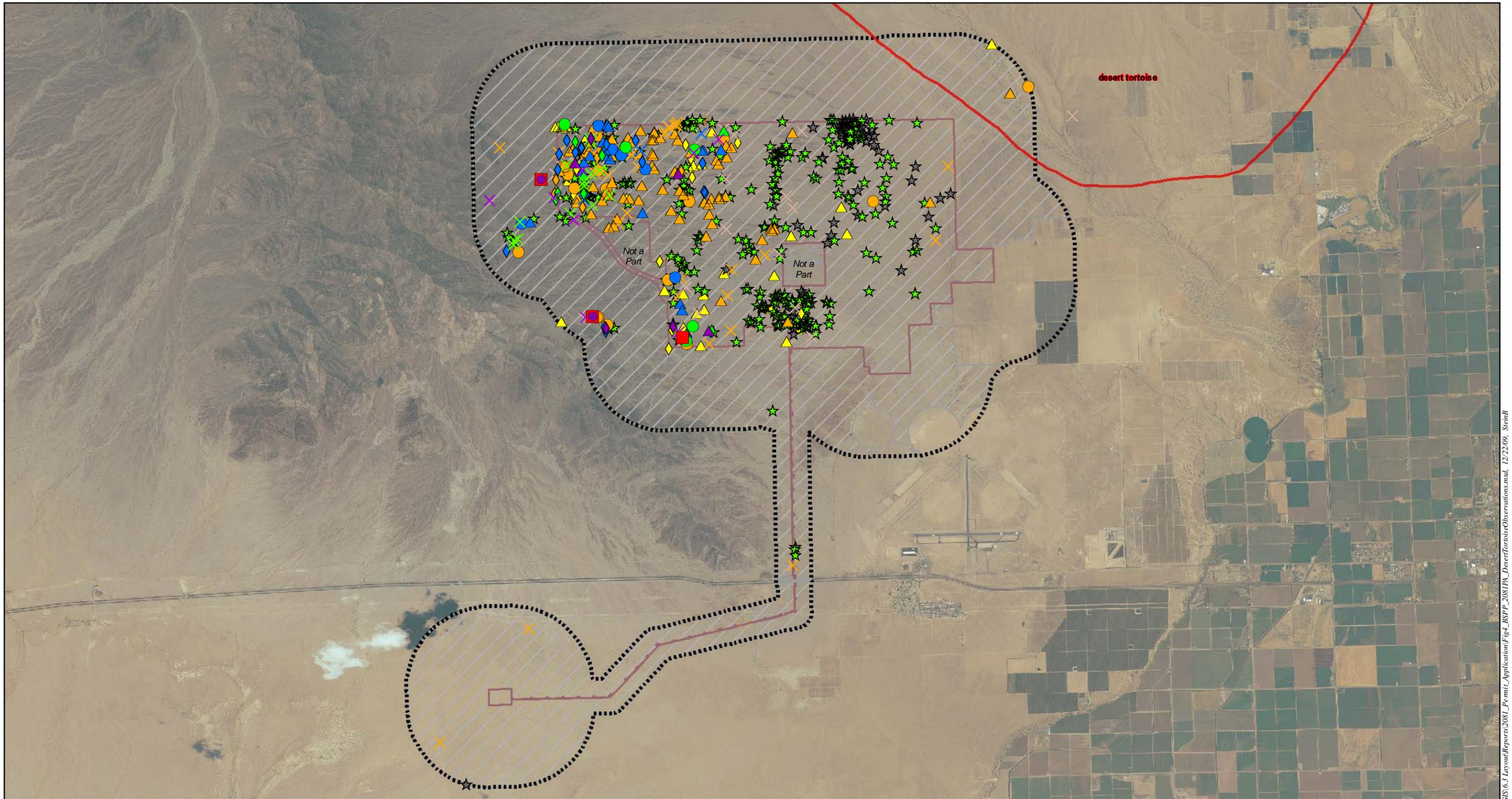
Source: NAIP 2005; AECOM 2009



Blythe Solar Power Project
CESA 2081 Permit Application

Figure 2
Proposed Project Elements
and Project Area

Date: December 2009



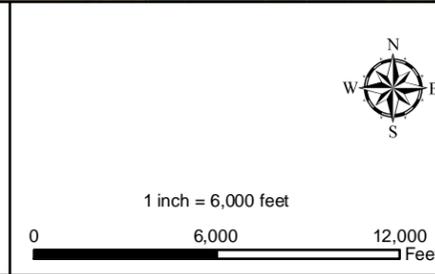
Legend

- Project Area
- Project Disturbance Area
- Desert Tortoise Suitable Habitat
- CNDDB Species Inventory**
- Specific Bounded Area

Source: NAIP 2005; AECOM 2009; CNDDB 2009

Desert Tortoise Observations

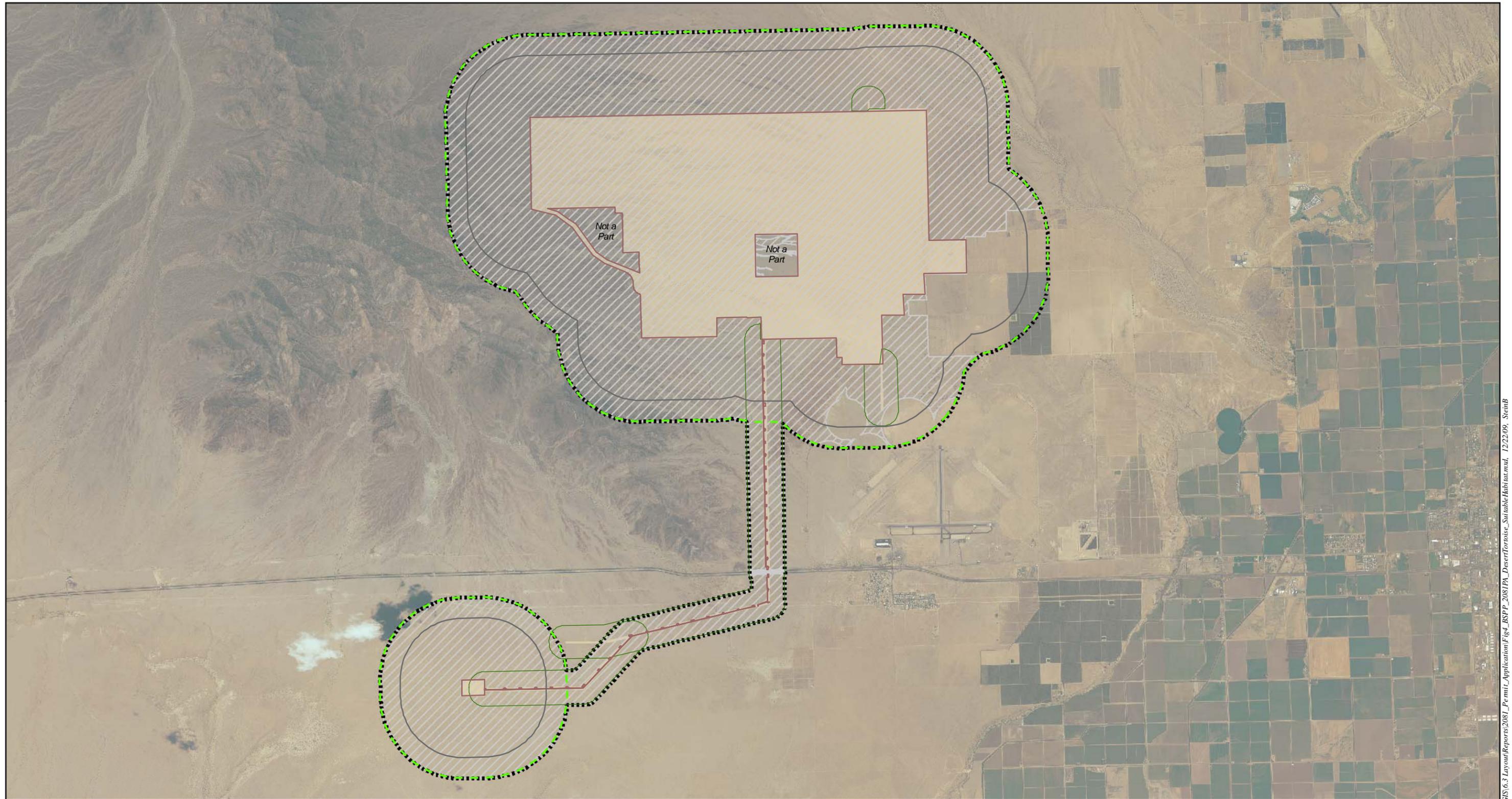
Tortoise	Burrow - Class 3	Pallet - Class 1	Scat - Class 3
Burrow - Occupied	Burrow - Class 4	Pallet - Class 2	Scat - Class 4
Bone Fragments - Class 5	Burrow - Class 5	Pallet - Class 3	Scat - Class 5
Bone Fragments - Class 5, Mineralized	Carcass - Class 2	Pallet - Class 4	Tracks
Burrow - Class 1	Carcass - Class 3	Pallet - Class 5	
Burrow - Class 2	Carcass - Class 4	Scat - Class 1	
	Drinking Depression	Scat - Class 2	



**Blythe 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

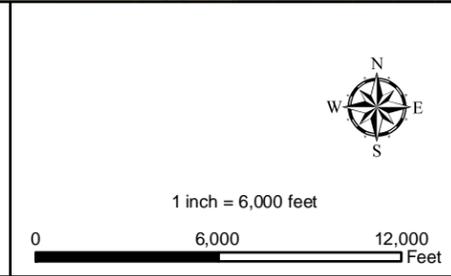
Desert Tortoise Survey Area

- 100% Coverage Survey Area

CEC Buffer Transects

- 1-mile Transect
- 0.75-mile Transect
- 1,000-foot Transect

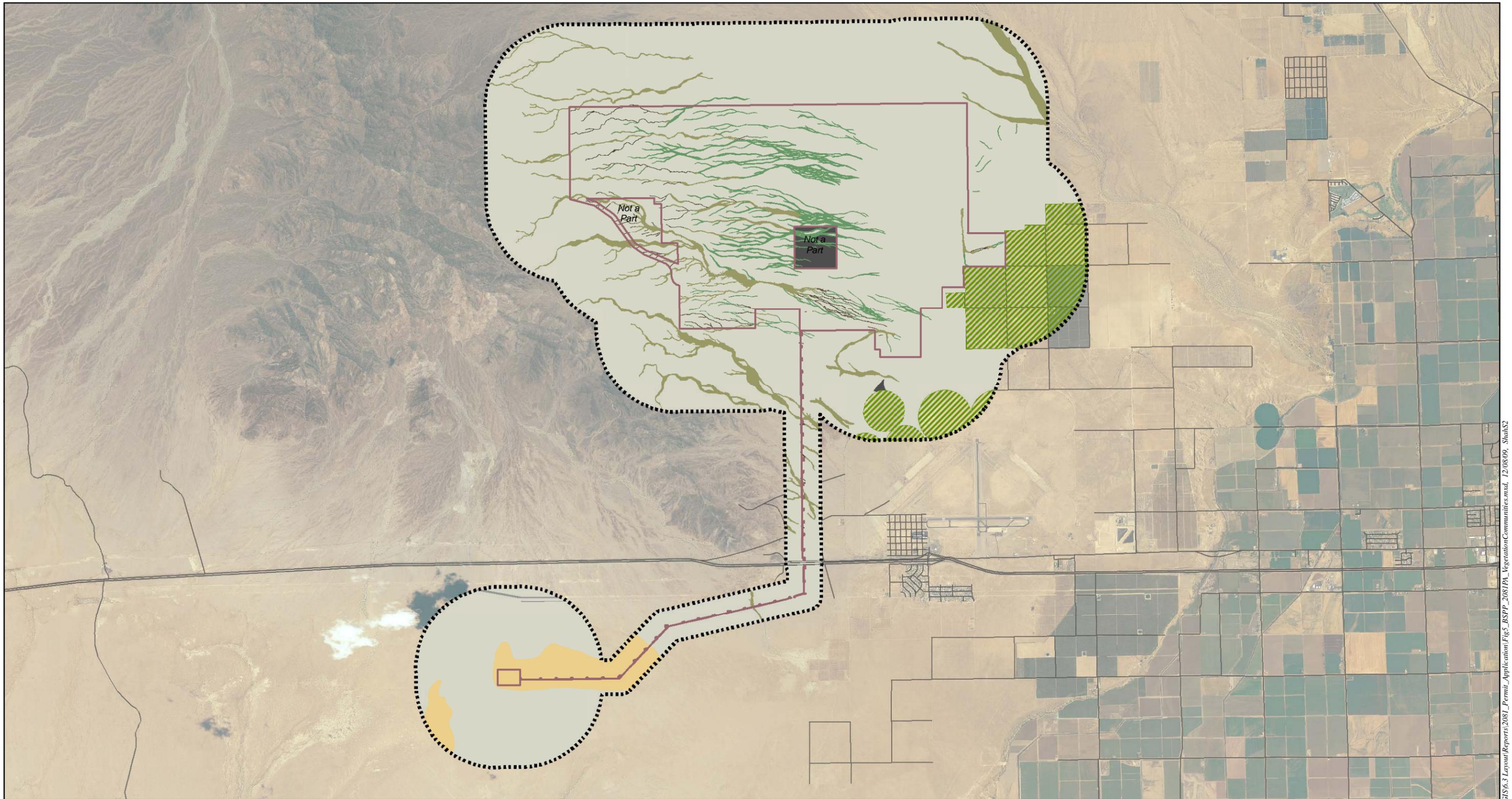
Source: NAIP 2005; AECOM 2009



**Blythe 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
- Paved Roads

Vegetation Communities

Riparian

- Creosote Bush - Big Galleta Association
- Desert Dry Wash Woodland
- Unvegetated Ephemeral Dry Wash

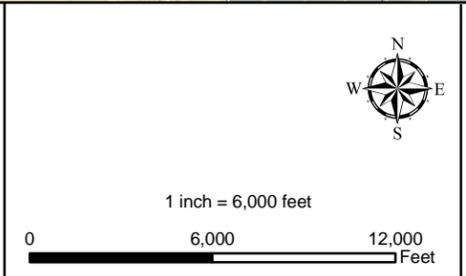
Upland

- Sonoran Creosote Bush Scrub
- Stabilized and Partially Stabilized Desert Dunes

Other

- Agriculture (Active and Fallow)
- Disturbed
- Developed

Source: NAIP 2005; AECOM 2009



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

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

Date: December 2009

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



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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
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- 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
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SUMMARY

AECOM performed biological resources studies for Palo Verde Solar I, LLC, who is the Applicant for the proposed Blythe Solar Power Project (Project or BSPP). This report is a revised version of the August 2009 report with the same title. Subsequent to the preparation of the initial report and Application for Certification (AFC) in August (AECOM 2009), the Project transmission line route and substation were established. During spring 2009 surveys, a portion of the transmission line and buffer had been surveyed, but the remainder of the transmission line and the entirety of the substation had not yet been surveyed. The results of the desert tortoise (*Gopherus agassizii*; DT) biological surveys within the previously unsurveyed areas are included herein.

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 Grant. The BSPP will be a 1,000-megawatt (MW) nominal solar thermal electricity-generating facility using parabolic trough technology. The Project would be located in the southern California inland desert, approximately 1 mile northwest of the Blythe Airport, in Riverside County, California (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 7,076.6-acre Project disturbance area (Figure 2). The acreage of the Project disturbance area has changed as a result of the addition of the transmission line disturbance areas (50.2 acres).

As a component of the needed biological resources work, presence/absence surveys for the Federal and State-endangered DT within the AFC disturbance area were conducted in spring, as reported here and in the original August 2009 report, and fall 2009 as added to this report. The fall 2009 surveys were conducted within the added areas of the transmission line disturbance area as well as within the buffers associated with this feature.

PROJECT DESCRIPTION

Palo Verde Solar I, LLC (the Applicant) is proposing to construct the BSPP, a 1,000-MW commercial solar thermal power-generating facility. The BSPP would be located in the southern California inland desert, approximately 7 miles west of the City of Blythe, the majority of which would be located approximately 0.5 mile north of the Interstate 10 (I-10) corridor in Riverside County, California. The Project would be located on a 9,405-acre right-of-way (ROW) owned by the Federal government and administered by BLM. Use of the Federal land would involve

issuance of a ROW grant to the Applicant by BLM. The Project facilities themselves would occupy approximately 5,950 acres of the ROW (referred to as the facility footprint). 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 on a receiver tube located at the focal point of the parabola. A heat transfer fluid (HTF) is heated to 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 1,000 MW, consisting of four identical and independent 250-MW power plants (Units #1 and #2). The units would be developed in phases, with construction scheduled to begin in late 2010 on the first unit; that unit would come on line in mid-2013 and subsequent units would come on line in each of the following 3 years.

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 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 require a new transmission line, which is in a preliminary design stage.

Access to the BSPP would be on a new road heading north from the frontage road along Interstate 10 (I-10). Only a small portion of the overall facility footprint would be paved, primarily the site access road, the service roads to the power blocks, and 6 acres of each of the 18-acre power blocks. The solar fields would remain unpaved and without a gravel surface in order to prevent mirror damage. The Project solar fields and support facilities perimeter would be secured with chain-link metal-fabric security fencing and controlled access gates.

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 the majority of the disturbance area and 1,000-foot buffer associated with

transmission line features, where focused DT surveys occurred in spring 2009. Also included in the spring 2009 survey area was an additional 180 acres that was removed from the AFC disturbance area.

- Fall 2009 survey area (surveys): This includes the additional disturbance area and 1,000-foot buffer associated with 2.1 miles of transmission line, and the substation disturbance area and associated 0.75-mile and 1-mile buffers where reconnaissance 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 construction of the 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 7-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 BSPP 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.

Following completion of spring 2009 surveys, several changes were made to the AFC disturbance area limits. First, the location of a transmission line and substation were identified (Figure 2). The final transmission line disturbance area was selected after submittal of the AFC. During spring 2009 surveys, a portion of the transmission line and buffer had been surveyed for DT (for approximately 5.7 miles of the final 7-mile transmission line). In the fall of 2009, the remainder of the transmission line disturbance area (and associated buffers) was assessed for habitat and focused DT surveys were conducted. The transmission line disturbance area totals approximately 50.2 acres.

Also, after spring 2009 surveys were completed, several portions of the disturbance area, totaling approximately 180 acres, were removed from the proposed Project and were therefore no longer a part of the disturbance area (Figure 2). Included in the 180 acres was the transmission line mentioned above that was subsequently reintroduced into the Project disturbance area. The 180 acres were never included in the AFC disturbance acreage calculation. However, since these

additional areas were included in spring 2009 surveys, results from within these areas 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 7,077-acre Project disturbance area. The BSPP site is nearly completely vacant and undisturbed and is entirely owned by BLM. There are no existing structures that would need to be demolished.

During World War II, the site was part of the General George S. Patton Desert Training Center, officially the California-Arizona Maneuver Area (DTC-CAMA), a simulated theater of operations. The site area was heavily used by tanks and other military vehicles.

The proposed BSPP is located in the Palo Verde Mesa east of the McCoy Mountains in eastern Riverside County, California, approximately 8 miles west of Blythe, California, and approximately 1 mile northwest of the Blythe Airport. Elevation ranges from approximately 670 feet above sea level at the southwestern limits to a low of about 420 feet above sea level near the southeastern side boundary (USGS 1983). The existing topographic conditions of the proposed Project disturbance area show an average slope of approximately 1.25 percent toward the east on the west side of the Project disturbance area and approximately 0.50 percent toward the southeast on the east side of the Project disturbance area. The general storm water flow pattern is from the higher elevations in the McCoy Mountains, located approximately 3 miles west of the site, to the lower elevations in McCoy Wash, located east of the site. Runoff from the mountains discharges into shallow moderately defined channels at the base of the mountains and passes through the Project disturbance area in a southeasterly direction and is intercepted off site by irrigation canals before reaching McCoy Wash.

Six vegetation communities and other cover types were identified within the BRSA during the surveys, including upland, riparian, and other cover types (Figure 3). These vegetation communities are dry desert wash woodland, unvegetated ephemeral dry wash, Sonoran creosote bush scrub, agricultural land, stabilized and partially stabilized desert dunes, and developed areas. The majority of the BRSA is composed of Sonoran creosote bush scrub. Plants indicative of desert dry wash woodlands follow the drainages that flow from west to east. Agricultural areas exist in the buffer area and consist of palm tree cultivation and fallow fields. The stabilized and partially stabilized desert dunes were only observed in the additional areas associated with the transmission line disturbance areas (fall 2009 survey area). Vegetation communities are based on

a classification system by R. Holland (1986). When appropriate, vegetation classification by J.O. Sawyer and T. Keeler-Wolf (1995) are also considered.

SPECIES BACKGROUND INFORMATION

The DT is listed as threatened under the Federal Endangered Species Act (ESA), with critical habitat 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 (CESA) on June 22, 1989 (CFGC 1989). No Federal designated critical habitat for the DT occurs 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.

DT home range varies with locality, year, resource availability, and social interactions (Berry 1986; O'Connor et al. 1994). Male DT home range (0.04–0.31 square mile) is estimated to be twice the size of 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 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 survey area 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 23,359.6-acre survey area (formerly 18,998 acres in the AFC), consisting of the Project disturbance area plus the buffer, is referred to as the BRSA.

A portion of the transmission line disturbance area, including the entire substation disturbance area, was added to the Project after the completion of spring 2009 surveys. During spring 2009 surveys, the AFC disturbance area was surveyed, but this survey did not include these areas. The spring and fall survey areas are displayed in Figure 4. A habitat assessment and focused DT surveys were performed in the additional portion of the transmission line disturbance area, including the substation disturbance 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, Charles German, Katie Hall, Gregg Lukasek, and Milo Rivera conducted wildlife species habitat assessments on February 15 and 16, 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 should be assessed. In fall 2009, a similar habitat assessment was conducted for the additional survey areas, including the addition to the transmission line and the new substation disturbance area. The habitat assessment was conducted by Shelly Dayman on October 7, 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 1,000-foot intervals 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 11 and June 4, 2009. Project biologists included Scott Cameron, Arthur Davenport, Shelly Dayman, Kim Duncan, Elias Elias, Andrew Forde, Michael Gallagher, Charles German, Katie Hall, James Huelsman, James Jennings, Ed LaRue, Gregg Lukasek, James Luttrell, Milo Rivera, Ellen Schafhauser, Patricia Seamount, Nicole Stephens, Brent Vickers, and Rob Wolfson.

Fall 2009 surveys also 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. Within the transmission line, 100 percent coverage surveys were completed, and within the buffer, the 1,000-foot buffer transect was surveyed. Within the substation disturbance area, 100 percent coverage surveys were completed and the 0.75- and 1-mile transects were surveyed within the buffer of the substation (Figure 4). Surveys were completed prior to the end of October to comply with survey season guidelines published in *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 surveys were conducted on October 23 and 24, 2009, by project biologists Rocky Brown, Robert Conohan, Shelly Dayman, Andrew Fisher, Charles German, Matt Kedziora, Erik LaCoste, and James McMorran.

The BSPP disturbance area was surveyed according to protocol by spacing transects 32.8 feet apart along north-to-south-oriented transects or along transects parallel to the disturbance area. The survey was conducted by slowly and 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 a Global Positioning System (GPS) unit. 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 were 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 (whether or not the scat was wet; if it had obvious odor or was odorless; if it was glazed or had no glaze; if it was dark brown, light brown, or bleached; if the scats were 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 the bones had begun to mineralize, since mineralization was observed on DT bones within this BRSA. Bones were assessed to determine whether they were becoming chalky as part of the aging process or if it appeared that the bone was being replaced by minerals and was therefore becoming more rock-like. Several bones showing mineralization were shown to paleontological crew members, and it was confirmed that some of the DT bones within the BRSA had begun to mineralize. 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. The action area for the BSPP is equivalent to the Project disturbance area. The total number of DTs observed within the Project

disturbance area was one; 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, 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, precipitation during the monsoon season was less than would be expected based on the historical average. Similarly, 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, 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 may still be present.

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 drafted. During the spring 2009 habitat assessment, 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 spring 2009 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, or BLM Sensitive

- Ferruginous hawk (*Buteo regalis*) – CDFG Watch List (WL), BLM Sensitive, Northern and Eastern Colorado Desert Coordinated Management Plan (NECO); however, wintering only on site
- 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
- Yellow warbler (*Dendroica petechia sonorana*) – CDFG SSC, NECO; however, only migratory on site
- American badger (*Taxidea taxus*) – CDFG SSC
- Desert kit fox (*Vulpes macrotis arsipus*) – State Protected Furbearing Mammal (PFM) (per California Code of Regulations [CCR] 460)
- Nelson's bighorn sheep (*Ovis canadensis nelsoni*) – BLM Sensitive, NECO
- Pallid bat (*Antrozous pallidus*) – CDFG SSC, BLM Sensitive, NECO

In addition to the above species list, during the fall 2009 habitat assessment, one additional species was determined to have potential to be present within the BRSA:

- Mojave fringe-toed lizard (*Uma scoparia*) – CDFG SSC, BLM Sensitive

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 both the spring 2009 and fall 2009 survey areas for DT is mapped in Figure 4. Within the Project disturbance area, 7,075.8 acres is considered suitable for DT. Approximately 3,733.3 acres of this acreage is moderate quality DT habitat (for this area) and 3,342.6 acres is low quality DT habitat.

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 observed on the east side of the BRSA and south of I-10 is considered low quality for DT in the region and low quality over the range of the species. The habitat on the west side of the BRSA is considered to be of moderate quality for DT within the Sonoran population.

Spring 2009 focused DT surveys were initiated in March 2009 and fall 2009 surveys were conducted in October 2009. A summary of the observations of DT sign and DT occurrences occurs below and in Table 1. In spring 2009 surveys, three adult DTs were encountered during surveys of the BRSA. One adult DT was observed within the Project disturbance area and two additional adult DTs were observed outside of the Project disturbance area, but within the buffer. The single adult male DT observed within the Project disturbance area on April 13, 2009, was seen walking on desert pavement toward the east. No active burrow was noted to be associated with this DT during this observation. During botanical surveys on March 26, 2009, an adult DT was observed within a caliche burrow (a cavity eroded or excavated into a hard calcium carbonate [caliche] soils) about 600 feet to the west of the Project disturbance area. This burrow had been previously observed (February 16, 2009) and was noted as a tortoise burrow with no recent sign. The burrow was visible to the end and the tortoise was not present within the burrow on this date. On June 4, 2009, a single adult male DT was observed about 4,000 feet to the southwest of the Project disturbance area during buffer zone surveys. This DT was observed both inside and outside of his caliche burrow. No DTs were observed in the fall 2009 surveys.

Numerous DT burrows (79 total, including eight active, two occupied, and an additional 18 definitely DT) and pallets (151 total, including three active and an additional 17 definitely DT) were observed throughout the BRSA in spring 2009 surveys and are mapped in Figure 5. Two Class 4 burrows were additionally observed within the fall 2009 survey area in the 1-mile buffer surrounding the substation. Forty-nine observations of DT scat were made within the BRSA. Scat of Class 1 and 2 is relatively recent and could be considered fresh. Eleven observations of fresh scat were made; 10 of those observations were within the Project disturbance area, mainly

on the northwestern and southwestern areas (Figure 5). DT carcasses (relatively intact) and bone fragments were observed throughout the BRSA. In Figure 5, Class 2, 3, and 4 DT shell remains are shown. These are considered carcasses here, rather than disarticulated bone fragments. Five

Table 1
Desert Tortoise Observations
BRSA
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	1	2	3	0	0	0	3
Tortoise Burrows	1	Occupied	0	2	2	0	0	0	2
	1	Active	6	2	8	0	0	0	8
	2		10	4	14	0	0	0	14
	3		4		4	0	0	0	4
	4		27	2	29	0	2	2	31
	5		18	4	22	0	0	0	22
	Total		65	14	79	0	2	2	81
Tortoise Pallets	1		2	1	3	0	0	0	3
	2		2		2	0	0	0	2
	3		14	1	15	0	0	0	15
	4		76		76	0	0	0	76
	5		53	2	55	0	0	0	55
	Total		147	4	151	0	0	0	151
Tortoise Scat	1		3	1	4	0	0	0	4
	2		7		7	0	0	0	7
	3		14	3	17	0	0	0	17
	4		8		8	0	0	0	8
	5		13		13	0	0	0	13
	Total		45	4	49	0	0	0	49
Tortoise Shell Remains	2	Carcass	5		5	0	0	0	5
	3	Carcass	5	1	6	0	0	0	6
	4	Carcass	16	5	21	0	0	0	21
	5	Bone Fragments, Not Mineralized	283	7	290	0	0	0	290
		Bone Fragments, Mineralized	74	1	75	0	1	1	76
	Total		383	14	397	0	1	1	398

Sign	Class*	Description	Number of Observations						Total
			Spring 2009 Surveys			Fall 2009 Surveys			
			Disturbance Area	Buffer	BRSA	Disturbance Area	Buffer	BRSA	
Tortoise Tracks				1	1	0	0	0	1
Tortoise Drinking Depression			1		1	0	0	0	1

* Classified using the Information Index for Desert Tortoise Sign: Burrows and Dens, Scats and Shell Remains as in the USFWS Protocol (USFWS 1992) (Appendix A).

relatively intact carcasses (Class 2) were present in the northwestern and southwestern portions of the Project disturbance area. Six Class 3 carcasses were found, also in the western areas of the BRSA; one was outside the Project disturbance area in the buffer. Twenty-one Class 4 carcasses were found within the BRSA. These are relatively intact carcasses. The majority of these were found on the western side of the BRSA, but one observation was in the northeastern corner, near McCoy Wash. Bone fragments (Class 5) were prevalent throughout the BRSA but were much more common on the east side. Of the more than 360 bone fragments observed, approximately 75 were considered mineralized. One set of mineralized bone fragments was observed during the fall 2009 season, in the 1-mile buffer area surrounding the substation.

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 [Blythe Biological Resources Technical Report] to the BSPP AFC document [AECOM 2009]).

It was not possible to calculate a DT abundance estimate using the 2009 (USFWS 2009) protocol since 20 DTs must be observed for this calculation to be valid and only one DT was observed within the Project disturbance area during the 2009 survey season. Because no DTs, or any recent DT sign, were detected on the east side of the BRSA during protocol surveys, DTs most likely occur at a very low abundance and density within this area. Only three DTs were detected on the west side of the BRSA; however, an abundance of recent DT sign was additionally observed throughout this portion of the BRSA. Therefore, DT abundance and density on the west side of the BRSA is low, but probably slightly greater than in the east. The west side of the BRSA is also located closer to the neighboring mountains, is of higher quality for DT (e.g., contains higher forage productivity), and would be expected to support a greater number of DT than the east side of the BRSA.

Species observed during protocol DT and other wildlife surveys are included in Attachment 5. Other special-status wildlife observed during 2009 surveys include the American badger (*Taxidea taxus*), western burrowing owl (*Athene cunicularia*), Mojave fringe-toed lizard (*Uma scoparia*), loggerhead shrike (*Lanus ludovicianus*), and yellow warbler (*Dendroica petechia* [however migrating only on site]), all CDFG SSC. Ferruginous hawk (*Buteo regalis* [however, wintering only on site]) and Nelson's bighorn sheep sign (*Ovis canadensis nelsoni*) were also observed, and are considered BLM sensitive. The Mojave fringe-toed lizard and burrowing owl are also considered BLM sensitive in addition to being considered CDFG SSC. Desert kit fox (*Vulpes macrotis arsipus*) was also observed and is a CCR (460) PFM.

Numerous Mojave fringe-toed lizards (MFTLs) were observed during fall 2009 surveys within the stabilized and partially stabilized dune habitat observed within the substation disturbance area and a portion of the transmission line disturbance area. This area is located south of I-10. No other stabilized or partially stabilized dune habitat suitable for MFTLs was observed within the Project disturbance area.

DISCUSSION

During habitat assessments in spring 2009, it was determined that the majority of the disturbance area and buffer contain suitable habitat for DT, with the exception of agriculture and developed land. Three adult tortoises were observed within the west side of the BRSA, including one within the Project disturbance area. Six active (Class 1) DT burrows were observed within the Project disturbance area and two more within the buffer, all of which were detected on the west side of the Project disturbance area and BRSA. DTs were not observed within these burrows, but it is highly probable that these are occupied burrows and DTs were not observed due to survey limitations (the DT may have been active and in another area or it was not possible to see the animal in a deep burrow). One of the active burrows was observed within the vicinity of the DT observed walking, not within the area of an active burrow. Also, DTs are often observed in burrows and areas that have no definitive DT sign present, so it is also probable the DTs are present in areas within the Project disturbance area with fresh sign (i.e., fresh scat) as well as in areas with no fresh sign that was noted. Fresh scat was observed in the northwest and southwest areas of the BRSA, and it is likely that these areas are both used and occupied by DTs. This is supported by the relatively intact DT carcasses also found in these areas. Bone fragments become much more common on the eastern side of the BRSA, which is also downstream. This suggests that DTs are present and foraging on the western side of the BRSA and that, as the DTs die and the carcasses become disarticulated and scattered bone fragments, these fragments are washed downstream into the eastern area. However, it should be noted that, in some cases on the

eastern side of the BRSA, it was evident that disarticulated and scattered bone fragments contained the majority of the pieces of DT carcass. This suggests that either the DT died there or that the intact carcass was brought there by other means (predator activity or large flood events). Approximately 75 of the 365 observations of DT bone fragments were considered mineralized. These bones were considered modern by paleontological standards (i.e., within the past 100 years). Bone fragments that were considered fossils were removed from the dataset for confidentiality reasons.

Habitat quality within the Project disturbance area is moderate on the western side of the Project disturbance area and low quality on the eastern side; habitat quality decreases to the east, farther away from the mountains. While DT densities are low within the Sonoran Desert as compared to the western Mojave Desert, the Sonoran populations are still important for the long-term conservation of the species. Given the climate in the Sonoran Desert, DT densities are expected to be lower than in the Mojave Desert. The habitat quality discussed in this report refers more specifically to the quality of habitat within this range of the species, not within the entire range of DT. Over the entire range of DT, habitat quality within the Project disturbance area is moderate in the west to low in the east. DT density observed within the BSPP is low.

Habitat quality for DT is better closer to the mountain areas or near large drainages (which are also usually associated with the mountainous areas). The dry desert wash woodlands and the drainages that flow from the west from the mountains onto the western areas of the BRSA provide areas with higher productivity for forage for DT as compared to the eastern portion of the BRSA. The eastern portion of the BRSA is generally drier and annual cover dries up earlier in the season than in the west. Habitat quality for DT within the Project disturbance area south of I-10 (transmission line disturbance area) is low. Habitat quality here is similar to habitat within the eastern portions of the BRSA—dry, with limited annual plants available for forage and limited shrub cover. Also, the sandy soils here may be less desirable for burrowing. The only DT sign observed south of I-10 were two Class 4 burrows and some mineralized DT bone fragments.

CNDDDB records show DT occurrences surrounding but not within the BRSA. The closest documented DT based on the CNDDDB occurs approximately 0.2 mile from 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, but can provide some insight into the distribution of DT. An additional DT observation occurred in 2009 approximately 35 miles to the west of the BRSA, during biological investigations for the Palen Solar Power Project (proposed by the same Applicant as for the BSPP).

Habitat suitability for the 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). It is likely that the most limiting factor in the distribution of DT within the BRSA is water. Within this area, the amount of water available is related to both elevation and the orographic effects of the mountains on rainfall patterns.

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). While there have been studies regarding slope and aspect preference for DT (Weinstein 1989; Anderson et al. 2000), DT choose sites based on surface conditions, which are influenced by a complex interaction between climate and topography (Nussear et al. 2009).

DTs require soils that can support burrows but also 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 Project disturbance area are suitable for burrowing. Therefore, there are no soils on site that would limit the distribution of DT.

Presence of ephemeral plant species is an indicator of habitat suitability for DT because ephemeral plants 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 Project disturbance area consists primarily of Sonoran creosote bush scrub. In spring 2009, high ephemeral plant productivity was observed within the drainages on the western side of the BRSA. Ephemeral plant productivity was lower within the desert pavement areas, but there were often pockets of vegetation within the pavement that contained plants. DT scat was observed within these pockets in several areas, and these are likely important foraging spots. Within the eastern portion of the BRSA, in the spring of 2009, ephemeral plant production ended much sooner than on the western side. The deep drainages on the west have more water because of the proximity to the McCoy Mountains. Flow from the mountains is not as far to the east. It is likely that the ephemeral plant production is higher just east of the BRSA, closer to McCoy Wash, and the water is associated with this drainage.

Rainfall in late 2008 and early 2009 within the region was lower than average. The rains that typically occur in the late summer/early fall were lower than the historical average for this area. The high ephemeral plant productivity within the western portion of the BRSA is probably typical for this site, but the lack of rains in February and March caused annual plants to dry up more quickly than normal. This effect was more pronounced on the eastern portion of the BRSA in spring 2009.

The climate and vegetation within the BRSA are consistent with the Sonoran Desert rather than the Mojave Desert. This is important for explaining the distribution of DT in this area, as detailed below. 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, are highly dependent on local orographic effects from topographic features such as mountains and vary significantly from one area to another (Nussear et al. 2009). Within the Mojave Desert, the rainfall is Mediterranean winter rainfall, as opposed to a bimodal rainfall pattern with important summer monsoon rains in the Sonoran. It is important to understand that there is increased precipitation in this area at higher elevations. Also, as elevation increases, temperature decreases, and so does the evapotranspiration rate. The increased rainfall and reduced evapotranspiration rates associated with increases in elevation work in concert to allow for a higher availability of water (for drinking) and increased plant production as elevation increases. The higher temperatures at the Blythe site magnify the effect of the evapotranspiration rate when compared to Mojave Desert areas. So, DTs should be more abundant in the mountains and alluvial fans and drainages associated with the mountains compared to the valleys (and are more common in the Mojave 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 here as elevation increases.

Other factors that may contribute to lower density/use levels of DT on the eastern (lower elevation) side of the Project disturbance area include the constraints to movement on the eastern and southeastern sides of the BRSA due to residential, commercial (airport), and agricultural use, and the constraint of I-10 to the south. The lack of DT sign south of I-10 is consistent with the low-quality DT habitat observed here—low annual forage, sandy soils, and the general lack of large drainages. It should be noted that the entirety of the BRSA is important for foraging and dispersal, with the western areas and the northeastern areas near McCoy Wash (a drainage associated with mountainous areas to the north) used more frequently by DT than the eastern areas.

CERTIFICATION STATEMENT

Qualified AECOM biologists who conducted DT surveys for the BSPP 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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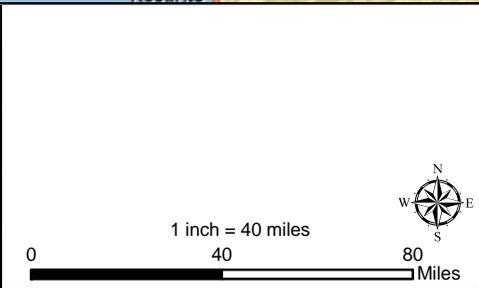
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ATTACHMENT 1

FIGURES



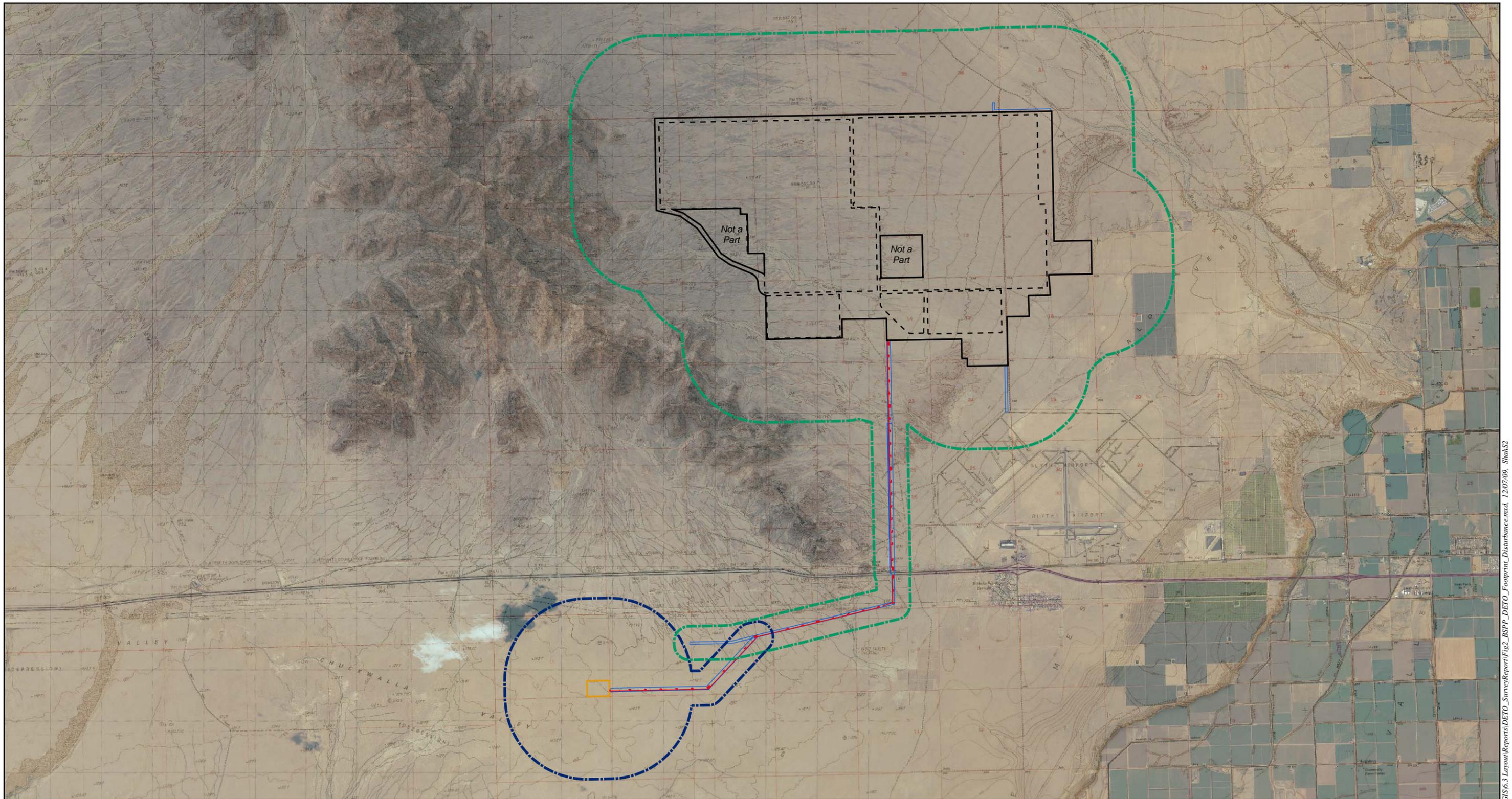
**Blythe Solar Power Project
Desert Tortoise
Technical Report**

**Figure 1
Regional Map**

Source: ESRI; AECOM 2009



Date: December 2009



Legend

--- Facility Footprint

Biological Resources Survey Area (BRSA)

--- Fall 2009 Survey

--- Spring 2009 Survey

Source: NAIP 2005; USGS; AECOM 2009

Project Disturbance Area

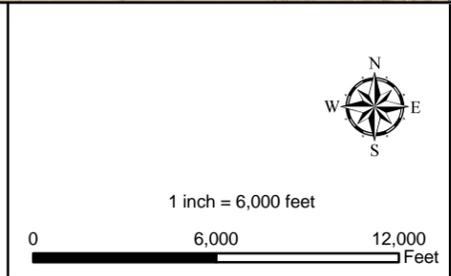
--- AFC Disturbance Area

--- Former Disturbance Area (Surveyed - No Longer a Part)

Transmission Line Disturbance Area

--- Transmission Line

--- Substation



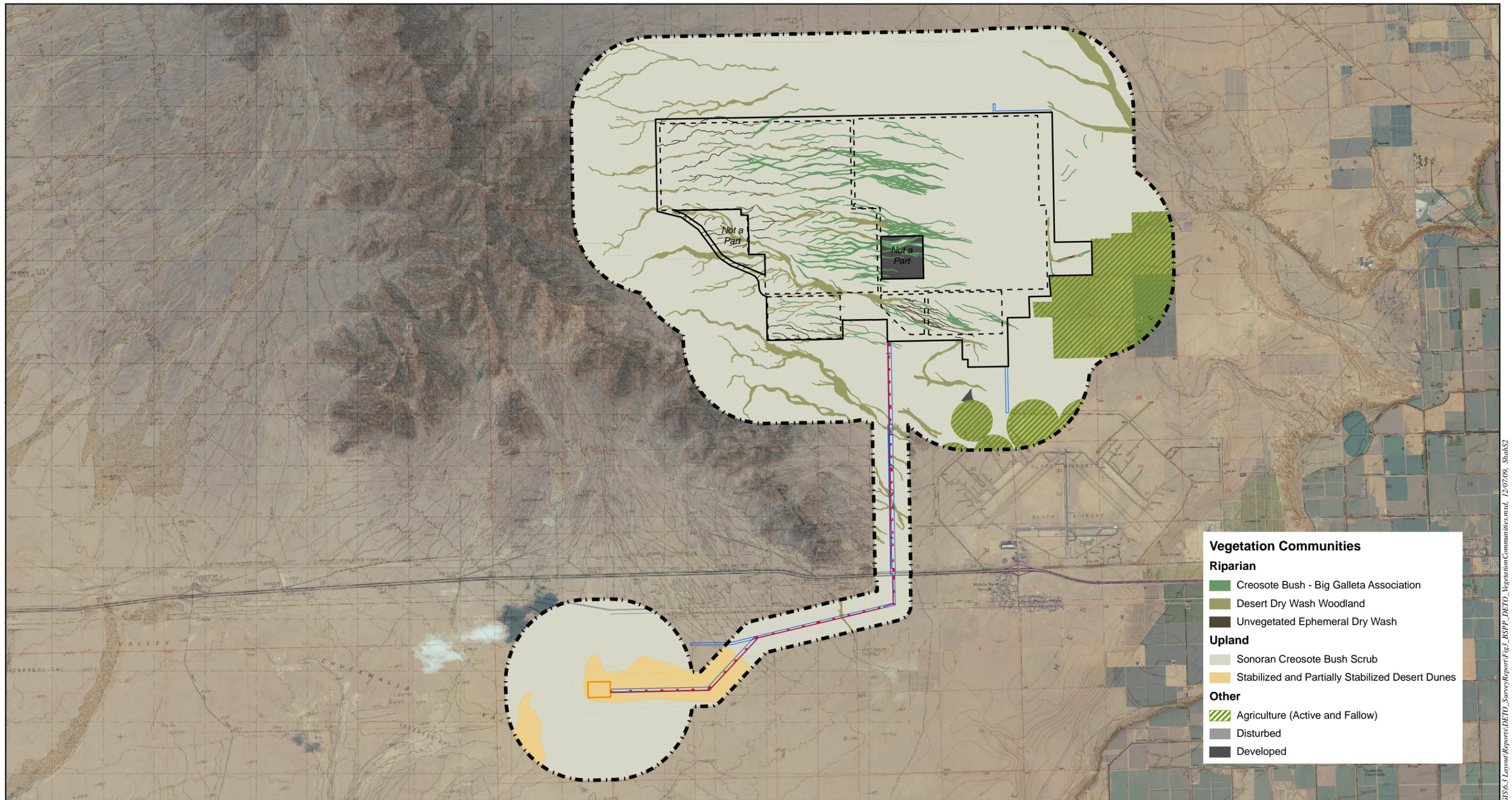
**Blythe Solar Power Project
Desert Tortoise Technical Report**

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

Solar Millennium

AECOM

Date: December 2009



Vegetation Communities

Riparian

- Creosote Bush - Big Galleta Association
- Desert Dry Wash Woodland
- Unvegetated Ephemeral Dry Wash

Upland

- Sonoran Creosote Bush Scrub
- Stabilized and Partially Stabilized Desert Dunes

Other

- Agriculture (Active and Fallow)
- Disturbed
- Developed



Legend

- Facility Footprint
- Biological Resources Survey Area (BRSA)

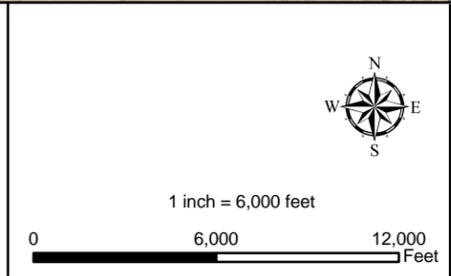
Project Disturbance Area

- AFC Disturbance Area
- Former Disturbance Area (Surveyed - No Longer a Part)

Transmission Line Disturbance Area

- Transmission Line
- Substation

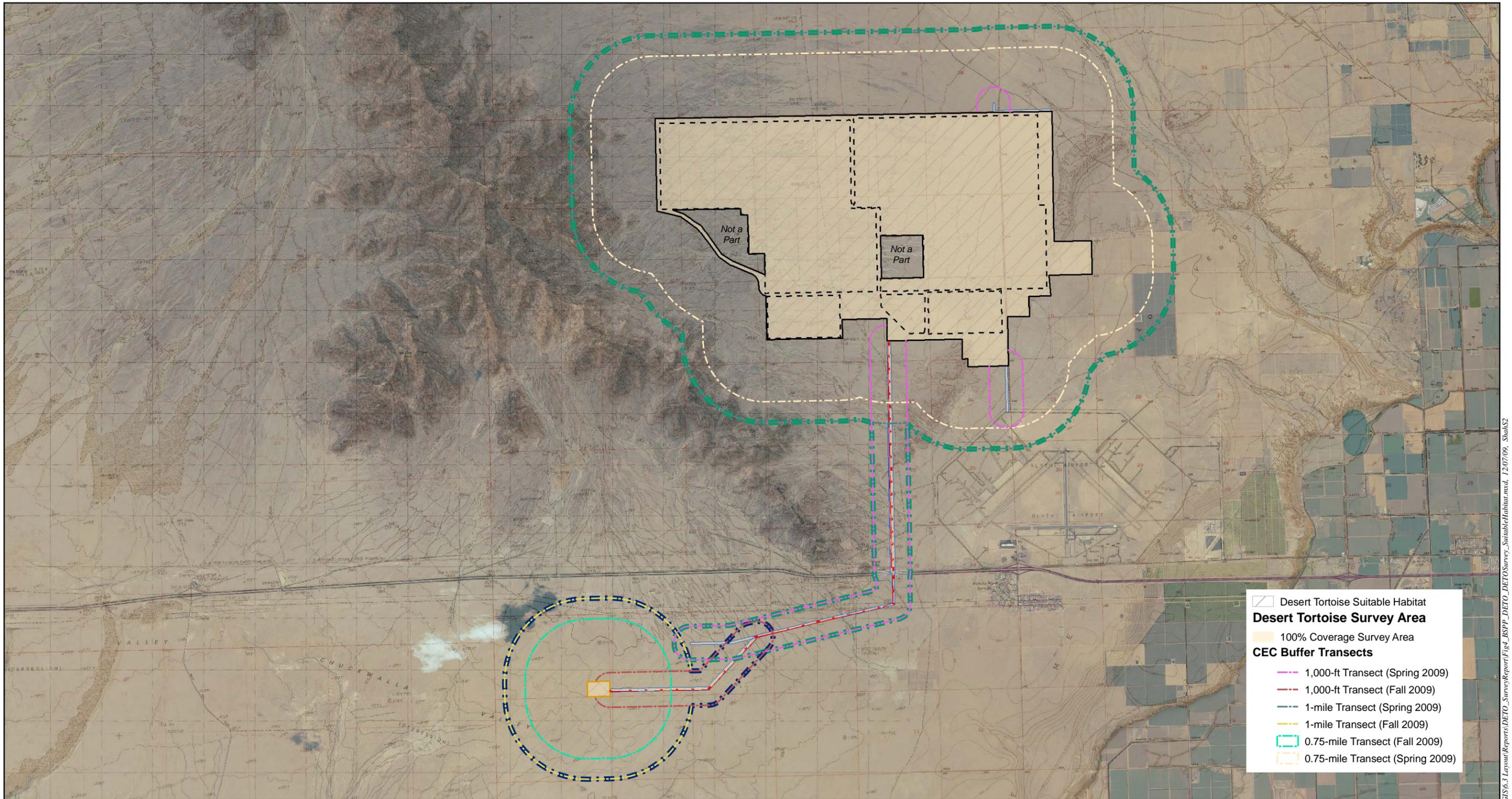
Source: NAIP 2005; USGS; AECOM 2009



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

**Figure 3
Vegetation Communities**

Date: December 2009



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

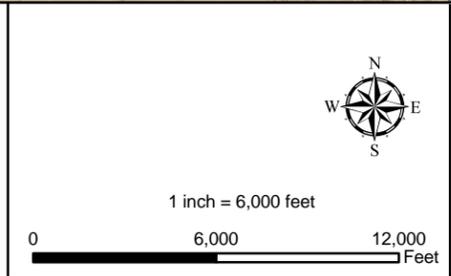


Legend

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

Project Disturbance Area
 AFC Disturbance Area
 Former Disturbance Area (Surveyed - No Longer a Part)
Transmission Line Disturbance Area (Fall 2009)
 Transmission Line
 Substation

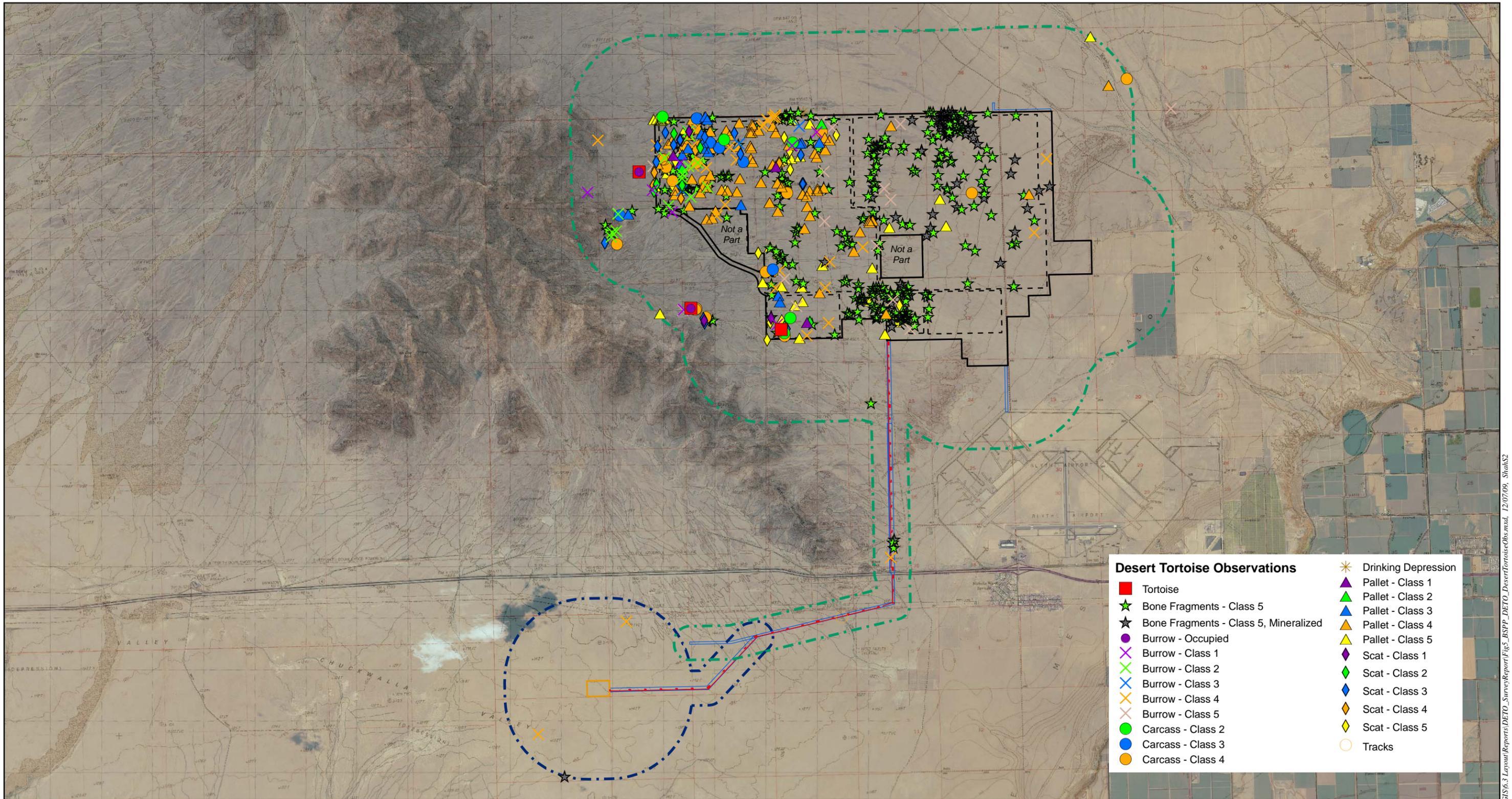
Source: NAIP 2005; USGS; AECOM 2009



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

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

Date: December 2009



Desert Tortoise Observations

■ Tortoise	✱ Drinking Depression
★ Bone Fragments - Class 5	▲ Pallet - Class 1
★ Bone Fragments - Class 5, Mineralized	▲ Pallet - Class 2
● Burrow - Occupied	▲ Pallet - Class 3
✕ Burrow - Class 1	▲ Pallet - Class 4
✕ Burrow - Class 2	▲ Pallet - Class 5
✕ Burrow - Class 3	◆ Scat - Class 1
✕ Burrow - Class 4	◆ Scat - Class 2
✕ Burrow - Class 5	◆ Scat - Class 3
● Carcass - Class 2	◆ Scat - Class 4
● Carcass - Class 3	◆ Scat - Class 5
● Carcass - Class 4	○ Tracks



Legend

--- Facility Footprint

Biological Resources Survey Area (BRSA)

--- Fall 2009 Survey

--- Spring 2009 Survey

Project Disturbance Area

□ AFC Disturbance Area

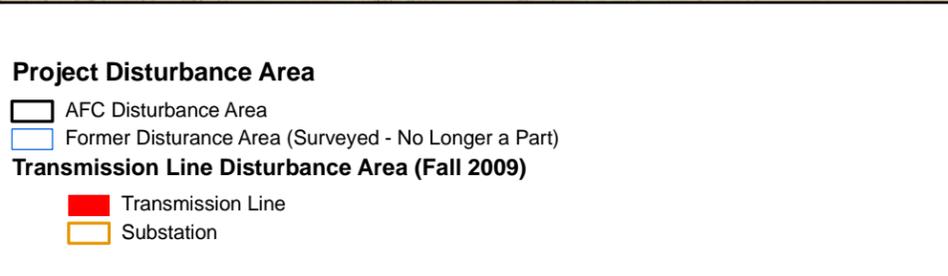
□ Former Disturbance Area (Surveyed - No Longer a Part)

Transmission Line Disturbance Area (Fall 2009)

■ Transmission Line

□ Substation

Source: NAIP 2005; USGS; AECOM 2009



Blythe Solar Power Project

Desert Tortoise Technical Report

Figure 5

Desert Tortoise Observations

Solar Millennium

AECOM

Date: December 2009

Path: P:\2009\0908082 Sol Mill\Blythe\6.0 GIS\6.3 Layout\Reports\DETO_SurveyReport\Figs_BSPP_DETO_DesertTortoiseObs.mxd, 12/07/09, Status2

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)
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 DATA SHEETS
FALL 2009

DESERT TORTOISE FIELD SURVEY DATA SHEET*

Site: Patent Blythe

Date: 10-23-09

Page 1 of 6

Type of Survey	GPS Unit	Map #	Surveyor	Additional Surveyors	Start	Time	Temp	Wind Sp/Dir	Weather & % Cloud
Fallow	11	N/A	SNA CGE	NKE [A-60M]	0943 AM	77°F	0 mph	0% CC	22% hum.
Focused			AFI ELA JMC	RCC [RBR]	Mid-day				
					End				

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (include comments)		
							Burr	Scat	Shell
BMFEL001	0702835 3719544	MFTL	AJU	M	Y	juvenile Mojave fringe-toed lizard			
BMFAF001	0702858 3719457	MFTL	AJU	M	Y	juvenile MFTL			
BMFAF002	0702866 3719389	MFTL	AJU	M	Y	juvenile MFTL			
BMFAF003	0702878 3719339	MFTL	AJU	M	Y	adult MFTL			
BMFAF004	0702877 3719374	MFTL	AJU	M	Y	juvenile MFTL			
BMFAF001	0702835 3719300	MFTL	AJU	M	Y	2 juvenile MFTL			

*See Reverse

SUPERMANSURVIVAL SURVIVAL, Zebra-tail, Kfax (MFTL)

BMFAF005 0702871 MFTL - juvenile ⊕ 1 about 10 m to S

3719257

OS ✓
 95 ✓
 85-5 ✓
 75 ✓
 65 ✓

55
 45
 35-5
 25
 15

B1-16MVE

DESERT TORTOISE FIELD SURVEY DATA SHEET*

Site: ~~ABEN~~
 Date: 10-13-09

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

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (include comments)		
							Burr	Scat	Shell
BMEFRC001	0702838 3799161	MFTL	AJU	MFU	YN	adult MFTL			
BMEFRC002	0702824 3719080	MFTL	AJU	MFU	YN	adult MFTL			
BMEFEL001	0702845 3718941	MFTL	AJU	MFU	YN	adult MFTL			
BMEFAF006	0702817 3718683	MFTL	AJU	MFU	YN	adult MFTL			
BMEFMK001	0702814 3718865	MFTL	AJU	MFU	YN	juvenile MFTL			
BMEFMK002	0702827 3718667	MFTL	AJU	MFU	YN	juvenile MFTL			
BMEFAF007	0702749 3718655	MFTL	AJU	MFU	YN	juv. u			

*See Reverse

Shovel-nose snake, roadrunner, coyote, kangaroo

59 ✓
 45 ✓
 35-5 ✓
 25 ✓
 13 ✓

Site: ~~9444~~ BLYTMC

DESERT TORTOISE FIELD SURVEY DATA SHEET*

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

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (include comments)		
							Burr	Scat	Shell
BMFCG001	0702704 3718963	MFTL	ⓐ J U	M F U	Y N	MFTL ⊕ one more 2cm to west			
BMFAF006	0702677 3718913	MFTL	ⓐ J U	M F U	Y N	MFTL			
BMFR002	0702689 3718823	MFTL	ⓐ J U	M F U	Y N	MFTL			
BMFC002	0702702 3718779	MFTL	ⓐ J U	M F U	Y N	MFTL			
BMFSD001	0702685 3718669	MFTL	ⓐ J U	M F U	Y N	MFTL			
BMFC003	0702616 3718726	MFTL	ⓐ J U	M F U	Y N	MFTL			
			A J U	M F U	Y N				
			A J U	M F U	Y N				

*See Reverse

red-tailed, worned look
 BBOEL001 0702654
 3718948 — possible owl tracks



55 ✓ 05 ✓ 505 ✓ 55 ✓ 755 ✓
 45 ✓ 95 ✓ 495 ✓ 45 ✓ 75 ✓
 35-5 ✓ 85-5 ✓ 488-5 ✓ 35-5 ✓ 75- ✓
 25 ✓ 65 ✓ 475 ✓ 25- ✓ 65 ✓
 15 ✓ 11 ✓ 415 ✓ 515 ✓ 65 ✓

DESERT TORTOISE FIELD SURVEY DATA SHEET*

Date: 10-23-09

Site: Blythe

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

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (include comments)		
							Burr	Scat	Shell
BMFAF001	0702580	MFTL	AJU	M	Y	MFTL			
BMFAF009	3118795		AJU	F	N				
BMFCG004	0702516	MFTL	AJU	M	Y	MFTL			
	3118823		AJU	F	N				
BMFAF010	0702478	MFTL	AJU	M	Y	MFTL			
	3118947		AJU	F	N				
BMFAF011	0702474	MFTL	AJU	M	Y	MFTL			
	3118844		AJU	F	N				
BMFJM001	0702478	MFTL	AJU	M	Y	MFTL			
	3118653		AJU	F	N				
BMFMK003	0702468	MFTL	AJU	M	Y	MFTL			
	3118772		AJU	F	N				
BMFAF012	0702410	MFTL	AJU	M	Y	MFTL			
	3118661		AJU	F	N				

*See Reverse
~~BMFAF005~~ BMFAF005 0702415 MFTL JUV. black-tailed jackrabbit
 3118813 MFTL

DESERT TORTOISE FIELD SURVEY DATA SHEET*

Site: Blythe

Date: 10-23-09

Page 5 of 6

Type of Survey	GPS Unit	Map #	Surveyor	Additional Surveyors

Start	Time	Temp	Wind Sp/Dir	Weather & % Cloud
Mid-day	1:40 PM	91°F	5 mph 8 mph	50% light CC
End	3:59 PM	91°F	2 to 5 mph	10% light CC

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (Include comments)	
							Burr	Scat Shell
BMEAF006	0702533 371915A	MFTL	AJU	M	Y	MFTL		
BMEAF003	0702600 3719490	MFTL	AJU	M	Y	MFTL		
BKBS001	0702704 3719687	Kit fox?	AJU	M	Y	Kit fox scat & tracks, scat is fresh, burrow is flattened on by them. Could be fox or wind blown sand, burrow potential for DETO, burrow likely inactive KIT fox complex - juvenile MFTL		4
BMEAF013	0703635 3719327	MFTL	AJU	M	Y			
BMEAF014	0703647 3719262	MFTL	AJU	M	Y			
BMEAF015	0703172 3719125	MFTL	AJU	M	Y			

*See Reverse

Normed 1.24rd

linear & buffers

DESERT TORTOISE FIELD SURVEY DATA SHEET*

Site: Blythe

Date: 10-24-04

Page 1 of 2

Type of Survey	GPS Unit	Map #	Surveyor	Additional Surveyors	Start	Time	Temp	Wind Sp/Dir	Weather & % Cloud
Coll. on tortoise			SDA APT JMC RCO CCE MKE ELA RBR		7:14AM	66°F	0 mph		5% light cc
					Mid-day				
					End				

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (include comments)		
							Burr	Scat	Shell
BBLAF002	0703695 3118445	BUNW	AJU	MFU	Y	burrowing owl main burrow, likely same indiv. as yesterday + picture of burrow			
BKBS002	0704730 3118442	KFOX?	AJU	MFU	Y	potential fox den potential old kit for complex, several burrows to entrances, a round-tailed size and one large burrow w evidence of scarpid predation some white wash @ large burrow potential fox den/BUNW (KFOX scat (a lot) present			
BBOAF001	0705270 3118850	BUNW tracks	AJU	MFU	Y	- burrowing owl tracks in sandy soil			
BKBAF001	0705585 311820072	KFOX?	AJU	MFU	Y	- old KFOX complex several deep enough for KFOX, BUNW DEN, KFOX scat (old) (low) evidence of coyote predation, dog scat many burrows			

*See Reverse

CA horned lark, 5-16-04

DESERT TORTOISE FIELD SURVEY DATA SHEET*

Site: BLMTR Date: October 24, 2009 Page 1A of 3A

Type of Survey	GPS Unit	Map #	Surveyor	Additional Surveyors	Start	Time	Temp	Wind Sp/Dir	Weather & % Cloud
4 footers 206 Lipstick Barker	DNA GPS		Yeanu (11) Anthony Brown		Mid-day				

all focus points

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (include comments)		
							Burr	Scat	Shell
BBOEL020	0703365 3718819	BUOW	AJU	M	Y	Tracks (2 sets) + OTHER TRACKS 30M E Pair (1AM) tracks in vicinity Potential Snow - no sign 6" x 4"			
BLTBB001	0705300 3719423	Le. Cent's thrasher	AJU	M	Y				
BKSEL001	0705343 3719437	kit fox	AJU	M	Y				
BKSEL002	0705446 3719587	kit fox	AJU	M	Y	2 openings. Prints & scat outside entrance - active			
BKSEL003	0705504 3719672	kit fox	AJU	M	Y	Likely inactive burrow complex. Some old scat. Potential Snow ACTIVE DID NOT BURY			
BMFL0020	0705290 3719731	MFTL	AJU	M	Y				
BMFL002	0705072 3719109	(2) MFTL	AJU	M	Y				
BMFL004	0704676 3718803	MFTL	AJU	M	Y				
BMFL0024	0704324 3718803	MFTL	AJU	M	Y				
BMFL003	0704262 3718815	(1) MFTL	AJU	M	Y				
BMFL005	0704127	MFTL	AJU	M	Y				

*See Reverse 3716785

DESERT TORTOISE FIELD SURVEY DATA SHEET*

Site: RLY TTE Date: 10/24/09 Page 1A of 3A

Type of Survey	GPS Unit	Map #	Surveyor	Additional Surveyors	Start	Temp	Wind Sp/Dir	Weather & % Cloud
	<u>AT&T</u>				Mid-day			
	<u>GPS II</u>				End			

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (include comments)		
							Burr	Scat	Shell
<u>BMFB006</u>	<u>0703923</u>	<u>MFTL</u>	<u>A</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>				
<u>BMFB007</u>	<u>3718783</u>		<u>A</u> <u>J</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>				
<u>BMFC022</u>	<u>0701939</u>		<u>A</u> <u>J</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>				
<u>BMFC022</u>	<u>3720501</u>		<u>A</u> <u>J</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>	<u>No sign. Potential DETO / BDOU.</u>	<u>4</u>		
<u>BMFC022</u>	<u>0701366</u>	<u>MFTL (x2)</u>	<u>A</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>	<u>20cm X 10cm</u>			
<u>BMFC022</u>	<u>3720182</u>		<u>A</u> <u>J</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>	<u>+ adult</u>			
<u>BMFC022</u>	<u>0701150</u>		<u>A</u> <u>J</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>	<u>snake tracks of entrance.</u>			
<u>BMFC022</u>	<u>3719939</u>		<u>A</u> <u>J</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>	<u>Potential BDOU</u>			
<u>BMFC022</u>	<u>0700834</u>	<u>MFTL (x3)</u>	<u>A</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>	<u>Adult ± 30 meters from juveniles</u>			
<u>BMFC022</u>	<u>3719299</u>		<u>A</u> <u>J</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>				
<u>BMFC022</u>	<u>0700857</u>	<u>MFTL (x3)</u>	<u>A</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>	<u>1 ± 30 meters</u>			
<u>BMFC022</u>	<u>3718388</u>		<u>A</u> <u>J</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>				
<u>BMFC022</u>	<u>0700949</u>	<u>MFTL</u>	<u>A</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>				
<u>BMFC022</u>	<u>3719002</u>		<u>A</u> <u>J</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>				
<u>BMFC022</u>	<u>0700978</u>	<u>MFTL</u>	<u>A</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>				
<u>BMFC022</u>	<u>3717953</u>		<u>A</u> <u>J</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>				
<u>BMFC022</u>	<u>0701041</u>	<u>MFTL (x2)</u>	<u>A</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>	<u>± 30 meters</u>			
<u>BMFC022</u>	<u>3717841</u>		<u>A</u> <u>J</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>				
<u>BMFC022</u>	<u>0701277</u>	<u>MFTL</u>	<u>A</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>				
<u>BMFC022</u>	<u>3717549</u>		<u>A</u> <u>J</u> <u>U</u>	<u>M</u> <u>F</u> <u>U</u>	<u>Y</u> <u>N</u>				

*See Reverse

DESERT TORTOISE FIELD SURVEY DATA SHEET*

Site: BLYTH

Date: 10/24/2007

Page 3A of 3A

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

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (include comments)		
							Burr	Scat	Shell
BDC6901	0701991	DETO	AJU	MFU	YN	4cm x 4cm Fossils			S
BPD1Deep6901	3717116 0702226		AJU	MFU	YN	x2 25cm x 10cm pieces 3cm x 5cm			
BMA25002	3717066 0703797		AJU	MFU	YN	Potential DETO/Burrow - lizard tracks at entrance			
BMFRB009	3717368 0704451 3718951		AJU	MFO	YN				
			AJU	MFU	YN				
			AJU	MFU	YN				
			AJU	MFU	YN				
			AJU	MFU	YN				
			AJU	MFU	YN				
			AJU	MFU	YN				
			AJU	MFU	YN				
			AJU	MFU	YN				
			AJU	MFU	YN				
			AJU	MFU	YN				
			AJU	MFU	YN				
			AJU	MFU	YN				
			AJU	MFU	YN				

*See Reverse

DESERT TORTOISE FIELD SURVEY DATA SHEET*

Site: Bythe

Date: Oct/24/2009

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Type of Survey	GPS Unit	Map #	Surveyor	Additional Surveyors	Time	Temp	Wind Sp/Dir	Weather & % Cloud
DT (Full Survey)	13		Erik Lacoite Rob Conahan		18:15	94°		
					4:00 pm			

GPS Ident Code*	GPS Coordinates	Species	Age	Sex	Healthy?	Comments	DETO Sign Type* (include comments)	
							Burr	Shell
BDBEL001	0703194-3720155	DT	AJU	M-FU	YN	9" W x 5" A 18" deep. Partial Partially collapsed and no sign of recent use	4	
BMAEL001	0702930-3720182	U/K	AJU	M-FU	YN	Potentially an old KF or Coyote 9" x 9"		
BDBEL001	0702855-3720161	AB	AJU	M-FU	YN	4x5" Freshly dug burrow.		
BDBEL001	0700189-3720143	KF	AJU	M-FU	YN	Complex w signs of recent use		
BDBEL002	0701810-3719981	KF	AJU	M-FU	YN	Complex w signs of recent use		
BMAEL002	0702220-3719158	KF/KR	AJU	M-FU	YN	KF complex recent use, K-rat tracks		
BDBEL						Bobcat scat		
BLSLE001	0701820-3718678	LHSH	AJU	MFO	YN	Bird observed calling.		
BMFEL000	0701244-3718980	MF	AJU	MFO	YN	Maxine Fringe-toed lizard		
BDBEL002	0701445-3717432	DT	AJU	M-FU	YN	In RTGS complex 8" W x 5" H 22" deep 5		
						Next burrow to even depth through the burrow		
BKBELO03	0702627-3717458	KF	AJU	M-FU	YN	photo 1985, 1984 on Eric's camera springs stuck		
BMAEL003	0702691-3717479		AJU	M-FU	YN	Burrow in RTGS complex 6" x 13"		
BDBEL001	0704083-3718769	BUON	AJU	M-FU	YN	Large mammal burrow in RTGS complex. possibly Coyote.		
BKBELO04	0703924-3717545	KF	AJU	M-FU	YN	Tracks observed		
BMFEL003	0703889-3719578	MF	AJU	M-FU	YN	7" W x 9" H 4' Deep. Active		
						2 W. METL		

*See Reverse

ATTACHMENT 4

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

Map Identifier	IDENT	Y_PROJ	X_PROJ	DATE	COMMENTS	Class
Badger Burrow	BGBRC001	3720161	702536	24-OCT-09 12:50:10PM	American badger burrow, 7" x 5", freshly dug burrow	
Burrowing Owl	BBLAF001	3718458	703719	23-OCT-09 5:13:24PM	Adult Burrowing owl, flushed from large burrow, in round tailed ground squirrel complex, white wash present, burrow narrowed to round-tailed size, large amount of suitable burrows about 40 m to east	
Burrowing Owl Burrow With Sign	BBLAF002	3718496	703696	24-OCT-09 7:59:40AM	Burrowing owl main burrow, likely same individual as noted on 10/23/09, pictures of burrow, suitable for tortoise	
Burrowing Owl Flush Point	001	3718473	703791	23-OCT-09 5:20:37PM	Burrowing owl flush point #2	
Burrowing Owl Tracks	BBOAF001	3718849	705270	24-OCT-09 8:39:43AM	Burrowing owl tracks in sandy soil	
Burrowing Owl Tracks	BBOEL001	3718948	702656	23-OCT-09 12:12:20PM	Possible burrowing owl tracks	
Burrowing Owl Tracks	BBOEL001	3718768	704084	24-OCT-09 3:29:03PM	Burrowing owl tracks observed	
Burrowing Owl Tracks	BBOEL020	3718817	703866	24-OCT-09 8:01:47	Burrowing owl tracks, 2 sets, plus other possible tracks 30 m to east	
Kit Fox Burrow	BKBEL003	3717458	702528	24-OCT-09 2:42:10PM	Kit fox burrow in round-tailed complex, 6" x 12"	
Kit Fox Burrow	BKBEL004	3719545	703925	24-OCT-09 3:46:45PM	Kit fox burrow, 7" wide x 9" high, 4' deep, active	
Kit Fox Burrow	BKBRB002	3719587	705449	24-OCT-09 9:29:14	2 openings, prints and scat outside entrance, active kit fox burrow	
Kit Fox Burrow	BMAEL001	3720181	702932	24-OCT-09 12:38:27PM	Potential old kit fox or coyote burrow, 9" x 9"	

Map Identifier	IDENT	Y_PROJ	X_PROJ	DATE	COMMENTS	Class
Kit Fox Complex	BKBAF001	3720073	705585	24-OCT-09 9:18:06AM	Old kit fox complex, several deep enough for kit fox, burrowing owl and tortoise (low), old kit fox scat, evidence of canid predation, dog scat, many burrows	
Kit Fox Complex	BKBEL001	3720143	702190	24-OCT-09 1:01:34PM	Kit fox complex with signs of recent use	
Kit Fox Complex	BKBEL002	3719980	701811	24-OCT-09 1:10:06PM	Kit fox complex with signs of recent use	
Kit Fox Complex	BKBRB003	3719672	705505	24-OCT-09 9:40:11	likely inactive kit fox burrow complex, some old scat, potential for burrowing owl	
Kit Fox Complex	BKBSD001	3719687	702704	23-OCT-09 1:25:13PM	Kit fox complex (inactive), 2 burrows, kit fox scat and tracks, scat is fresh, burrow is flattened on bottom, could be from wind blown sand, potential for tortoise, burrowing owl and kit fox	4
Kit Fox Complex	BKBSD002	3718472	704739	24-OCT-09 8:24:16AM	Old kit fox complex, several burrows with entrances about round-tailed ground squirrel size and one large burrow with evidence of canid predation, some white wash at large burrow, potential for tortoise/burrowing owl/kit fox, a lot of kit fox scat present	
Kit Fox Complex	BMAEL002	3719158	701229	24-OCT-09 1:40:21PM	Kit fox complex, recent use, kangaroo rat tracks, bobcat scat	
Le Conte's Thrasher	BLTRB001	3719423	705302	24-OCT-09 9:08:43	Le Conte's thrasher Pair, tracks in vicinity	
Loggerhead Shrike	BLSEL001	3718677	701222	24-OCT-09 1:52:24PM	Loggerhead shrike, observed calling	

Map Identifier	IDENT	Y_PROJ	X_PROJ	DATE	COMMENTS	Class
Mammal Burrow	BMACG002	3719938	701151	24-OCT-09 13:08:11	Mammal burrow, potential for burrowing owl, snake tracks @ entrance	
Mammal Burrow	BMAEL003	3717476	702892	24-OCT-09 2:52:45PM	Large mammal burrow in round tailed complex, possibly coyote	
Mammal Burrow	BMARB001	3720500	701940	24-OCT-09 12:45:34	Mammal burrow, no sign, potential for tortoise and burrowing owl, 20 x 10 cm	4
Mammal Burrow	BMARB002	3717367	703797	24-OCT-09 15:00:14	Mammal burrow, potential for tortoise and burrowing owl, 20 cm x 10 cm	4
Mojave fringe-toed lizard	BBMFEL003	3718814	704263	24-OCT-09 11:02:29	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMAF015	3719129	703174	23-OCT-09 4:22:43PM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF001	3719456	702859	23-OCT-09 10:17:21AM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF002	3719388	702867	23-OCT-09 10:19:47AM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF003	3719337	702879	23-OCT-09 10:22:13AM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF004	3719323	702879	23-OCT-09 10:25:03AM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF005	3719257	702872	23-OCT-09 10:27:15AM	Two juvenile Mojave fringe-toed lizards, one about 10 m to south	
Mojave fringe-toed lizard	BMFAF006	3719158	702535	23-OCT-09 1:11:35PM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF006 1	3718685	702818	23-OCT-09 11:00:36AM	Adult Mojave fringe-toed lizard	

Map Identifier	IDENT	Y_PROJ	X_PROJ	DATE	COMMENTS	Class
Mojave fringe-toed lizard	BMFAF007	3718655	702749	23-OCT-09 11:24:49AM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF008	3718912	702678	23-OCT-09 11:46:02AM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF009	3718794	702581	23-OCT-09 12:22:54PM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF010	3718947	702479	23-OCT-09 12:44:45PM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF011	3718894	702475	23-OCT-09 12:47:41PM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF012	3718661	702470	23-OCT-09 12:56:33PM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF013	3719327	703636	23-OCT-09 4:08:38PM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF014	3719261	703649	23-OCT-09 4:11:18PM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF015	3719255	704716	24-OCT-09 9:44:40AM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF016	3719169	704040	24-OCT-09 9:57:02AM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF017	3719172	703950	24-OCT-09 9:59:26AM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFAF018	3719511	703675	24-OCT-09 10:10:53AM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFCG001	3718963	702705	23-OCT-09 11:43:37AM	Adult Mojave fringe-toed lizard, plus one more 20 m to west	

Map Identifier	IDENT	Y_PROJ	X_PROJ	DATE	COMMENTS	Class
Mojave fringe-toed lizard	BMFCG002	3718778	702704	23-OCT-09 11:53:05AM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFCG003	3718725	702618	23-OCT-09 12:02:27PM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFCG004	3718823	702517	23-OCT-09 12:34:16PM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFCG005	3718812	702416	23-OCT-09 1:02:59PM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFCG020	3719331	705291	24-OCT-09 10:17:22	Juvenile Mojave fringe-toed lizard, active did not bury	
Mojave fringe-toed lizard	BMFCG021	3718803	704325	24-OCT-09 10:56:04	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFCG022	3720181	701358	24-OCT-09 12:59:21	Two juvenile and one adult Mojave fringe-toed lizards	
Mojave fringe-toed lizard	BMFCG023	3718387	700858	24-OCT-09 13:37:25	Three juvenile Mojave fringe-toed lizards, one +/- 30 m away	
Mojave fringe-toed lizard	BMFCG025	3717840	701043	24-OCT-09 13:52:32	Two juvenile Mojave fringe-toed lizards, +/- 30 m apart	
Mojave fringe-toed lizard	BMFCG026	3717548	701279	24-OCT-09 14:01:36	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFCGG024	3718002	700950	24-OCT-09 13:46:38	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFEL001	3719544	702836	23-OCT-09 10:14:29AM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFEL002	3718971	702846	23-OCT-09 10:48:22AM	Adult Mojave fringe-toed lizard	

Map Identifier	IDENT	Y_PROJ	X_PROJ	DATE	COMMENTS	Class
Mojave fringe-toed lizard	BMFEL002	3719109	705073	24-OCT-09 10:28:35	Two juvenile Mojave fringe-toed lizards	
Mojave fringe-toed lizard	BMFEL030	3718480	701244	24-OCT-09 1:57:52PM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFEL031	3719578	703890	24-OCT-09 3:49:25PM	Two juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFJM001	3718852	702478	23-OCT-09 12:50:07PM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFMK001	3718895	702815	23-OCT-09 11:09:22AM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFMK002	3718667	702772	23-OCT-09 11:23:30AM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFMK003	3718771	702469	23-OCT-09 12:53:35PM	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFRB001	3719299	702876	23-OCT-09 10:26:07AM	Two juvenile Mojave fringe-toed lizards	
Mojave fringe-toed lizard	BMFRB002	3719080	702825	23-OCT-09 10:34:07AM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFRB004	3718803	704677	24-OCT-09 10:45:22	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFRB005	3718785	704128	24-OCT-09 11:08:19	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFRB006	3718782	703924	24-OCT-09 11:13:34	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFRB007	3719298	700840	24-OCT-09 13:20:47	Three juvenile Mojave fringe-toed lizards, one adult 30 meters away	

Map Identifier	IDENT	Y_PROJ	X_PROJ	DATE	COMMENTS	Class
Mojave fringe-toed lizard	BMFRB008	3717953	700979	24-OCT-09 13:48:53	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFRB009	3718950	704482	24-OCT-09 15:36:21	Juvenile Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFRB20	3719389	703663	23-OCT-09 17:36:47	Sub-adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFRC001	3719161	702839	23-OCT-09 10:30:44AM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFRC001	3718744	703031	23-OCT-09 17:03:46	Sub-adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFRC002	3718822	702690	23-OCT-09 11:50:46AM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFRC003	3719430	702601	23-OCT-09 1:16:45PM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFSD001	3718698	702686	23-OCT-09 11:55:24AM	Adult Mojave fringe-toed lizard	
Mojave fringe-toed lizard	BMFSD002	3719075	702679	23-OCT-09 4:35:13PM	Adult Mojave fringe-toed lizard	
Tortoise Bone Fragment - Class 5 (Mineralized)	BDCCG001	3717115	701993	24-OCT-09 14:15:51	Tortoise bone fragment, mineralized, 4 cm x 4 cm	
Tortoise Burrow - Class 4	DBBEL001	3720134	703200	24-OCT-09 12:27:04PM	Potential tortoise burrow, 9" wide x 5" high, 18" deep, partially collapsed and no sign of recent use	4

Map Identifier	IDENT	Y_PROJ	X_PROJ	DATE	COMMENTS	Class
Tortoise Burrow - Class 4	BDBEL002	3717931	701475	24-OCT-09 2:15:00PM	In round-tailed ground squirrel complex, 8" wide x 5" high >24" deep, flat bottom with even depth throughout the burrow, photo 1925, 1924 with Erik's camera, opening faces SE	

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
INVERTEBRATES		
Order Coleoptera		Beetles
	Family Tenebrionidae	
	<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 treader cricket
REPTILES		
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> ^{1, 2}	desert tortoise
BIRDS		
Order Ciconiiformes		Hérons, Storks, Ibises, and Relatives
	Family Ardeidae	
	<i>Butorides virescens</i>	green heron
	Family Cathartidae	
	<i>Cathartes aura</i>	turkey vulture

	Scientific Name	Common Name
Order Falconiformes		Diurnal Birds of Prey
	Family Accipitridae	
	<i>Buteo jamaicensis</i>	red-tailed hawk
	<i>Buteo swainsoni</i> ²	Swainson's hawk
	<i>Circus cyaneus</i> *	northern harrier
	Family Falconidae	
	<i>Falco mexicanus</i> ⁺	prairie falcon
Order Galliformes		MPheasants, Grouse, Quail and Relatives
	Family Odontophoridae	
	<i>Callipepla gambelii</i>	Gambel's quail
Order Charadriiformes		Shorebirds, Gulls and Relatives
	Family Charadriidae	
	<i>Charadrius vociferus</i>	killdeer
	Family Scolopacidae	
Order Columbiformes		Pigeons and Doves
	Family Columbidae	
	<i>Zenaida macroura</i>	mourning dove
Order Caprimulgiformes		Goatsuckers and Relatives
	Family Caprimulgidae	
	<i>Chordeiles acutipennis</i>	lesser nighthawk
Order Cuculiformes		Cuckoos and Relatives
	Family Cuculidae	
	<i>Geococcyx californianus</i>	greater roadrunner
Order Strigiformes		Owls
	Family Strigidae	
	<i>Athene cunicularia</i> *	burrowing owl
Order Apodiformes		Hummingbirds and Swifts
	Family Apodidae	
	<i>Chaetura vauxi</i> *	Vaux's swift
	Family Trochilidae	
	<i>Calypte costae</i>	Costa's hummingbird
Order Passeriformes		Song birds
	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
MAMMALS		
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</i> sp.	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

¹Federally threatened or endangered species

²State threatened or endangered 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

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

Docket No. 09-AFC-6

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: [\[http://www.energy.ca.gov/sitingcases/solar_millennium_blythe\]](http://www.energy.ca.gov/sitingcases/solar_millennium_blythe)

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:

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

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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-6**
1516 Ninth Street, MS-4
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I declare under penalty of perjury that the foregoing is true and correct.



Ashley Y. Garner