Tessera Solar
power from stirling energy systems

DOCKET
08-AFC-13
DATE AUG 04 2010
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August 4, 2010

Mr. Christopher Meyer
CEC Project Manager
Attn: Docket No. 08-AFC-13
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

RE: Calico Solar (formerly Solar One) Project (08-AFC-13)
Applicant's Submittal of the Draft Desert Tortoise Translocation Plan

Dear Mr. Meyer:

Tessera Solar hereby submits the Applicant's Draft Desert Tortoise Translocation Plan (Plan). The Bureau of Land Management approved the release of the Plan, which will be included as an appendix to the Final Environmental Impact Statement for the Calico Solar Project, with the acknowledgement that the document is a draft, subject to change at the Record of Decision. The Plan was reviewed by federal agencies and their comments are incorporated; however, no formal state agency review has occurred. I certify under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge.

Sincerely,

Felicia L. Bellows
Vice President of Development

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REVISED DRAFT PLAN

DESERT TORTOISE TRANSLOCATION PLAN CALICO SOLAR PROJECT

Prepared for

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URS Project No. 27658189.20002

July 28, 2010

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°F	Fahrenheit
ACEC	Area of Critical Environmental Concern
BLM	Bureau of Land Management
BO	Biological Opinion
CDFG	California Department of Fish and Game
CEC	California Energy Commission
DETO	desert tortoise
DTCC	Desert Tortoise Conservation Center
DTRO	Desert Tortoise Recovery Office
DWMA	Desert Wildlife Management Areas
GPS	global positioning system
I-40	Interstate 40
km	kilometers
m	meter
mm	millimeter
MCL	midline carapace length
mph	miles per hour
MW	megawatts
NAP	not a part
Project	SES Calico Solar Project
PPA	Power Purchase Agreement
ROD	Record of Decision
ROW	right-of-way
URS	URS Corporation
URTD	upper respiratory tract disease
USFWS	U.S. Fish and Wildlife Service
USGS	United State Geological Survey
WSA	Wilderness Study Area

SECTION 1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Project Description Summary

The Calico Solar Project (Project) includes the construction, operation, maintenance, and abandonment of an 850-megawatt (MW) solar power generating facility and its ancillary systems. The original Project footprint encompassed 8,230 acres, but has been reduced in size to 6,215 acres based on discussions with the wildlife agencies (Bureau of Land Management, United States Fish and Wildlife Service, Department of Fish and Game, and the California Energy Commission). The smaller footprint facility would be constructed in two phases: Phase 1 would be 275 MW and would cover approximately 2,327 acres; Phase 2 would be 575 MW and would cover approximately 3,887 acres. Project phasing is based on this translocation plan schedule. The Project (both size footprints) would consist of approximately 34,000 SunCatcher™ solar dishes. Construction is tentatively scheduled to occur over an approximate five-year period beginning in 2010 through 2012 for Phase 1 and between 2013 and 2015 for Phase 2.

Based on input from the U.S. Fish and Wildlife Service's Desert Tortoise Recovery Office (DTRO) and the wildlife agencies, the northern boundary of the original Project site was modified to include an approximate 4,000-foot desert tortoise linkage between the Project (exclusive of all detention basins) and the base of the Cady Mountains. To accommodate this modification, the detention basins were re-configured to extend east to west along the northern Project boundary and the boundary between Phases 1 and 2, which allows the detention basins to be included within the Project fenceline (chain link and tortoise exclusion fencing) and outside of the 4,000-foot wildlife linkage. The detention basin design also maintains the natural drainage patterns of the site. Additional modifications were made to the overall original project footprint, resulting in a decrease in project acreage to 6,215 acres (a 2,015-acre reduction from the original 8,230 acre footprint). Several support facilities were adjusted, and the remainder of the Phase two solar field footprint was decreased to avoid the majority of the sensitive biological and flood-prone areas of the site and minimize the distance needed for desert tortoise (Gopherus agassizii; DETO) translocation. This new footprint will allow the Applicant to meet the requirements of the power purchase agreement PPA, avoid environmentally sensitive areas, reduce the loss of desert tortoise habitat, reduce direct impacts to individual tortoises, avoid or reduce impacts to special status plants, and pull away from the toe of the Cady Mountains.

1.1.2 Project Location

The Project is located in an undeveloped area of San Bernardino County, California, approximately 37 miles east of Barstow, California and north of Interstate 40 (I-40; Figure 1). The Project is located primarily on public land administered by the Bureau of Land Management (BLM), under the jurisdiction of the BLM Barstow Field Office. The 6,215-acre area in which the Project would be constructed is primarily open, undeveloped land within the Mojave Desert between approximately 1,810 and 3,050 feet (550 and 930 meters) above mean sea level. The Cady Mountain Wilderness Study Area (WSA) is located north of the Project site. The Pisgah Crater, within the BLM-designated Pisgah Area of Critical Environmental Concern (ACEC), is located south and east of the Project. Several underground and aboveground utilities traverse the area.

The Action Area of the Project is defined in the biological assessment and in this document as the Project site and any necessary components, a 1,000-foot buffer to account for impacts to DETO home ranges, DETO recipient sites, translocation control sites, and all contiguous DETO habitat within 6.2 miles of long-distance translocation sites - based on the average distance DETO may range following a translocation. Other areas within the Action Area include portions of the site that are not a part (NAP) of the Project Plan of Development. These NAP areas are displayed on the attached figures as NAP; however, survey results in these areas are noted in this report. The Action Area also includes a large section of land east of the transmission line located in the BLM Pisgah ACEC, and biological surveys were conducted in this additional area. This land east of the transmission line within the ACEC is not part of the currently proposed Project, but is being considered as a desert tortoise translocation recipient area.

Additional lands outside the Project boundary considered for this plan include areas into which DETO would be translocated and monitored, identified herein as recipient areas and control animal areas. These areas are described in detail below, and are displayed in the figures attached to this plan.

1.1.3 Purpose and Need for this Plan

The Project site supports occupied DETO habitat, and this plan is identified as a key mitigation measure to minimize take (mortality) of this federally- and state-listed species. The Project site would be fenced to preclude DETO access, and the resident population would need to be translocated to suitable habitat off site (recipient site) prior to construction of the facility. DETO found within the Project site would be translocated from the Project site to designated recipient sites off site. These recipient sites would be conserved lands adjacent to or near the Project site.

The DETO population of adult/sub-adult tortoises on the Project site was estimated using 10 m transect survey data (URS 2010) and the USFWS DETO population estimation formula. A total of 57 DETO were found within the reduced footprint Project site in 2010. Of these, 48 adults and 9 subadults were detected (Figure 6). Five of the total 57 tortoise were adults within their burrows. Eighteen DETO were detected within Phase 1 of the Project site - 6 juveniles and 12 adults. Of the 39 DETO detected within the Phase 2 portion of the Project site, 3 were juveniles, 32 were adults, and 4 were subadults. No surveys were conducted within the NAP areas in spring of 2010. Based on the USFWS formula, approximately 93 adults/sub-adults DETO (95 percent confidence range of 47 to 185 individuals) may occupy the 6,215-acre Calico Project site. It is expected that an additional 31.1-51.1% of the individuals detected during 5m clearance surveys will be juveniles (Turner et al. 1987); therefore, an estimated 29-48 (= 93 x 0.311 and 93 x 0.511) juveniles may need to be translocated. Based on the distribution of DETO within the site, the number of DETO that may undergo short-distance translocation (i.e., DETO moved within 500 meters (m)) is estimated to be approximately 30 individuals, and the number of DETO that may undergo long-distance translocation (DETO moved greater than 500 m) is estimated to be up to 101 individuals. The methodology for DETO surveys and population estimation, as described in the URS Corporation (URS) *Calico Solar Biological Assessment (Appendix A), Calico Solar Supplemental Biological Assessment (Appendix B), and Desert Tortoise Survey Results Letter Report, 2010 (Appendix C*), is summarized below.

Subject to agency approvals, this document provides the details required to successfully execute the translocation of all DETO present on the site. Monitoring of translocated DETO and control site (areas

greater than 10km from translocation sites) DETO would occur for at least five years after they are placed on recipient sites and a commensurate number of control animals would be transmittered and monitored over the same time period in order to assess any translocation impacts on DETO and evaluate program success.

1.1.4 Existing Desert Tortoise Data and Population Estimation Methodology

Between March 29 and April 15, 2010, the entire original 8,230-acre Calico Solar Project site was surveyed at one hundred percent coverage (*Desert Tortoise Survey Results Letter Report, 2010)*. Experienced desert tortoise biologists conducted 10–meter [m]-wide belt transects, in accordance with the 2010 USFWS Pre-Project Survey Protocol. Preliminary results of these surveys are presented in Table 1 and shown on Figures 6 and 7 (for the current reduced Project footprint). A total of 104 tortoise were found on the original footprint of the Project site in 2010. Of these, 88 adults 1 subadult, and 15 juveniles were detected (Figure 6). Ten of the total 104 tortoise were adults within their burrows. Eleven DETO were detected within Phase 1 of the Project site - 4 juveniles and 7 adults. Of the 93 DETO detected within the Phase 2 portion of the Project site, 11 were juveniles, 81 were adults, and 1 was a subadult. No surveys were conducted within the NAP areas in spring of 2010. The northwestern NAP Area 1 also potentially may support a population of 18 to 33 individuals, with the bulk of these individuals clustered toward the northern section. However, no DETO translocation would occur within this NAP area.

Table 1
2010 Desert Tortoise Observations on Calico Solar Project Site
Original Footprint

Tortoise by Age and Location	Acres Surveyed	Adult on Surface	Adult In Burrow	Sub-Adult	Juvenile	Total Detected
Phase 1 - North of Railroad	2,000	4	0	0	4	8
Phase 1 - Northern Detention Basins	320	3	1	0	0	4
Phase 2 - North of Railroad between Phase 1	3,780	69	10	1	10	90
Phase 2- South of Railroad	2,130	1	0	0	1	2
Total on Calico Solar Site	8,230	77	11	1	15	104

For the Agency Preferred Alternative 1a,, the 6,215 acre alternative, which is the current Project description, modifying the Project boundary to exclude 2,015 acres of habitat avoids approximately 46 percent of the adult desert tortoise found on the original Project site. Of the 104 total tortoise found during 2010 surveys, 57 DETO are located within the smaller Project boundary; 47 desert tortoise would now be avoided (Table 2). The Project boundary modifications reduce the estimate of desert tortoises requiring translocation for the Project from 176 to 93 adult individuals and from 32-53 to 29-48 juveniles.

Table 2
2010 Desert Tortoise Observations on Calico Solar Project Site
Preferred Agency Alternative 1a

Tortoise by Age and Location	Acres Surveyed	Adult on Surface	Adult In Burrow	Sub-Adult	Juvenile	Total Detected
Excluded Area along Northern Boundary	1,746	25	3	1	5	34
Phase 1 - North of Railroad	1,876	2	0	0	4	6
Phase 1 - Northern Detention Basins	451	9	1	0	2	12
Phase 2 - North of Railroad between Phase 1	1,747	32	4	0	3	39
Phase 2- South of Railroad	2,139	0	0	0	0	0
Total on Calico Solar Site	6,215	43	5	0	9	57

* The animals from the excluded northern boundary will not need to be moved and are therefore not included in the totals

1.2 PLAN GOALS

The primary goals of the Calico Solar Translocation Plan are stated below.

- Translocate all DETO out of the fenced Calico Solar site.
- Minimize stress and other deleterious effects on all translocated DETO.
- Minimize impact on resident DETO populations at recipient sites.
- Evaluate the success of the program through monitoring for five years after implementation.

SECTION 2 TRANSLOCATION PLAN

2.1 CONSISTENCY WITH AGENCY GUIDELINES

Based on the recent influx of large-scale renewable energy projects within DETO habitat, and incorporating lessons learned from current and past DETO translocation efforts, draft guidelines for DETO relocation (The Desert Tortoise Field Guide), based on collaboration with USFWS, BLM, and California Department of Fish and Game (CDFG), are available from the Desert Tortoise Recovery Office (DTRO) (Appendix E). The USFWS will distribute a new set of guidelines for DETO translocation, which will be supported by a white paper from DTRO. This plan follows the guidelines, to the extent practicable, and incorporates USFWS, BLM and CDFG input based on specific Project constraints. Important aspects of these guidelines are discussed below.

2.1.1 Designation and Location of Recipient and Control Areas

Recipient areas and control animal areas are key elements of this plan. Recipient areas are designated based on the type of translocation performed: short-distance translocation or long-distance translocation. Short-distance translocation involves moving a given DETO found on the Project site within 500 m of the point of capture; therefore, the short-distance recipient area is identified as lands which meet the selection criteria within 500 m of the Project boundary (The figures show a 480-meter buffer so that if a DETO is on the interior edge of the 480 meters, it would still be within 500 meters when moving it to the short-distance recipient site; Figure 2). Long-distance translocation involves moving a given DETO more than 500 m from the point of capture, and, therefore, the long-distance recipient area is identified as specific agency-approved lands more than 500 m from the project boundary (Figure 2).

Desktop and GIS analysis was conducted by URS to develop selection criteria for recipient sites that incorporated DETO habitat suitability mapping (Nussear *et al.* 2009), literature and existing database review, percent slope, land use and ownership, soils, USGS DETO suitability mapping, and proximity to development, highways, and rail lines to determine the best recipient sites. In addition, BLM was consulted to determine the locations of proposed projects that would occur within proposed recipient areas, and the location of the BLM Renewables ROW, which was identified in March 2010 as the preferred area available for development of renewable energy projects. Protection of translocated DETO and long-term habitat manageability are crucial aspects that must be assured. Survivorship may be maximized if DETO are translocated into habitat of similar or better quality to their original home range, as well as within a nearby population with a similar genetic composition. The proposed recipient area should also be contiguous, with ample additional suitable habitat beyond the recipient area into which translocated and/or resident DETO can move.

The USGS suitability mapping is based on a complex model that resulted in model scores of 0 to 1 (Nussear *et al.* 2009). Model scores reflect a hypothesized habitat potential given the range of environmental conditions where DETO occurrence was documented. When compared to known DETO distribution, the mean model score for all DETO presence cells was 0.84, and 95 percent of the cells with known presence had a model score greater than 0.5. It is important to note that there are limitations to the model, and there are likely areas for which habitat potential was predicted not to be high. Likewise, there are likely areas of low potential for which the model predicted higher potential.

In an effort to provide a more complete representation of the analysis that was conducted, existing biological data, including vegetation type, percent slope, habitat suitability, land use and ownership data, and DETO locations (URS 2010), is provided on Figures 3 through 7. The long-distance translocation eligibility area totals approximately 1,233 acres (5.0 square km), and the proposed translocation recipient areas in the Ord-Rodman DWMA total approximately 9,833 acres (39.8 square km). These proposed recipient areas might be further refined based on the site characterization and disease testing results.

A control animal would be designated for each translocated DETO for monitoring purposes. A control animal is defined as one that is greater than 10 km from the translocated and designated resident animal. Therefore, control areas are lands which meet the selection criteria and that are located more than 10 km from a given translocated DETO. For display purposes, a 10-km buffer around the translocation areas is depicted on Figures 3-5 to indicate the nearest potentially-eligible control areas.

2.1.2 Recipient Site Characterization

Protocol surveys of all potential recipient sites were conducted to determine the density and observed health of the resident population and to evaluate the habitat quality of these recipient sites. Surveys were conducted in the proposed ACEC relocation area and in areas adjacent to the DWMA areas currently identified as potential long-distance recipient sites during the 2010 spring DETO active season (April 16 - May 31). Surveys of the potential DWMA translocation recipient sites will be completed in September 2010. Appropriateness of recipient sites will be based on the density of resident tortoise (an indicator of habitat quality), observed habitat quality, and proportion of animals exhibiting signs of disease as described below.

The habitat on the Project site was assessed during the protocol DETO surveys in 2010, then divided into high, medium, and low quality DETO habitat based on the density of resident tortoise (an indicator of habitat quality), observed vegetation cover and forage quality, and proportion of animals exhibiting signs of disease, so that the habitat on the Project site could be directly compared with habitat within the recipient sites and control sites Factors used to qualify habitat value included level of disturbance (grazing, agriculture or roads), presence of native and non-native vegetation (weeds), soil/substrate composition, topography, general landform type, topography, presence of forage, and presence of desert tortoise and/or desert tortoise sign including burrows and scat. Habitat quality on the Project Site and the translocation sites is described below, respectively, and illustrated in Figure 9.

2.1.2.1 High Quality Habitat on the Project Site

The main factor in determining whether habitat demonstrated high quality was based on the presence of DETO and DETO sign. When comparing this measure to the other factors used to determine high quality habitat, several factors were found to correlate well. In addition to containing a high number of DETO and DETO sign, high quality habitat also showed little to no evidence of disturbance, contained little to no weed infestations, and had a uniform and dense cover of forage (annual wildflowers). Physically, the higher quality habitat areas also were located in the transition zones between the foothills and flatter alluvial valleys. These areas were also typically characterized as having a moderate amount of small washes, with gravelly to rocky substrate suitable for burrowing by DETO.

High quality habitat on the Project site was identified in the northern portion of the site, from the foothills and through the transition to sandier alluvial soils, encompassing the basins of Phase 1 and the majority of Phase 2 to the northern boundary of the larger portion of Phase 1 (Figure 9).

2.1.2.2 Medium Quality Habitat on the Project Site

Medium quality habitat contained some evidence of DETO presence, but in much lower concentrations than in high quality habitat. Medium quality habitat still contained substrate suitable for DETO burrowing (gravel and sand), but the presence of larger rocks began to transition to greater concentrations of fine sand. The topography also begins changing from gently sloping washes to flatter alluvial fans. This area is the transition between areas containing a majority of smaller braided washes (high quality habitat) and the relatively flat, sandy alluvial valley (low quality habitat). Disturbance was still relatively low here, with low numbers of invasive plant species and an even distribution of forage and general vegetation. The distinguishing characteristics of medium quality habitat onsite were defined by poorer substrate for burrowing and lack of DT activity.

Medium quality habitat occurs on the Project site as a band along the northern portion of the larger section of Phase 1.

2.1.2.3 Low Quality Habitat on the Project Site

Low quality habitat on-site was mainly defined by the lack of suitable substrate and little evidence of tortoise presence. These areas were closer to the railroad and freeway and contained a higher level of disturbance and had more areas dominated by invasive plant species. Low quality habitat on-site was relatively flat, with the substrate being predominantly sandy with some gravel.

Low quality habitat was found over the lower portion of the larger section of Phase 1, and down into the portions of the site between the railroad and freeway.

2.1.2.4 Habitat Quality of Proposed Recipient Sites

The habitats at the proposed recipient and control sites were compared to the habitat at the Project site with respect to DETO habitat suitability and use. In general, the habitat for all the proposed short- and long-distance recipient areas and control sites consisted of Mojave creosote scrub comparable to the Project site.

Based on the surveys of the Pisgah ACEC translocation area in 2010, the habitat is contiguous and similar to the habitat in Phase 1 and Phase 2 south of the railroad track. The habitat compares directly to areas of the Project site adjacent to this area. The majority of this area is fairly flat, with some braided washes in the north, quickly fading into a large, flat alluvial fan. Soil in the north consists of cobbles with small rock, turning to sandy loam throughout the alluvial fan. Although sandier than the foothills, the dominant vegetation remains Mojave creosote bush scrub. Forage was plentiful in this area due to the sandy loam soils. Some non-native species were observed in this area, consisting of small isolated patches of Sahara mustard; however, it did not occur in large enough patches to pose a risk for infestation. Several large patches of native fiddleneck were observed from the middle to southern portion of this area, suggesting past grazing use. The soft soils and lack of topographic variety (washes) likely contributed to lower than

expected DT activity. The northern portion of this area is medium quality DT habitat, while the southern portion is low quality. A total of 10 adult and 2 subadult DETO and 70 burrows (Categories 1-4) were observed in this area during protocol surveys (Figure 7). An existing transmission line corridor currently divides the ACEC from the Project site. Habitat in this area does not currently appear to be fragmented as a result of the road or transmission line.

The habitat in the northern DETO linkage was surveyed as part of the 1,000 foot buffer of the original Project boundary and is located in the transition zones between the foothills and flatter alluvial valleys but also includes steep rocky slopes at the edge of the Cady Mountains. This area was comprised of creosote bush scrub and desert wash scrub with small to medium washes and gravelly to rocky substrate suitable for burrowing that supported a high number of DETO and DETO sign. The northern linkage habitat showed little to no evidence of disturbance, contained little to no weed infestations, and had a uniform and dense cover of forage (annual wildflowers).

The control sites to the northwest of the site (Figures 6 and 9) were also surveyed in Spring 2010, and show varying levels of grazing, with some areas nearly denuded of vegetation. DETO were still found in these areas, and are likely to have historically occupied these areas in greater numbers, but grazing has reduced the cover, diversity, and size of vegetation in some areas minimizing available resources. Based on the areas where DETO were found onsite and off, it appears that DETO favored topographically diverse habitat consisting of small braided washes alternating with small inter-wash areas of upland. DETO found in the surveyed areas seem to be nearest to the foothills, close to the edges of the survey areas (areas that were greater than 20% slope were excluded from surveys). Additionally, the bulk of the disturbed areas appeared to have been historically good DETO habitat at some point in the past, but have since been denuded of vegetation. These areas are slowly returning to a natural state and could easily support more DETO than they currently do if the habitat quality was improved.

2.1.3 Recommended Allowable Desert Tortoise Density

Based on agency input, the density of the recipient site after translocation should not exceed 130 percent of the known density within the recovery unit, which was determined to be 4.7 DETO per square km (12.2 per square mile). Therefore, the final density within the recipient site cannot exceed 6.0 DETO per square km (15.5 per square mile) for recipient sites that support habitat of good quality. A smaller number of final densities would be allowed in recipient sites supporting habitat of lesser quality. Assuming the proposed recipient areas have good quality habitat and are at the known limit (4.7 DETO/square km), 2 DETO per square km (five per square mile) would be allowed to be translocated into them. An exception to this requirement is the short-distance recipient site in the 1,591-acre desert tortoise linkage on the northern boundary of the Project site that has been created at the request of the DTRO and wildlife agencies. Based on agency input, the density of this area after translocation shall not exceed 10 percent of the current maximum density; thus the final density in the linkage would not exceed 7 DETO per square km. Therefore, 1 DETO per square km (2 per square mile) would be allowed to be translocated into the linkage area.

2.1.4 Monitoring

Monitoring of translocated, resident and control DETO would occur for five years after translocation is completed. A specific monitoring schedule is provided in the guidelines and discussed below.

2.1.5 Personnel Roles and Responsibilities

A lead biologist experienced in DETO ecology and conservation would orchestrate this program and be the main point of contact for the agencies, Applicant, and participating biologists. Participating biologists would hold the appropriate certifications/approvals from USFWS and CDFG for handling DETO. USFWS would provide their approval of the personnel involved once the USFWS Biological Opinion (BO) and BLM Record of Decision (ROD) have been issued for the Project. In order to execute this translocation plan, up to five teams of biologists, each with a team leader, would be designated. Each team would have a specific role, including conducting clearance surveys and health assessments, and attaching transmitters, performing DETO translocation, establishing resident animal habitat and attaching transmitters, and establishing control animal habitat and attaching transmitters. If necessary, a fifth team would initiate DETO monitoring.

Additional biologists with sufficient DETO surveying and monitoring experience, as acceptable to the agencies, would work directly with the approved biologists and act as assistants in performing the various tasks associated with the program. This work would include, but not be limited to: clearance surveys, transmitter attachment and telemetry logistics, health assessments (which would entail drawing blood), DETO retrieval and handling, artificial burrow construction, construction monitoring, and post-translocation monitoring, among other tasks. All biologists would abide by the latest handling guidelines as set forth by the DETO recovery office (USFWS 2009a, USFWS 2010).

Table 3 provides a list of biologists URS proposes for support during the implementation of this plan. These individuals all have previous handling experience, and the majority of the personnel listed are currently involved in the Fort Irwin DETO translocation program. Updated DETO disease awareness training is available, and all DETO handlers would be required to attend this training prior to implementation of this program. Biologist qualifications would be provided to the agencies for review and approval at least 30 days prior to program implementation. Training of new personnel could be conducted by DTRO staff or others in order to ensure sufficient numbers of qualified biologists would be available to implement this plan in a timely manner.

Table 3
Preliminary List of Agency-Approved Desert Tortoise Biologists

Name	Handle	Transmitter Attachment	Blood Draw
Charles Jones	✓	✓	
Crissy Slaughter	✓		
Craig Knowles	✓		
Danna Hinderle	✓		
Eric Somers	✓	✓	
Gretchen See	✓	✓	
Jacquelyn Smith	✓	✓	✓
Laura Pavliscak	✓	✓	✓
Leslie Backus	✓	✓	
Nate Jones	✓	✓	
Peter Woodman	✓	✓	✓
Rachel Woodard	✓		
William Boarman	✓	✓	
Brian Lohstroh	✓		

2.2 EXCLUSIONARY FENCING

The DETO exclusionary fencing used for this Project would follow the specifications provided in the *Desert Tortoise Field Manual* (USFWS 2009b, Appendix F), and would include installing I-beam barriers (cattle guards) across access roads where they meet permanent or temporary exclusionary fencing to act as tortoise guards. DETO exclusionary fencing could be constructed at any time of year. The Project site would be permanently fenced in two phases and temporarily fenced as needed during construction (Figure 9).

At a minimum, the Phase 1 area and portions of the Phase 2 area above the railroad would be fenced in October 2010, and the entire Phase 2 would be fenced as appropriate to allow for clearance surveys, health assessments, and translocation to occur prior to initiation of construction associated with Phase 2, which is currently planned for June 2013. As noted in Section 1, agency guidelines state that fencing can be constructed at any time of year, provided an authorized biologist is present. If delays in construction start times were to occur, the Applicant would fence the Project site in October or November 2010, but clearance surveys for the site and translocation of DETO would be conducted during the next active season. A smaller area of Phase 1 would be cleared to allow the access road and bridge to be built in 2010.

Phase 1 fencing would occur in October 2010 and would include the main Phase 1 area including the right-of-way (ROW) for the access road on the eastern boundary up to the Phase 2 (north of the railroad) boundary, the entire Phase 2 area south of the railroad (not including the westernmost Phase 2 island), and a buffer of the access road located within NAP Area 3 up to the BNSF ROW. If time allows, as much of

Phase 2 will be fenced as possible after Phase 1 fencing and clearance surveys are completed, and tortoise clearance surveys would be conducted during the next active season. Temporary fencing will also be placed in areas where necessary to ensure DETO do not gain access to Phase 1 construction activities. Figure 9 depicts the fencing plan for the Project. In addition to fencing for Phase 1, approximately 10 temporary quarantine holding pens would also be constructed in the Pisgah ACEC relocation area.

Phase 2 fencing would occur in a segmented fashion, starting with the Detention Basins in April-May 2011. The 'chimney' portion of Phase 2 and the westernmost 'island' of Phase 2 will be fenced and cleared during an active season in 2012. Figure 8 illustrates the general proposed timing of the fencing for the Project. DETO from the Phase 2 areas would be translocated to the long-distance receptor sites.

Prior to exclusionary fence construction, survey crews would stake the alignment on foot, or with aid of a vehicle driven only on paved or unpaved roads (not on natural terrain). The vehicle would be restricted to a speed of 35 miles per hour (mph) on paved roads and 25 mph on unpaved roads. Twenty-four hours prior to construction of the fence, qualified biologists would survey the staked fence alignment for DETO. The surveys would be 100 percent coverage clearance surveys with transects 5 m apart, and would include a 30-m-wide swath of area centered on the fence alignment. For the main portion of Phase 1, DETO detected during these fence clearance surveys would be moved into the adjacent Pisgah ACEC short-distance translocation recipient site. Those which can be placed within 500 m of their point of collection in the recipient site in the ACEC will be moved without the requirement for disease testing, and those which will be placed a distanced greater than 500 m from their collection point will be placed in the temporary quarantine pens inside the ACEC while awaiting results from the blood sample analysis for disease testing. The tortoise that were detected in main portion of Phase 1 during 10 m transect surveys, and that can be moved less than 500 m from the location they are collected, would not require disease testing before being moved to the ACEC. However, it is expected that additional DETO (adults + juveniles) may be found during 5m transects and would require translocation into the ACEC and may require blood tests and temporary placement into the quarantine holding pens, depending on their location when detected. In addition to the Project site, two DETO were detected in an area that was recently identified as an environmentally sensitive area on the west side of NAP Area 2 and has been excluded from the Project footprint. To avoid and minimize loss of DETO in this recently excluded area, the Applicant proposes to relocate all DETO found in this area. These DETO would be relocated greater than 500 m from their current location, which would require blood testing prior to moving them to the long-distance translocation site. The Applicant proposes to install temporary fencing around the Project line (on the west side of NAP Area 2) that surrounds this environmentally sensitive area while waiting for blood test results (Figure 8) to avoid moving the tortoise more than once. The fencing around this area would be removed once the DETO are relocated to the long-distance translocation areas in Spring 2011. Also, an unknown (but predicted to be small) number of DETO reside in the NAP Area 2; the Applicant is working with the private land owners to gain access to this area. In portions of the NAP Area 2 where access is gained, the Applicant will translocate the DETO following the procedure for any DETO being moved greater than 500 meters.

During exclusionary fence clearance surveys for the detention basins in Phase 1 planned for spring 2011, DETO collected within 500 m of the location where they are released in the linkage area will be moved without disease testing. The majority of the DETO detected during the spring 2010 surveys were detected within 500 m of the boundary of the Phase 1 detention basin areas and can be moved without requiring blood testing; however, the number of tortoise that would be placed in the linkage will be limited to avoid

raising the tortoise density of the linkage above 10% of its current density (4.5 tortoise per kilometer). Any additional individuals that are detected in the detention basin portion of Phase 1will be placed in quarantine pens within the Pisgah ACEC or placed into the linkage area to the north of the basins (Figure 3), and once they are found to be healthy will be released. An additional option would be to hold the DETO in quarantine pens in Phase 2 of the Project site until they are found to be healthy. The same procedures for translocation would be followed if this option is used.

Following installation of the desert tortoise exclusion fencing for both the permanent site fencing and temporary and permanent exclusionary fencing, the fencing shall be regularly inspected. Permanent and temporary fencing will be inspected at least two times a day for the first 7 days to ensure a recently moved tortoise has not been trapped within the fence. Thereafter, permanent and temporary fencing will be inspected monthly and within 24 hours following all major rainfall events. A major rainfall event is defined as one for which flow is detectable within the fenced drainage. Any damage to the fencing will be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within 48 hours of observing damage. Inspections of permanent site fencing will occur for the life of the Project. All fencing will be repaired immediately upon discovery and, if the fence may have permitted tortoise entry while damaged, the Designated Biologist will inspect the area for tortoise. If fencing is not repaired within 48 hours, the BLM Wildlife Biologist will be notified within 5 business days to determine if additional remedial action is required, such as the need for conducting additional clearance surveys within the Project footprint.

During clearance acitivities for all remaining activities (i.e operation, maintenance, and abandonment, DETO detected within the fence ROW would be moved out of harm's way, and relocated outside the Project area in designated recipient sites. All DETO burrows detected within the fence alignment would be checked for occupancy, and then collapsed. Burrowed DETO found within the fence alignment would be excavated and moved to the appropriate location, as mentioned above. Moved DETO would be placed under a bush or other appropriate location out of direct sun exposure, or placed in an artificial burrow if other burrows are not available or if weather conditions require it.

2.3 CLEARANCE SURVEYS

2.3.1 Clearance Survey Schedule

As indicated above, DETO clearance surveys would occur on the Project site after the BO and BLM ROD are issued. These clearance surveys would follow the guidelines provided in the *Desert Tortoise Field Manual* (USFWS 2009b). A clearance survey would also take place along the exclusionary fence alignment, as mentioned above. These clearance surveys would take place according to the schedule indicated in Table 4 (See Table 5 for a complete schedule for this plan).

2.3.2 Clearance Survey Methodology

The clearance survey would be conducted after the DETO exclusionary fence is constructed within each phase or in each area where construction will occur, and would consist of at least two consecutive surveys of the site using 5-m-wide belt transects. The second survey would be performed perpendicular to the first. If any tortoises are detected in the second sweep, a third sweep would be conducted. This process

would continue until a sweep is conducted in which not tortoises are detected. The intent of the clearance survey is to detect all DETO aboveground and belowground within the Project site and move them out of harm's way. If necessary, DETO would be coaxed or excavated from burrows, then those burrows and unoccupied burrows would be collapsed. DETO burrows would be excavated according to the *Desert Tortoise Field Manual*, which allows the use of hand tools. After construction has commenced, in the event that a desert tortoise is located inside the exclusion fence, an authorized biologist will collect the desert tortoise and follow appropriate translocation procedures.

DETO detected during the clearance surveys would undergo a health assessment (and blood sample analysis if being moved more than 500 m), and then would be translocated by a second team of biologists. Data collected for each captured DETO would include midline carapace length (MCL), sex (if MCL is greater than 180 mm), weight, health, capture location recorded with a global positioning survey (GPS) unit accurate to within 3 to 5 m (including a note if DETO is in a burrow), and capture location habitat description. Each DETO would also be photo-documented, given a unique identification number that would be glued to the carapace according to approved methods, and fitted with a radio transmitter for monitoring.

Table 4
Desert Tortoise Clearance Survey Schedule

Date	Clearance Action	Concurrent Actions
September 29, 2010 (ROD issued and permitted to start work, according to the BLM)	(1) Clearance Surveys for Exclusionary Fence (2) Construction of Phase 1 exclusionary fence, including portions of Phase 2 south of the railroad	Visual heath assessment, DETO in fence ROW moved out of harm's way and transmittered. .For desert tortoise along the southern fence boundary, if they cannot be moved less than 500 meters, they would be placed back within the project site. Construction of up to eleven 20mx20m quarantine pens and artificial burrows inside the pens within the Pisgah ACEC.
October 2010	1) Clearance Survey for Phase 1 (exclusive of the detention basins) and portions of Phase 2 south of the railroad	DETO that can be moved within 500 m of their point of collection will be moved into the Pisgah ACEC translocation site. Disease testing of all DETO that will be moved greater than 500 m. DETO awaiting blood sample analysis will be placed into individual quarantined pens within the Pisgah ACEC translocation site, Surveys and health assessments commence in the translocation and control sites. Monitoring of all transmittered DETO commences.
Fall 2010, concurrent with Phase 1 translocation, if schedule allows	(1) Clearance Surveys for Exclusionary Fence of Phase 2 (2) Construction of Phase 2 fence	Monitoring of recently translocated resident and control DETO commences. Disease testing of recipient sites receiving DETO from further than 500 m of their collection site (Pisgah ACEC and Ord-Rodman DWMA).
Spring 2011	1) Clearance Surveys for Detention Basins, and access road	DETO that can be moved within 500 m of their point of collection will be moved into the northern DETO linkage (no blood sample analysis required), or into quarantine pens in the Pisgah ACEC. DETO awaiting blood sample analysis will be placed into individual quarantined pens within the Pisgah ACEC. Surveys and health assessments commence in the translocation and control sites. Monitoring of all recently transmittered DETO commences.

Table 4
Desert Tortoise Clearance Survey Schedule
(Continued)

Date	Clearance Action	Concurrent Actions
Spring 2013, Phase 2 translocation is compete, if schedule allows	Clearance Surveys for Phase 2	DETO that can be moved within 500 m of their collection point will be moved into the northern linkage without blood sample analysis, DETO awaiting blood sample analysis will be placed into individual quarantined pens within the northern linkage or within the long-distance receptor site. Surveys and health assessments commence in the translocation and control sites. Monitoring of all recently transmittered DETO commences.

Acronyms:
BLM – Bureau of Land Management
DETO – desert tortoise
ROD – Record of Decision

The radio transmitter would be fitted on DETO according to established methods (Boarman *et al.* 1998) and would have a battery life of at least one year. Radio transmitters might be temporarily attached with duct tape if temperature or time constraints would not allow for proper transmitter attachment. These transmitters would be removed and affixed properly within 48 hours. DETO fitted with radio transmitters would be monitored according to the monitoring schedule described below, and transmitters would be removed once monitoring is completed (approximately 3 years after translocation). If an animal is too small to be able to receive a transmitter, it would be translocated using the same protocols above except they would not receive a transmitter and would not be part of the monitoring program.

In the event a DETO nest is detected during the clearance surveys, it would be translocated according to established protocol (Desert Tortoise Council 1994, rev. 1999) to a site with similar physical characteristics in the recipient area. Only potentially viable nests (*i.e.,* those discovered between May and October [Karl and Resource Design Technology 2006]) would be translocated. On-site burrows confirmed or suspected of being occupied by DETO would be excavated according to established guidelines, and as described in the *Desert Tortoise Field Manual*, and would be collapsed after DETO are safely removed. Unoccupied burrows within the Project site would also be collapsed at this time.

2.4 TORTOISE HANDLING AND TRANSPORT

2.4.1 Tortoise Health Considerations

DETO suffer from various diseases that range from upper respiratory tract disease (URTD) to cutaneous dyskeratosis, herpes virus, shell necrosis, bacterial and fungal infections, and bladder stones (USFWS 2008, Homer *et al.* 1998; Berry et al. 2002; Origgi *et al.* 2002). Two of these diseases, URTD and cutaneous dyskeratosis, have been implicated in negatively affecting DETO populations (Jacobson *et al.* 1991 and Jacobson *et al.* 1994). Little information is available regarding the distribution of the other maladies or the magnitude of their effects within or among DETO populations (Boarman 2002).

URTD is a contagious disease that is transmitted through direct contact (Brown *et al.* 2003) and appears to be exacerbated by stress (M. Brown – Personal Communication to Tracy *et al.* 2004). Transmission

most likely occurs when the infected DETO exhibits clinical signs (*e.g.*, nasal discharge, wheezing, conjunctivitis, and lethargy) during the acute phase of the disease, although an infected DETO may not exhibit these signs. In an effort to positively identify URTD-infected (seropositive) DETO with the highest degree of confidence, a blood sample is collected and subsequent laboratory analysis is conducted (Schumacher *et al.* 1997).

In an effort to avoid infecting resident populations, as well as healthy DETO to be moved, a visual health assessment would be completed on all translocated DETO, as well as on the resident populations within the recipient sites. Additional disease testing in the form of blood sample analysis would occur for DETO that are moved more than 500 m from their captured location. For the Phase 1 translocation effort, blood samples would be collected from each DETO, which are fitted with radio transmitters and then placed in a 20 meter by 20-meter quarantine holding pen within the Pisgah ACEC receptor area. At this time, DETO being moved less than 500 meters could be moved to one of two translocation areas, the Pisgah ACEC for DETO found in Phase 1, and DETO found in the detention basin area of Phase 1 will be moved to the DETO linkage situated along the northern boundary of the Project. Desert tortoises from these two areas that will be moved greater than 500 meters will be contained in quarantine pens in the Pisgah ACEC while waiting for the results of their blood tests. For Phase 2, the animals would be transmittered, blood samples would be taken, and the animals would be left in place while blood testing results are being compiled. After the blood sample analysis is complete, healthy DETO would be released from their quarantine pens by removing the exclusionary fence, and allowing the DETO to move freely within the translocation area. Diseased or seropositive DETO would remain in the quarantine pens until they can be removed from the field and taken to an appropriate facility approved by the DTRO and CDFG.

Resident DETO of the Ord-Rodman DWMA translocation receptor sites will receive a health assessment, including a disease test if it the area will receive any desert tortoises from greater than 500 meters away. Diseased or seropositive DETO would be left on site and a 2.5-km buffer, in which no translocation could occur, would be mapped around these sick resident animals.

Collection of blood samples would follow approved protocols (University of Florida, Department of Pathobiology, undated), and samples would be sent to an approved laboratory for analysis (*e.g.*, University of Florida Mycoplasma Research Lab). Blood samples are best collected during a DETO active phase, from April through May 15 and September through October 31, in order to obtain results with the highest confidence. These limitations may change based on weather conditions and DETO behavior. URTD-infected and/or otherwise diseased DETO found on the Project site would remain in the quarantine holding pens until they can be removed from the field and placed in an appropriate facility approved by the DTRO. A 2.5-km buffer zone would be placed around diseased or seropositive DETO found within the recipient sites, and no translocation would occur within this buffer zone.

2.4.2 Translocation Procedures

DETO handling would follow established guidelines (USFWS 2009a) and would focus on the well-being of the animals. New clean latex gloves would be used when handling tortoises – new gloves being donned each time a different animal is handled. Biologists would strive to keep DETO captivity time for handling and transport to approximately 30 minutes; however, some translocations may take longer than this if the recipient site is a long distance away. Captive DETO would be shaded at all times to avoid

overheating, and would be monitored periodically for signs of overheating or stress. No DETO handling would occur if the temperature in the shade two inches aboveground exceeds 95 degrees Fahrenheit (ºF) (35 degrees Celsius), and translocation procedures would not occur if temperatures are forecast to exceed this threshold. In the unanticipated event that temperatures exceed 95ºF with a DETO in captivity, DETO would be kept in a controlled environment at a temperature below 95ºF until conditions became suitable for release. For translocated DETO, releases should occur when temperatures range from 18-30°C (65-85°F) and are not forecasted to exceed 32°C (90°F) within 3 hours of release or 35° (95°F) within 1 week of release. Additionally, forecasted daily low temperatures should not be cooler than 10° C (50°F) for one week post-release. In some cases, DETO might be held overnight to comply with these temperature constraints, and released the following morning. Ground temperatures shall be measured on the ground surface in an area near the DETO in full sun, with the thermometer in the shadow of the observer. Ambient air temperature shall be measured in the shade, protected from wind, at a height of 2 inches (5 centimeters) above the ground surface.

DETO would be transported in a covered plastic tub that had been sterilized with a 10 percent bleach solution. If transported by vehicle, DETO would be secured and cushioned to prevent injury, and vehicle speed would be limited to 25 mph on unpaved roads and 35 mph on paved roads.

DETO being moved less than 500 meters detected during the clearance surveys would be fitted with radio transmitters and translocated to an appropriate location outside the project fence (a location out of direct sun exposure is best, such as under/within the shade of a bush). Construction of artificial burrows might be necessary if there are not many available in the recipient site. Translocation of DETO up to the maximum distance of 500 meters into the recipient site is not necessary or recommended by the USFWS, since shorter distance translocation would potentially keep individuals closest to or within their home ranges. However, even spatial distribution of DETO within the recipient site is important and must be considered when determining specific locations. DETO would be released at the recipient site which would be prepared according to the guidelines described in Sections 2.5.3.2 and 2.6.3.2. DETO would be released within the shade of a shrub if temperatures do not exceed 95ºF. Following release, the DETO would be monitored to ensure that it is acclimating normally and has found adequate shelter.

DETO would be released at the recipient site which would be prepared according to the guidelines described in Sections 2.5.3.2 and 2.6.3.2. DETO would be released within the shade of a shrub if temperatures do not exceed 95ºF. Following release, the DETO would be monitored to ensure that it is acclimating normally and has found adequate shelter.

DETO would undergo a rehydration regimen if they void their bladder during handling, and within 12 hours before release, all DETO to be translocated should be hydrated according to existing protocols. The rehydration regimen would take place at the location where the DETO is to be released, whether it occurs during the initial clearance surveys or during translocation. Rehydration would consist of placing the DETO in a sterilized tub of water for a minimum of 10 minutes. The water level in the tub would not exceed the height of the DETO's lower jaw. The water temperature would not be extremely hot or cold, relative to ambient conditions.

Holding Pens

In some cases, DETO slated for translocation might need to be placed in temporary holding pens. Although some of these scenarios are described above, a list of all the known potential scenarios in which a holding pen would be required is provided below.

- DETO adults found in Phase 1 that are greater than 500 m from the edge of the Project boundary will be placed in quarantined holding pens in the adjacent Pisgah ACEC while awaiting health assessment results. Once the test results are returned and the DETO are deemed healthy, and the conditions are appropriate (weather, tortoise behavior, etc.), the fences will be removed and the tortoise will be allowed to move freely within their translocation area.
- Juvenile DETO are translocated using the same methods as adults. Juvenile DETO too small for transmitter attachment (*i.e.*, less than 110 mm MCL or those tortoise where the total mass of the epoxy and transmitter would weigh more than 10% of the body weight of the juvenile tortoise) would undergo a health assessment (blood samples taken if moved more than 500 m), and if healthy, moved to a predator-proof holding pen (Morafka *et al.* 1997) in the recipient site. If vegetation is not adequate in the holding pens, the tortoise might require supplemental feeding and hydration. This holding pen would be modified to allow departure of the juvenile DETO after a two-week acclimatization period, if conditions are suitable.
- DETO found to be diseased and/or seropositive would be placed in a designated quarantined holding pen onsite located in the Phase 2 or another area that is not being developed at the time of clearance surveys until they could be removed from the field. Seriously ill or otherwise compromised DETO may be euthanized if deemed appropriate, and with approval from the resource agencies.
- Previously undetected DETO found during Project construction would be moved out of harm's way. These DETO would be placed in individual quarantined holding pens, preferably in the recipient area where they would be translocated. Once the health assessment or blood sample analysis (if necessary) is complete, the tortoise will be released by removing the pens during the appropriate conditions.
- Other unforeseen circumstances which might require agency consultation.

The quarantine pens shall measure approximately 20 meters by 20 meters to enclose one tortoise and an artificial burrow, which will be constructed according to the Desert Tortoise Field Guide prior to installing the quarantine pen. Steel T-posts or rebar (2 to 3 feet or 0.6 to 0.9 meter) should be placed every 4 to 5 meters to support the pen material. The pen material should extend 30 inches (45.7 centimeters) aboveground, and the bottom of the enclosure shall be buried 6 to 12 inches, or bent inward (towards the burrow) with sandbags placed along the base, or any other measures necessary to ensure zero ground clearance. Care shall be taken to minimize visibility of the pen by the public. An Authorized Biologist or Desert Tortoise Monitor shall check the pen at least daily and ensure that the DETO is in the burrow or pen, the DETO is being cared for in compliance with the animal husbandry plan developed by the vet, and the pen is intact. All instances of penning or issues associated with penning shall be reported to the USFWS within one working day.

According to the guidelines set forth by the agencies, DETO cannot be held within a holding pen for more than one year. In addition, all quarantine facilities and animal husbandry plans would be developed by a qualified veterinarian and approved by the DTRO. For holding pens on the Project site, additional disease testing would be required for all DETO found to be within 500 m of a seropositive or diseased DETO prior to translocation. Currently, the Applicant proposes to construct up to 10 quarantined holding pens in the Pisgah ACEC translocation area.

2.5 TRANSLOCATION < 500 METERS

2.5.1 Site Considerations and Proposed Locations

The rationale for short-distance translocation is to move DETO found inside the Project boundary to areas within 500 metersoutside the Project boundary, and, therefore, possibly keep them within their home range. DETO found within Phase 1 and Phase 2 would be eligible translocation < 500 meters. The potential recipient sites have been designated, with direction from the agencies, and include suitable BLM Pisgah ACEC lands on the eastern edge of the Project site and the linkage area at the northern edge of the project boundary. One hundred percent coverage (10-m belt transects) protocol surveys were conducted within the Pisgah recipient areas in Spring 2010, between April 16 and May 25, 2010, partial surveys (1,000 feet beyond the original Project boundary) were conducted in the linkage area to the north. The Spring 2010 surveys also did not cover the entire receptor area in the Ord-Rodman DWMA. Some areas are scheduled to be surveyed in Fall 2010.

The animals in Phase 1 exclusive of the detention basins will be moved in2010. Those individuals that can be moved less than 500 m from the location that they were collected will be moved to the Pisgah ACEC. More adult and juvenile DETO in Phase 2 would potentially require translocation to the Pisgah ACEC, the northern linkage, or the Ord-Rodman DWMA, depending on their location when detected during the 5 m clearance surveys of Phase 2.

The area in the Pisgah ACEC which will receive desert tortoises moved less than 500 meters potential short-distance recipient site is shown on Figure 2, and comprises approximately 942 acres (3.8 square kilometers) that could potentially support up to 11 additional DETO (3.7 additional DETO per square kilometer). The number of tortoise that could be relocated into the ACEC was determined through agency guidance to limit the resulting density of the recipient site to a maximum of a 30% increase in density assuming the site supports habitat of equal or better quality the areas from which the desert tortoises are moved. The short-distance translocation eligibility areas are shown on Figure 3. The Pisgah ACEC will be accepting DETO moved <500 meters and > 500 meters. The linkage area to the north will be accepting desert tortoises moved < 500 meters. The Ord-Rodman DWMA will be accepting any additional desert tortoises that cannot be accommodated by the nearby translocation areas due to density restrictions. All of the DETO that are moved into the Ord-Rodman DWMA will be translocated > 500 meters.

A designated resident DETO within the receptor site of same sex and similar age would be monitored for every translocated DETO placed in a recipient site (if available). This resident DETO would be fitted with a radio transmitter and monitored in concert with the translocated DETO. As stated previously, a control DETO is one that is found more than 10 km away from both the resident and translocated DETO, and is the same sex and similar age. Potential areas for locating control animals have been identified to the

northwest of the Project site, shown in Figures 3 through 5. These control animals would be transmittered and monitored in concert with the translocated animals and resident animals.

2.5.2 Proposed Location

Desktop GIS analysis using the criteria described above in Section 2.1.1 was used to determine the potential long-distance receiver sites that are located as close as possible to the Project site. Any DETO than cannot be translocated into the areas adjacent to the project site will be moved to the Ord-Rodman DWMA. We anticipate that this number should be within the 95% confidence interval determined by project site surveys, up to 185 animals.

The proposed DETO Translocation Recipient Areas are presented on Figures 2 through 5. These proposed areas were delineated based on DETO habitat suitability as modeled by the United States Geological Survey (USGS) (2009) (Figure 3), and land use and ownership of areas proximal to the Project site (Figure 4). To avoid issues with land acquisition and management, only DWMAs and ACECs on BLM lands were considered for potential translocation recipient areas. Criteria resulted in the proposed long-distance translocation recipient areas in the Ord-Rodman DWMA and the Pisgah ACEC shown on Figures 3 through 5.

The proposed DETO translocation area adjacent to the site for Phase 1 and 2 of the Project is presented in Figure 2. The majority of animals moved into these areas will be moved less than 500 meters, however, some desert tortoises moved greater than 500 meters will be translocated into the Pisgah ACEC as previously discussed. This figure shows the areas within the Project site in which DETO would be eligible for translocation within 500 meters, and are depicted as the short-distance translocation eligibility area (green). The tan area outside the Project site represents the areas into which DETO would be translocated within 500 m and is depicted as the short-distance translocation recipient area. The eligible translocation area for Phase 1 and Phase 2 is approximately 942 acres in the Pisgah ACEC immediately adjacent to the Project site and the 1,591 acre linkage area to the north. However, there are relatively large areas of suitable habitat beyond the Pisgah ACEC translocation recipient area into which DETO can move.

If the number of DETO needed to be translocated from the project site exceeds the carrying capacity of the Pisgah ACEC and the linkage area to the north, these animals will be moved to the Ord-Rodman DWMA greater than 500 meters away. Also, DETO found within the majority of the areas in Phase 2 are expected to be moved to the Ord-Rodman DWMA greater than 500 meters away, depicted as the long-distance translocation eligibility area. The proposed recipient areas are shown on Figures 2 through 5, and are discussed below.

2.5.3 Short-Distance Translocation Site Characterization

A protocol survey of the short-distance translocation recipient site was conducted to assess quality and density of the resident population. This task was conducted concurrently with the surveys conducted within the long-distance translocation areas and on the Project site in Spring 2010. The USFWS Protocol Survey of the short-distance translocation recipient site included 100 percent coverage, 10-m belt transects to assess the habitat value and DETO density so that translocated DETO would not compromise

existing populations. Data collected for all DETO detected was the same as described in the clearance survey methodology above, including a visual health assessment.

The habitat at the translocation recipient sites must be evaluated and compared to the habitat from which the translocated DETO originate, such that DETO would be translocated into habitat similar to the habitat from which they came. Both macro-habitat features (precipitation, soils, vegetation community, density, geomorphology [*i.e.*, hills, alluvial fan, bajada, wash, *etc.*]) and micro-habitat features (*i.e.*, slope, aspect, forage species, *etc.*) would be evaluated before translocating DETO. In addition, suitable areas for translocation would not include high incidences of anthropogenic disturbance (*e.g.*, highly fragmented by roads, off-highway vehicle activity, *etc.*).

Portions or all of the recipient area might be ruled out for short-distance translocation for various reasons. Potential reasons might include the following: 1) the habitat is of insufficient quality or lacks enough similarity as compared to the habitat where the DETO are being translocated from; 2) the resident DETO population within the recipient areas is determined to be too dense (or at carrying capacity) and introduction of translocated individuals would compromise translocated individuals, the resident population, and/or both; and 3) diseased individuals are detected within the resident population. A 2.5-km buffer into which no translocation could occur would be placed around these diseased individuals. The occurrence of health-compromised DETO is estimated to be approximately three to five percent of the population (AMEC 2008). In the event the entire recipient area is ruled out, or there is a lack of sufficient habitat to support any additional short-distance translocations, additional recipient sites would need to be identified.

A protocol survey of the Pisgah ACEC translocation recipient site was conducted to assess the habitat quality and density of the resident population. This task was conducted concurrently with the surveys conducted within portions of the Ord-Roadman DWMA translocation areas, control areas, and on the Project site in Spring 2010. The USFWS Protocol Survey of the Pisgah ACEC translocation recipient site included 100 percent coverage, 10-m belt transects to assess the habitat value and DETO density so that translocated DETO would not compromise existing populations. Data collected for all DETO detected was the same as described in the clearance survey methodology above, including a visual health assessment.

2.5.3.1 Pisgah ACEC and Northern LinkageTranslocation Sites

Based on the surveys of the Pisgah ACEC translocation area in 2010, the habitat is contiguous and compares directly to the habitat in Phase 1 and Phase 2 south of the railroad track. This area is located within the Pisgah Area of Critical Environmental Concern (ACEC) and the habitat compares directly to areas of the Project site adjacent to this area. The majority of this area is fairly flat, with some braided washes in the north, quickly fading into a large, flat alluvial fan. Soil in the north consists of cobbles with small rock, turning to sandy loam throughout the alluvial fan. Although sandier than the foothills, the dominant vegetation remains Mojave creosote bush scrub. Forage was plentiful in this area due to the sandy loam soils. Some non-native species were observed in this area, consisting of small isolated patches of Sahara mustard; however, it did not occur in large enough patches to pose a risk for infestation. Several large patches of native fiddleneck were observed from the middle to southern portion of this area, suggesting past grazing use. The soft soils and lack of topographic variety (washes) likely contributed to

lower than expected DT activity. The northern portion of this area is medium quality DT habitat, while the southern portion is low quality. A total of 10 adult and 2 subadult DETO and 70 burrows (Categories 1-4) were observed in this area during protocol surveys (Figure 7). An existing transmission line corridor currently divides the ACEC from the Project site. Habitat in this area does not currently appear to be fragmented as a result of the road or transmission line.

2.5.4 Site Preparation

Specific sites into which DETO would be translocated would be of similar or better habitat, with similar micro-habitat features (as described above), if possible. Sites chosen would be a suitable distance from roads and other areas of relatively frequent and unprotected anthropogenic disturbance (e.g., fenced or otherwise excluded from DETO use) so that DETO would not be put at risk. Because all DETO that are moved greater than 500 m must undergo blood sample analysis, and cannot be placed into the translocation areas until they are found to be free of disease, quarantined holding pens with artificial burrows will be constructed in the Pisgah ACEC translocation area, as discussed above. Prior to commencement of translocation activities, the pens will be built approximately 1300 feet apart and dispersed as evenly as practicable within good-quality habitat in the Pisgah ACEC translocation area. DETO will be placed in the holding pens after having blood samples taken and fitted with radio-telemetry transmitters, and will remain in the pens until test results are received. Once the test results are received and DETO are deemed healthy, the pens will be removed and the DETO will be allowed to move freely within the translocation area. This method removes the need to move the DETO more than once, decreasing the direct impacts on the DETO being translocated. The pens will be constructed according to the Desert Tortoise Field Guide and the DETO will be cared for in compliance with the animal husbandry plan developed by a veterinarian and approved by DTRO. An Authorized Biologist or Desert Tortoise Monitor will check the pens at least daily and ensure that the DETO is in the burrow or pen, the DETO is well, and the pen is secure.

If juvenile desert tortoise will be translocated greater than 500 meters, a predator-proof holding pen for juvenile DETO would be constructed within the recipient site to hold the juveniles, while awaiting disease test results. The enclosure would be constructed according to approved specifications (Morafka *et al.* 1997) and of suitable size to support all individuals.

2.6 LONG-DISTANCE TRANSLOCATION GREATER THAN 500 METERS

2.6.1 Site Considerations

Long-distance translocation consists of moving DETO found on site more than 500 m from the eastern boundary of the Project to the translocation recipient sites supporting suitable habitat in the Ord-Rodman DWMA. Caveats and selection criteria for potential translocation recipient areas include the use of suitable habitat on BLM lands only and in habitats that are situated on slopes shallower than 20 percent. Proximal DETO translocation areas were identified based on current biological survey data and extensive desktop analysis that included coordination among URS, USFWS, BLM, and CDFG biologists. A recipient site characterization, including a habitat assessment, DETO protocol surveys, and observational

health assessment of the resident DETO population, was started in Spring 2010 and will be completed in Fall 2010, as described in Section 2.6.3.1.

The Ord-Rodman DWMA recipient areas comprise approximately 9,833 acres (39.8 square kilometers) (Figures 3 through 6), and could support up to 7 DETO per square km, totaling up to 60 additional DETO during translocation efforts. Surveys were conducted in portions of the Ord-Rodman DWMA in spring 2010, which would be used for long-distance translocation receptor sites. 100% protocol DETO surveys and habitat assessments will be conducted in the remaining proposed long-distance sites in September 2010 to determine tortoise density and micro-habitat quality.

2.6.2 Site Characterization

A protocol survey of the Ord-Rodman DWMA translocation recipient sites will be conducted in September 2010 to determine the habitat quality and density of the resident population. Survey results for the Pisgah ACEC were discussed previously. The surveys of the recipient site would include 100 percent coverage, 10-m transects, with the same methods as described in the clearance survey methodology above. DETO population density within the recipient sites will be assessed, and the number of DETO placed into the recipient sites will be limited to allow a density increase of no more than 30% greater than existing densities.

During implementation of the proposed Project, a disease assessment of the resident population, including blood sample analysis, would also be conducted in the translocation recipient sites during the active phase of DETO in fall 2010.

Portions or all of the recipient areas might be ruled out for translocation for various reasons, as described in Section 2.5.3 above.

Habitat assessments and 100% protocol DETO surveys of adjacent DWMA areas were conducted in May 2010. Results from these surveys are provided below, and were used to describe the general habitat characteristics of the proposed translocation sites; detailed information on the actual recipient sites will be updated upon completion of the surveys in September 2010.

2.6.3 DWMA 1

This area is located south of I-40 and south of Route 66 (Figures 4 and 9). Topography of this area is dominated by two large washes with a multitude of associated braided washes, and areas of large boulders and cobbles. The entire area is a large gently sloping bajada similar to the high quality habitat onsite. Vegetation is comprised of a diverse and uniform assemblage of Mojave creosote scrub, with little to no signs of grazing or other disturbance. Non-native species were not abundant and the area is mostly pristine. A transmission line access road cuts through this area and hiking trails are located here as well, but there is little sign of human disturbance. The washes were large enough to support smoke tree and desert willow stands. The soil is mostly gravelly substrate, with few areas of pure sand. Despite the similarity of this site to the high quality habitat on the Project site, burrows and DETO were not found in the quantities expected. Caliche caves were abundant in the banks of the numerous washes, but little DETO sign was noted in or around the majority of them. An inordinate number of carcasses was observed here, all within the same relative age class of roughly two to four years, suggesting a die-off. The

carcasses were all intact with no signs of predation. Based on the healthy appearance of all the live DETO seen in this area (17 adult, 1 subadult and 1 juvenile), disease does not appear to be the cause of death. However, disease testing will be used to verify that this population is healthy before tortoises are relocated here. Approximately 70 burrows were found in this area (Category 1-4). Several consecutive years of drought could be the cause of death for many of the DETO. Based on the presence of diverse habitat and topographically diversity, the habitat here appears to be high quality.

2.6.4 DWMA 2

This area is located further south of I-40 along a transmission line road (Figures 4 and 9) and contains several deep washes, with variable terrain ranging from a gently sloping bajada in the north to deep canyons in the south. A drastic change in topography divides the area into two pieces. The southern piece is located at the mouth of the alluivial fan, in the mountains and the terrain is extremely hilly, dominated by canyon washes. Vegetation is diverse here, but sparse, and ground cover is dominated by desert pavement. Non-native species were not abundant and the area is mostly pristine. Soil consists of cobble and gravel. Some DETO were found in this area, but little DETO activity was observed here. This area would qualify as low-medium quality habitat. As the wash exits the mountains, it immediately fans out into an alluvial fan/bajada that makes up the northern portion of the area. This area is similar in topography and vegetative composition as the project site. DETO and DETO sign was found in good numbers; however, a similar pattern of carcasses as found in DWMA 1 was also noted here. Live DT encountered here (20 adults, 8 subadults, and 5 juveniles) varied in age and visually appeared to be in excellent health. However, disease testing will be used to verify the health of this population. Approximately 128 burrows were found in this area (Category 1-4). Regardless of the high number of carcasses found here, this area is high quality habitat.

2.6.5 Site Preparation

Long-distance translocation recipient site preparation would follow the methodology presented in Section 2.5.2.2, above.

2.7 TRANSLOCATION SCHEDULE

Two windows exist in which translocation can occur: Spring (March-May) and Fall (September-November). These times reflect the DETO activity cycle and avoid extreme thermal conditions. These windows are dependent on actual regional conditions, including adequate rainfall, temperature, available forage, etc. Project approvals are expected by September 2010, and, based on that schedule, translocation would occur during the fall window (approximately five animals from the Phase 1 area along the railroad). Protocol surveys on the Project site and recipient sites were started in Spring 2010 and will be completed in September 2010. This included conducting an initial visual health assessment of all tortoise detected and an assessment of the density of the resident recipient site populations. See Section 2.3 above for more detail about the clearance survey schedule and methodology, and Sections 2.5.2.1 and 2.6.2.1 above for more detail about the recipient site characterization.

DETO translocation in Phase 1 would begin immediately upon receipt of Project approvals and after the exclusion fence is constructed, and it is planned to occur in October 2010. Fall translocation would be

contingent on the regional conditions, as discussed above. Translocations should occur in spring (April 1 through May 31), but fall (September 1 through October 15) may be considered. In addition, the following conditions must be met:

- Releases should occur when temperatures range from 18-30°C (65-85°F) and are not forecasted to exceed 32°C (90°F) within 3 hours of release or 35° (95°F) within 1 week of release. Additionally, forecasted daily low temperatures should not be cooler than 10° C (50°F) for one week post-release.
- Release points for tortoises should be pre-selected during visits to the translocation site (configuration of release points is project-specific) and should be at least 2.5 km from any documented seropositive or clinically ill (showing outward signs of disease) resident tortoise.
- Desert tortoises should be transported to their release sites in clean, ventilated protective containers. If re-used, these containers must be disinfected using 10 percent household bleach or other solution approved by USFWS and the State wildlife agency before being used for another tortoise.
- Within 12 hours before release, all desert tortoises to be translocated should be hydrated according to existing protocols.
- Tortoises should be released at unoccupied shelter sites. Shelters include unoccupied soil burrows, spaces within rock outcrops, caliche caves, and the shade of shrubs.

In order to execute this translocation plan, up to five teams of biologists, each with a team leader, would be designated. Each team would have a specific role: a team conducting clearance surveys, blood tests, and transmitter attachment, a team to conduct DETO translocation, a team to blood test and place transmitters on resident animals, and a team to perform control animal establishment and transmitter attachment. If necessary, a fifth team would initiate DETO monitoring. A preliminary schedule is presented in Table 5, below.

The translocation team would focus on the areas with known locations of DETO to commence the 5 m protocol surveys. As the clearance team finds additional DETO, the translocation team would send additional members to recover the DETO for translocation. If necessary, some members of the clearance team would attach transmitters to newly captured DETO to ensure recapture by the translocation team.

It is possible that some individuals from Phase 2 can be moved < 500 m, however the majority of the individuals will need to be moved greater than 500 m and would require blood testing. These animals would be monitored within DETO exclusionary fencing on the Project site while waiting for disease test results. Juvenile holding pens would be built as discussed above so that DETO that are too small to wear transmitters can be relocated once test results have been received. If any of the DETO that remain on the Project site have positive disease test results, all DETO within 500 meters of the positive tortoise's initial and current locations will be re-tested before those individuals can be cleared as "healthy" for translocation.

Table 5
Preliminary Schedule: Calico Solar One Tortoise Translocation

Date	Activity
July/August 2010	Draft translocation plan approved, recipient sites and control sites designated.
Spring 2010	Project site protocol survey (10-m transects) and visual health assessment conducted for DETO on Project site.
	Recipient sites (for short- and long-distance translocation) habitat assessment/ protocol survey and visual health assessment conducted.
	Control Areas surveyed and habitat assessment conducted.
Late Spring/Summer 2010, after protocol surveys are complete	Recipient site analysis to refine actual location and extent of recipient sites. Analysis will incorporate an assessment of recipient site habitat quality, an estimate of DETO density, the location of diseased DETO, and agency input.
7-September-2010	USFWS issues Biological Opinion.
August, 2010	Biologist qualifications will be provided to CDFG, USFWS, and BLM for approval.
30-Sep-2010	BLM files Record of Decision (CEC files certification), 30-day appeal period starts.
	Exclusionary fence construction initiated for Phase 1, including northern detention basins, and access road, and holding pen south of railroad tracks. If the schedule allows, fencing will also be constructed around Phase 2. Begin constructing 11 holding pens in Pisgah ACEC receptor area.
October 2010, after exclusionary fence installed	Team 1: Clearance surveys (5-m transects, perpendicular passes) initiated in Phase 1, including northern detention basins, and access road, and Phase 2 as possible. DETO being moved > 500 meters blood tested and all desert tortoises being handled transmitted for translocation Initial construction monitoring in areas of active ground disturbance within Phase 1 area.
	Team 2: Short-distance DETO translocation initiated within Phase 1. Animals from Phase 1 Area (exclusive of detention basin area) translocated to pens in Pisgah ACEC. Any diseased DETO (based on visual assessment) will be held in the quarantine pen until they can be placed in an appropriate facility.
	Team 3: Recipient site survey initiated; transmitter placed on one healthy resident DETO per translocated DETO.
	Team 4: Control site survey initiated; transmitter placed on one control DETO per translocated DETO.
	Team 5: If necessary, fifth team will initiate monitoring of the translocated DETO, resident and control animals.

Table 5
Preliminary Schedule: Calico Solar One Tortoise Translocation
(Continued)

Date	Activity
Fall 2010, after Phase 1 translocation is compete, or Spring 2011	Conduct translocation of animals from the Phase 1 detention basin area into the northern linkage and Ord-Rodman DWMA. As time allows, additional translocation efforts in Phase 2 will begin, including exclusionary fence construction (if not completed yet), clearance surveys, blood sample analysis for DETO moved more than 500 m, and translocation (up to 93 tortoises estimated to be translocated).
	Additional resident and control DETO established and transmitters placed all DETO.
Winter 2010	Exclusionary fence construction initiated for remaining areas onsite.
Spring 2011	Clearance surveys within remaining uncleared areas in Project Site (Detention Basins and Phase 2).
	Transmitters placed on DETO and health assessment (including blood tests) conducted on DETO for short- and long-distance translocations.
	Complete remaining DETO translocations, Initial construction monitoring within Phase 2 area.
	Additional resident and control DETO established and transmitters placed on each translocated, resident, and control DETO.
Fall 2011 or Spring 2012	Complete any remaining translocations as necessary.
	Additional resident and control DETO established and transmitters placed on each translocated DETO.

Acronyms:

BLM – Bureau of Land Management

CDFG – California Department of Fish and Game

CEC - California Energy Commission

DETO – desert tortoise

ROD – Record of Decision

USFWS – United States Fish and Wildlife Service

2.8 MONITORING AND REPORTING

Monitoring of translocated, resident, and control DETO would provide useful information about the success of the effort as well as for future translocation projects. The Applicant would provide for monitoring to be conducted by qualified biologists using both radio telemetry and incidental observation. Translocated, resident, and control DETO would be fitted with a light-weight radio transmitter with a battery life of at least one year (*e.g.*, Holohil model AI-2F), attached using methods similar to those described in Boarman *et al.* (1998). The radio transmitters would also be attached to any DETO that are held in the short-term quarantine pens in the ACEC. Some of the DETO from Phase 1 might be held in

predator-proof holding pens in the ACEC until the following spring (2011), if they were found to be diseased, until they can be disease-tested in the following spring. Because of their small size and delicate nature, any juvenile DETO located that requires blood testing would be affixed with specially designed radio transmitters that are small enough to minimize stress, or not fitted with a transmitter if deemed appropriate. The total mass of the epoxy and transmitter should weigh no more than 10% of the body weight of the juvenile tortoise, especially if the shell has not hardened at the time of attachment. Juvenile DETO too small for transmitter attachment (*i.e.*, less than 110 mm MCL) would be moved into predator-proof holding pens in the recipient sites and then released. Due to the small size of the transmitters and the subsequent short battery life, these juvenile transmitters would have to be replaced approximately every 10 weeks. Radio transmitters would be maintained (battery replacement, etc.) on a regular basis. Biologists would search for all DETO with malfunctioning transmitters, and searches would include a survey of known burrows or other shelter sites within the known home range of the individual. These efforts would be documented in the monitoring reports submitted to the agencies. All transmitters would be removed at the completion of the monitoring effort. Any vehicle use associated with monitoring efforts would be limited to routs designated "open" by BLM (unofficial routs would not be used and no cross country travel would be used). All other travel would be on foot.

All translocated (short- and long-distance), resident, and control DETO would be monitored for five years after translocation, according to the schedule provided below.

- First location would be obtained within 24 hours of the translocation of a given DETO.
- For at least the first week, tortoises would be monitored daily.
- During the next two weeks, locations would be secured every three to four days.
- During March through November, locations would be secured every week.
- During November to February, locations would be secured every other week.

Resident and control tortoises will be monitored for the 5-year monitoring period as follows:

- A minimum of once a week from March through early November; and
- A minimum of once every other week from November through February

The focus of the monitoring effort would be to check for homing activity and to observe translocated and resident DETO survivorship, compared to control animals. Regular monitoring of DETO translocation recipient sites would also ensure recipient site management issues (human disturbance, excessive predation, *etc.*) were identified and addressed in a timely manner. Monitoring observations would be reported informally (i.e., e-mail reports) to the regulatory agencies on a monthly basis, or more frequently if necessary. More detailed annual reports, due December 31 of each year, would be submitted to the regulatory agencies.

Information on DETO movements, habitat use, survival, disease, nutrition, and predation would be recorded throughout the monitoring effort, and should include:

- Assessments of condition (*i.e.*, measurements of body mass and carapace, health assessment, calculation of body condition) will be conducted during each year of monitoring; one assessment prior to and one assessment subsequent to over-wintering.
- Any health problems observed (*e.g.*, rapid declines in body condition, perceived outbreaks of disease, mortality events) will be reported to the USFWS and State wildlife agency such that appropriate actions can be taken in a timely manner.
- Mortalities will be investigated as thoroughly as possible. Information on health concerns and mortalities, including tortoise unique identifier, location, and cause of death (if determined) will be provided to the Ventura USFWS Office, CDFG Victorville Office, and the BLM Barstow Field Office within 48 hours of discovery. Fresh carcasses will be submitted for necropsy (details to be provided during project planning and coordination with USFWS) and the cost covered by the Applicant.
- In addition to monitoring the tortoises, perform vegetation transects at representative sampling locations within the recipient site which will be repeated annually to capture potential changes in habitat characteristics. At a minimum, monitoring of the annual species component will be accomplished to identify changes in forage diversity and availability. The USFWS will provide additional guidance to project proponents on appropriate methods of vegetation monitoring and sampling during the planning process.

Monthly reports would include an analysis of all relevant DETO health and habitat use observations, data on animal movements recorded from telemetry study, as well as any issues encountered in recipient site management. The monthly report would include the following information: (1) identity of the translocated, resident and control animal; (2) location (GPS coordinates and maps) and dates of observations; (3) general condition and health, including injuries and state of healing; and (4) locations moved from and to. The monitoring reports would include recommendations on how to improve techniques and recipient site management to enhance translocation success. Once monitoring is finished, the transmitters would be removed.

The various measurements used to determine the success of the proposed translocation effort is provided below.

Survivorship can be measured by quantifying survival/mortality over time by the periodic monitoring of marked individuals (*e.g.*, monthly, annually, or at longer intervals). These data would be used to compare translocated DETO with local control populations in similar habitats. If mortality rates for translocated DETO are significantly greater than those observed in the resident and/or control populations, remedial action would be coordinated with the agencies.

Growth rates can be measured by recording dimensions of the shell and measuring the mass of animals over time. If growth rates of individual DETO in translocated populations exceed a 20 percent reduction as compared to individuals in control populations after accounting for age, gender, and variation among sites in the amount of annual rainfall and forage availability, the individual would be considered potentially affected by the translocation.

Movement of translocated, control, and recipient site DETO would be monitored and reported with the use of radio telemetry. Translocated DETO are expected to have increased movements when compared to resident DETO for a period of one to three years, before they tend to "settle" into their new sites (Esque *et al.* 2005). Because short-distance translocated DETO would still likely be within their home ranges, they might exhibit signs of "settling" in more quickly than their long-distance translocated counterparts.

Overall health of translocated, control and recipient site DETO would be noted during monthly monitoring events. Qualified biologists performing examinations for health characteristics would be required to have experience identifying the clinical signs of URTD, herpes virus, and cutaneous dyskeratosis in DETO. It is assumed that all translocated DETO would be free of *Mycoplasma agassizii* antibodies prior to release into the recipient sites. Any injured or diseased DETO would be removed from the project site and placed in an agency-approved facility prior to translocation.

Nutrition of DETO would be determined by monitoring of the annual vegetation in the recipient areas as described above will be used as an indicator of nutrition, based on food resource availability.

Predation of DETO would be monitored by recording any evidence of predator activities in the translocation and control areas. Common predators of DETO and nests include coyote, raven, kit fox, badger, bobcat, skunk, ringtail, coachwhip snake, golden eagle, and ants (Esque *et al.* 2005).

The ultimate measure of success for this translocation plan would be how well translocated DETO adjusted to their new locations, and whether the introduction of translocated DETO into an existing population had a negative, positive, or neutral effect on resident DETO. Evaluation criteria used to monitor the success of translocation activities would include survivorship, growth rates, movement, overall health, nutrition, and predation. If a translocated, resident, or control tortoise appeared to become ill at any time during the monitoring period, it may undergo blood testing pending consultation with the agencies.

SECTION 3 CONTINGENCY PLANNING AND CONTACTS

Strategies for dealing with the various contingencies that may occur during implementation of the proposed Project would be built into the plan based on the best information available. In the event unforeseen circumstances arose, the lead biologist would notify the pertinent agencies and other contacts according to the list provided in Table 6.

Principles of adaptive management would be enacted as the program is implemented, and the methodology proposed in this plan might be modified slightly (with agency approval) to improve the success of the program. Mortality from coyote predation is a primary concern for translocation efforts. If this occurred during this Project's implementation, adaptive management strategies would be implemented to minimize predation. The nature of these strategies cannot be determined at this time, but would be developed based on information found in the plan reporting documents.

Table 6
Contacts for the Calico Solar Desert Tortoise Translocation Plan

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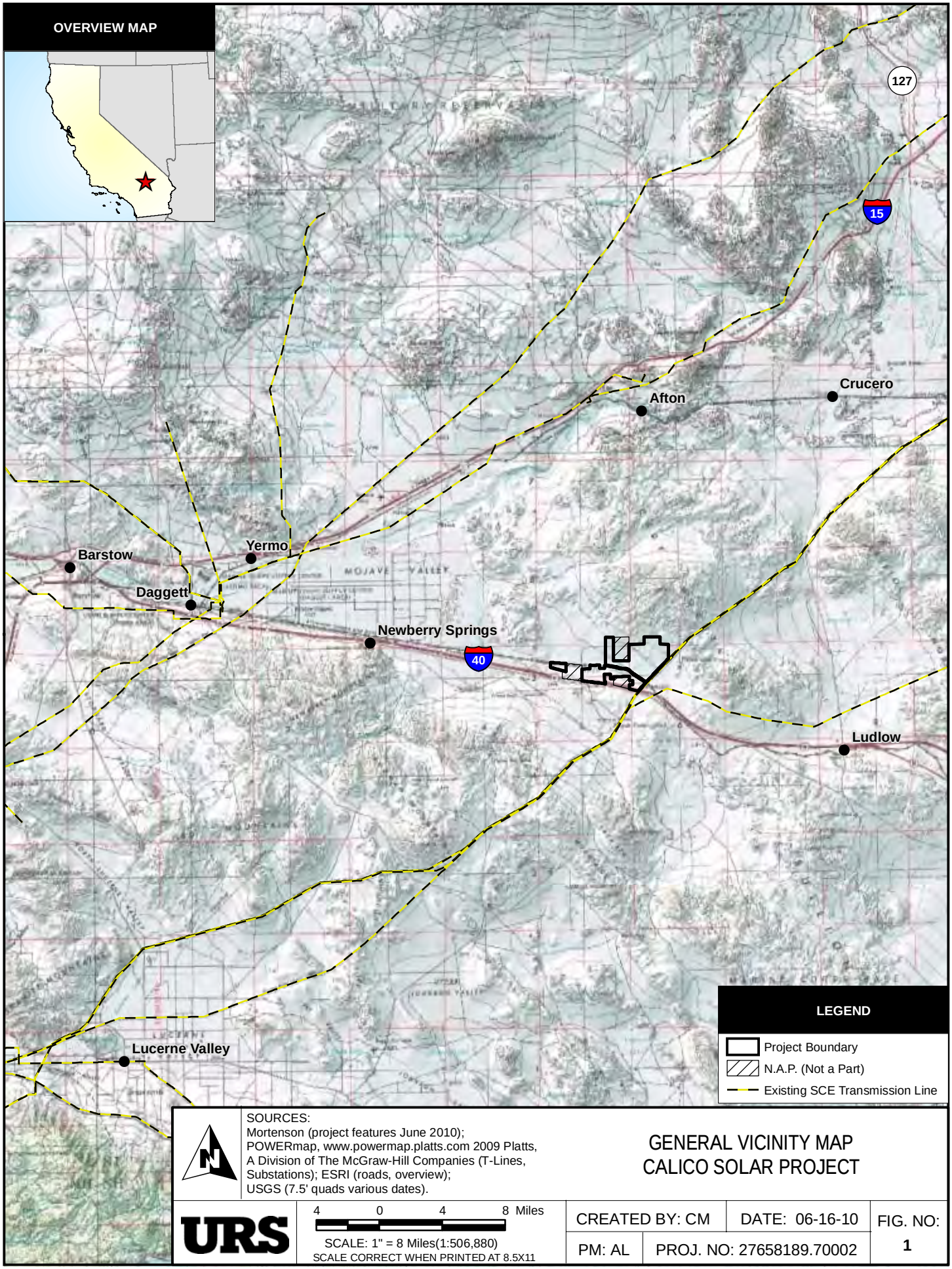

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POWERmap, www.powermap.platts.com 2009 Platts, A Division of The McGraw-Hill Companies (T-Lines, Substations); ESRI (roads, overview);
USGS (7.5' quads various dates).

GENERAL VICINITY MAP
CALICO SOLAR PROJECT

URS

4 0 4 8 Miles

SCALE: 1" = 8 Miles(1:506,880)
SCALE CORRECT WHEN PRINTED AT 8.5X11

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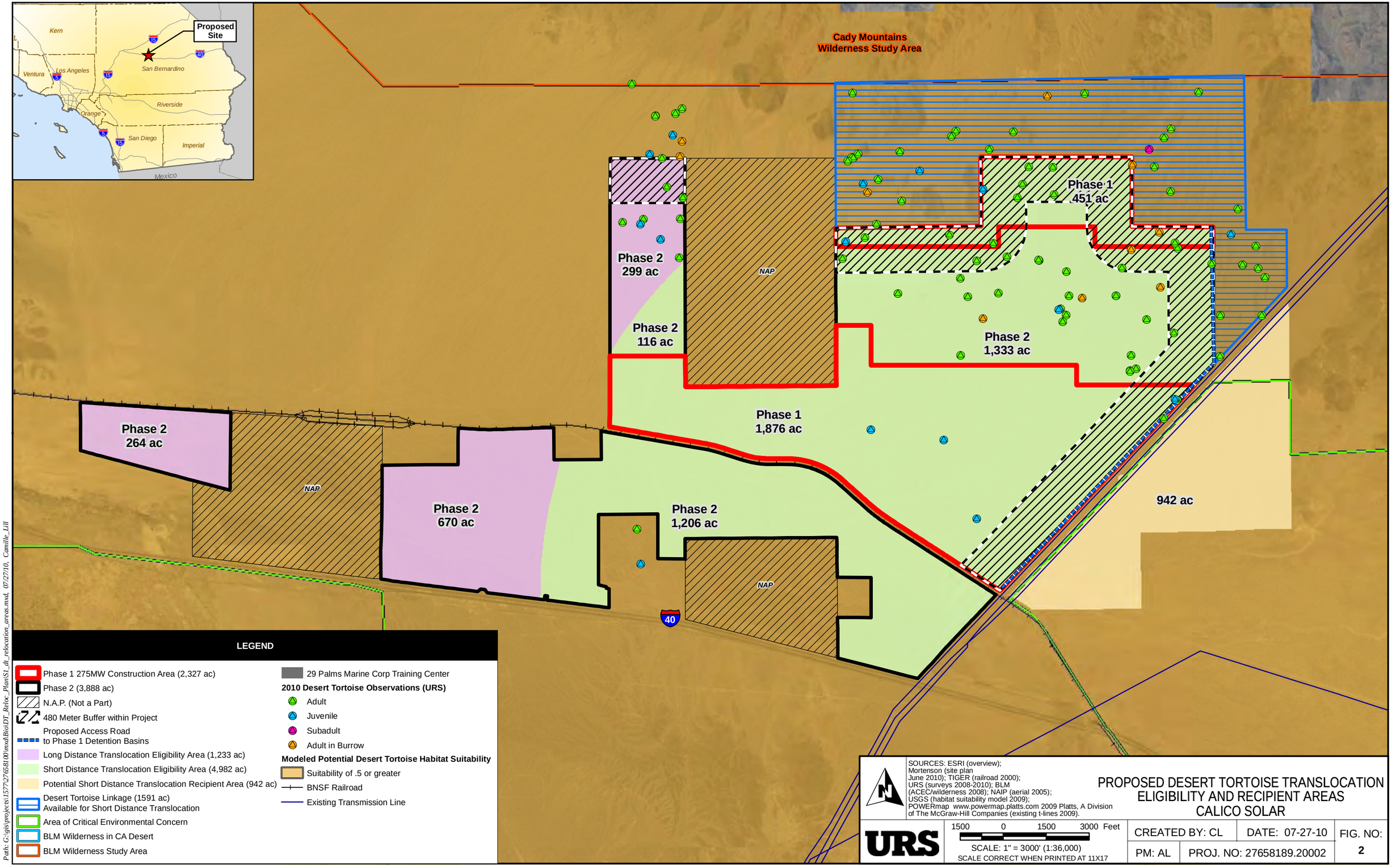

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Manix ACEC

Mojave Fringe-toed Lizard ACEC

Manix ACEC

Mojave Fringe-toed Lizard ACEC

Cady Mountains
Wilderness Study Area

Kelso Dunes
Desert Wilderness Area

Ord-Rodman DWMA ACEC

Pisgah ACEC

Rodman Mountains
Desert Wilderness Area

Rodman Mountains
Desert Wilderness Area

man Mountains Cultural Area ACEC

odman DWMA ACEC

29 Palms Marine Corps Training Center

LEGEND

- Project Boundary
- 480 Meter Buffer within Project
- Phase 1 - 10 Kilometer Buffer
- Potential Control Area (6,929 ac)
- Long Distance Translocation Area inside DWMA's (9,833 ac)
- Desert Tortoise Linkage (1591 ac) Available for Short Distance Translocation
- Potential Future BLM Renewable Energy Projects
- 29 Palms Marine Corp Training Center
- BLM Wilderness in CA Desert
- Area of Critical Environmental Concern
- BLM Wilderness Study Area

2010 Desert Tortoise Observations (URS)

- Adult
- Juvenile
- Subadult
- Adult In Burrow

- Desert Tortoise Critical Habitat

Modeled Potential Desert Tortoise Habitat Suitability

- .1
- .2
- .3
- .4
- .5
- .6
- .7
- .8
- .9
- 1.0

- BNSF Railroad
- Existing Transmission Line

SOURCES: ESRI (overview); Mortenson (site plan June 2010); URS (sensitive species surveys 2008-2010); TIGER (railroad 2000); CNDDB (Oct. 2009); USFWS (desert tortoise critical habitat 1994); USGS (habitat suitability model 2009); MC 29 Palms (base); POWERmap www.powermap.platts.com 2009 Platts, A Division of The McGraw-Hill Companies (existing t-lines 2009).

PROPOSED DESERT TORTOISE LONG DISTANCE TRANSLOCATION RECIPIENT AREAS CALICO SOLAR

URS

1.25 0 1.25 2.5 Miles

SCALE: 1" = 2.5 Miles (1:158,400)
SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: CL	DATE: 07-27-10	FIG. NO: 3
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Mojave Fringe-toed Lizard ACEC
Manix ACEC
Mojave Fringe-toed Lizard ACEC
Manix ACEC
Mojave Fringe-toed Lizard ACEC
Cady Mountains
Wilderness Study Area
Ord-Rodman DWMA ACEC
Pisgah ACEC
Rodman Mountains
Desert Wilderness Area
Rodman Mountains
Desert Wilderness Area
Rodman Mountains Cultural Area ACEC
Ord-Rodman DWMA ACEC
29 Palms Marine Corps Training Center

LEGEND

- Project Boundary
- N.A.P. (Not a Part)
- 480 Meter Buffer within Project
- Phase 1 - 10 Kilometer Buffer
- Potential Control Area (6,929 ac)
- Long Distance Translocation Area inside DWMA's (9,833 ac)
- Potential Short Distance Translocation Recipient Area (942 ac)
- Desert Tortoise Linkage (1591 ac) Available for Short Distance Translocation
- Potential Future BLM Renewable Energy Projects
- Desert Tortoise Critical Habitat
- BLM Wilderness in CA Desert
- Area of Critical Environmental Concern
- BLM Wilderness Study Area
- Cattle Grazing Allotment
- BLM-Administered Public Land
- Private Land
- State Land
- 29 Palms Marine Corp Training Center
- BNSF Railroad
- Existing Transmission Line

SOURCES:
Mortenson (site plan June 2010); TIGER (railroad 2000); ESRI (overview); USDA (NAIP aerial 2005); MC 29 Palms (base); BLM (ACEC 2008, wilderness areas 1982-1996, land ownership 2009); 29 Palms MCTC (installation area); POWERmap www.powermap.platts.com 2009 Platts, A Division of The McGraw-Hill Companies (existing t-lines 2009).

LAND USE AND OWNERSHIP OF RELEVANT RECIPIENT AND CONTROL AREAS CALICO SOLAR

URS

1.25 0 1.25 2.5 Miles

SCALE: 1" = 2.5 Miles (1:158,400)
SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: CL	DATE: 07-27-10	FIG. NO: 4
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Manix ACEC

Mojave Fringe-toed Lizard ACEC

Manix ACEC

Mojave Fringe-toed Lizard ACEC

Cady Mountains
Wilderness Study Area

Kelso Dunes
Desert Wilderness Area

Ord-Rodman DWMA ACEC

Pisgah ACEC

Rodman Mountains
Desert Wilderness Area

Rodman Mountains
Desert Wilderness Area

Rodman Mountains Cultural Area ACEC

Ord-Rodman DWMA ACEC

29 Palms Marine Corps Training Center

LEGEND

- Project Boundary
- N.A.P. (Not a Part)
- 480 Meter Buffer within Project
- Phase 1 - 10 Kilometer Buffer
- Potential Control Area (6,929 ac)
- Long Distance Translocation Area inside DWMA's (9,833 ac)
- Potential Short Distance Translocation Recipient Area (942 ac)
- Desert Tortoise Linkage (1591 ac) Available for Short Distance Translocation

2010 Desert Tortoise Observations (URS)

- Adult
- Juvenile
- Subadult
- Adult in Burrow

- Potential Future BLM Renewable Energy Projects
- Desert Tortoise Critical Habitat
- BLM Wilderness in CA Desert
- Area of Critical Environmental Concern
- BLM Wilderness Study Area
- 29 Palms Marine Corp Training Center
- Areas over 20% Slope

GAP Vegetation

- Alkali Desert Scrub
- Barren
- Cropland
- Desert Scrub
- BNSF Railroad
- Existing Transmission Line

SOURCES: ESRI (overview); Mortenson (site plan June 2010); URS (desert tortoise surveys 2010); TIGER (railroad 2000); USDA (NAIP aerial 2005); MC 29 Palms (base); UCSB (GAP land cover 1998); BLM (ACEC 2008, wilderness areas 1982-1996). POWERmap www.powermap.platts.com 2009 Platts, A Division of The McGraw-Hill Companies (existing t-lines 2009).

PROPOSED TRANSLOCATION RECIPIENT AREAS, VEGETATION AND DESERT TORTOISE LOCATIONS CALICO SOLAR

URS

1.25 0 1.25 2.5 Miles

SCALE: 1" = 2.5 Miles (1:158,400)
SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: CL	DATE: 07-27-10	FIG. NO: 5
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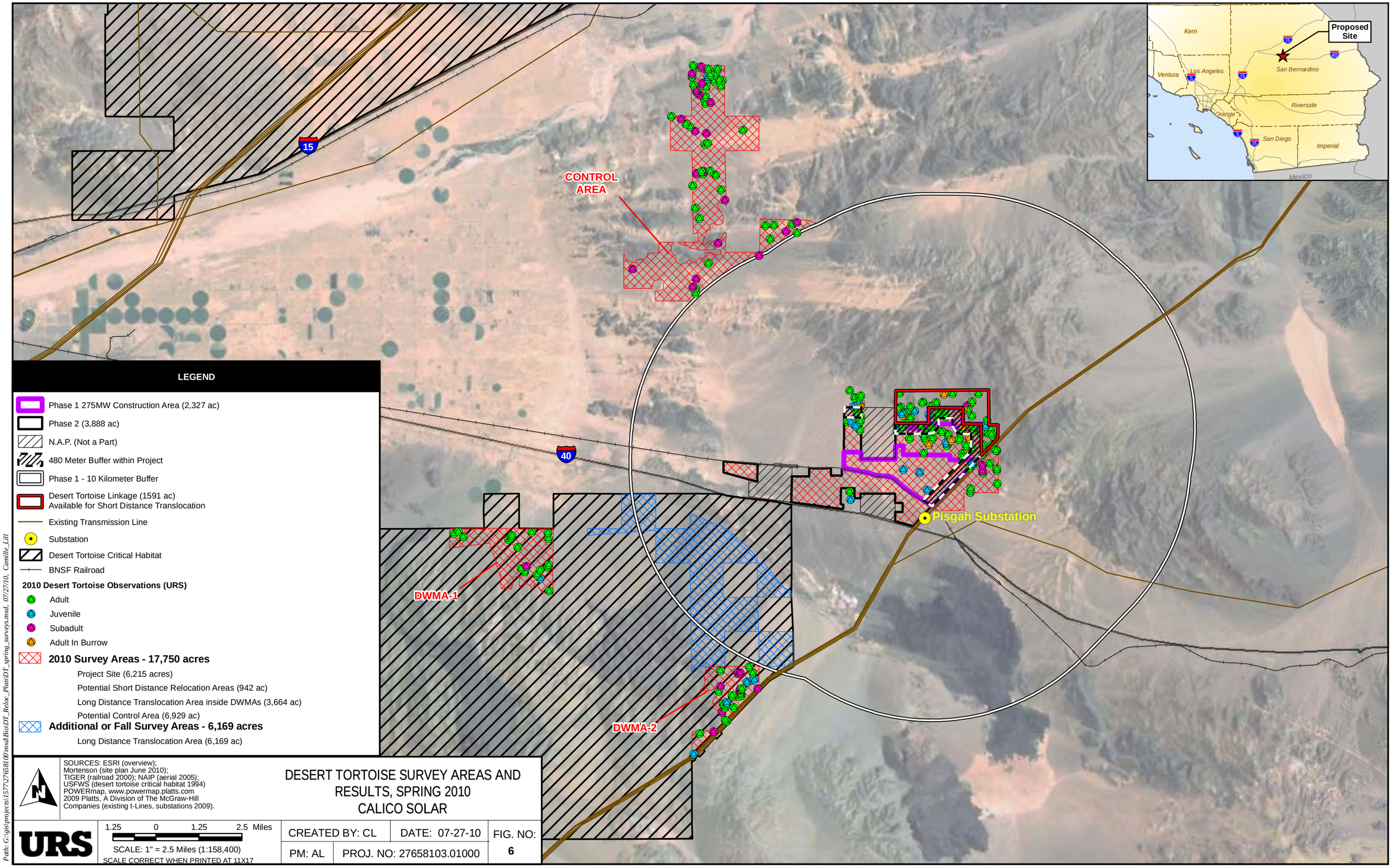

LEGEND

- Phase 1 275MW Construction Area (2,327 ac)
- Phase 2 (3,888 ac)
- N.A.P. (Not a Part)
- 480 Meter Buffer within Project
- Phase 1 - 10 Kilometer Buffer
- Desert Tortoise Linkage (1591 ac) Available for Short Distance Translocation
- Existing Transmission Line
- Substation
- Desert Tortoise Critical Habitat
- BNSF Railroad

2010 Desert Tortoise Observations (URS)

- Adult
- Juvenile
- Subadult
- Adult In Burrow

2010 Survey Areas - 17,750 acres

- Project Site (6,215 acres)
- Potential Short Distance Relocation Areas (942 ac)
- Long Distance Translocation Area inside DWMAs (3,664 ac)
- Potential Control Area (6,929 ac)

Additional or Fall Survey Areas - 6,169 acres

- Long Distance Translocation Area (6,169 ac)

SOURCES: ESRI (overview); Mortenson (site plan June 2010); TIGER (railroad 2000); NAIP (aerial 2005); USFWS (desert tortoise critical habitat 1994) POWERmap, www.powermap.platts.com 2009 Platts, A Division of The McGraw-Hill Companies (existing t-Lines, substations 2009).

DESERT TORTOISE SURVEY AREAS AND RESULTS, SPRING 2010 CALICO SOLAR

URS

1.25 0 1.25 2.5 Miles

SCALE: 1" = 2.5 Miles (1:158,400)

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LEGEND

- Phase 1
- Phase 2
- N.A.P. (Not a Part)
- Desert Tortoise Linkage (1591 ac)

Burrows by Category

- 1
- 2
- 3
- 4
- 5
- BNSF Railroad

Phase 1
Phase 2
N.A.P
Phase 2
Phase 1
Phase 2
N.A.P
N.A.P
40
40

SOURCES: ESRI (overview);
Mortenson (project features June 2010);
TIGER (railroad 2000); NAIP (aerial 2005);
URS (desert tortoise survey 2010).

DESERT TORTOISE BURROW DETECTIONS ON THE PROJECT SITE, SPRING 2010 CALICO SOLAR

URS

1500 0 1500 3000 Feet

SCALE: 1" = 3000 feet (1:36,000)
SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: CL	DATE: 07-27-10	FIG. NO: 7
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T09N R05E
T08N R05E
T09N R06E
T08N R06E

Phase 1
Phase 2
N.A.P. Area 1
N.A.P. Area 2
N.A.P. Area 3

LEGEND

- Permanent Fencing (Chain-link Only, 14.2 miles)
- Permanent Exclusionary Fencing (Desert Tortoise (DT) Only, 16 miles)
- Permanent Fencing (Chain-link and DT Exclusionary Combined, 14.9 miles)
- Temporary Exclusionary Fencing (DT Only, 10.5 miles)
- Existing Trestle
- Cattle Guard
- BNSF Centerline
- Temporary Construction Access Road (4.0 miles)
- Main Access Road (5.5 miles)
- Proposed Access Road to Detention Basins
- Project Road
- Project Boundary
- N.A.P. (Not a Part)
- Detention Basins (545 ac)
- Pisgah Substation
- Township/Range Boundary
- Section
- LWCF Acquisition
- BLM Acquired Land

Note: Fencing distances and some project features have been moved or exaggerated to show separation at this scale.

SOURCES: ESRI (overview);
Mortenson (project features June 2010):
URS (main access rds, t-line, fenceline, waterline Feb. 2010);
USGS 7.5' quads (Hector 1992, Sleeping Beauty 1993);
BLM (acquired lands, Land and Water Conservation Fund, and township/range 2009). BNSF Railroad (San Bernardino County, 2008).

TEMPORARY AND PERMANENT FENCING CALICO SOLAR

URS

1500 0 1500 3000 Feet

SCALE: 1" = 3000' (1:36,000)
SCALE CORRECT WHEN PRINTED AT 11X17

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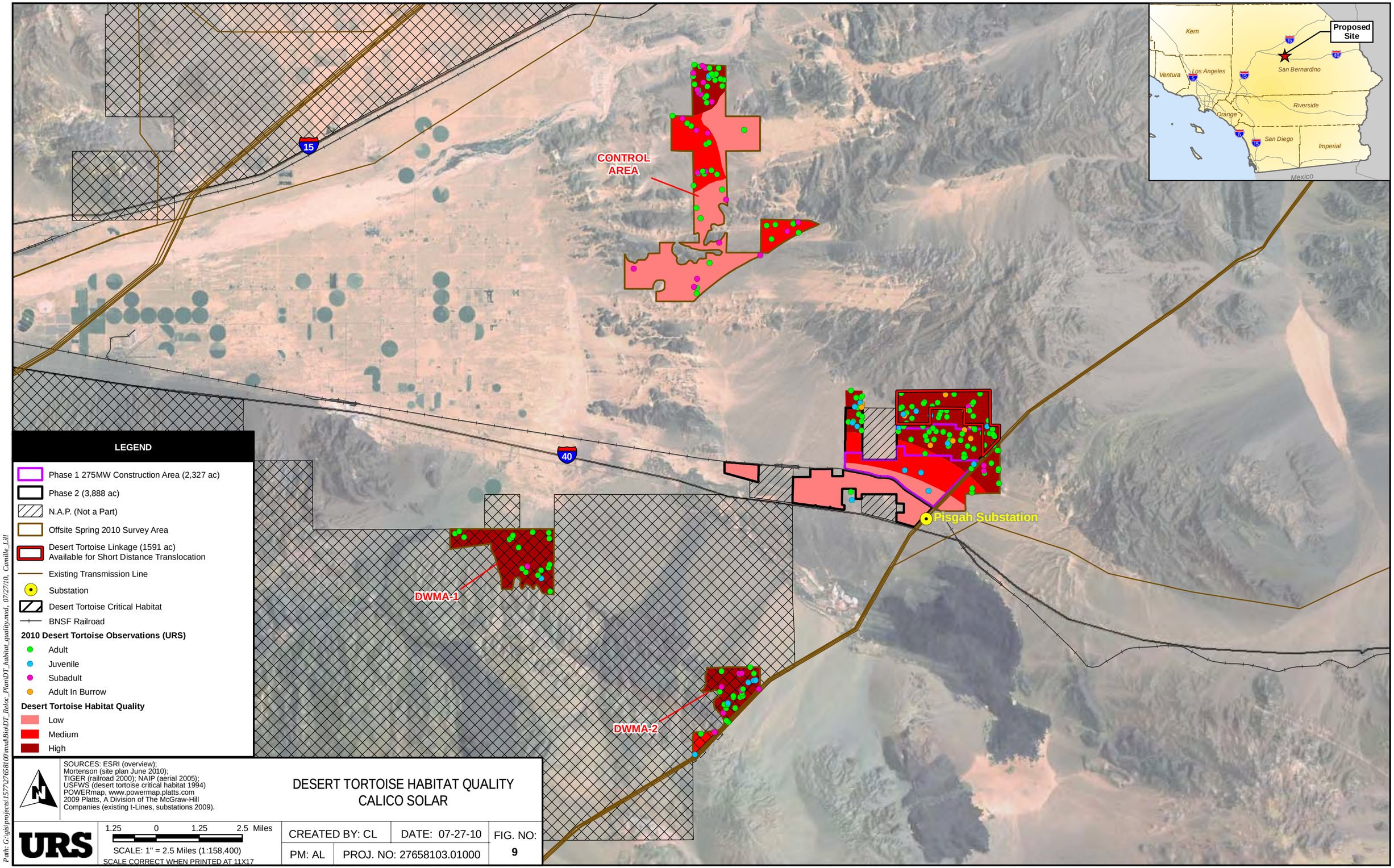

SOURCES: ESRI (overview);
Mortenson (site plan June 2010);
TIGER (railroad 2000); NAIP (aerial 2005);
USFWS (desert tortoise critical habitat 1994)
POWERmap, www.powermap.platts.com
2009 Platts, A Division of The McGraw-Hill Companies (existing t-Lines, substations 2009).

DESERT TORTOISE HABITAT QUALITY
CALICO SOLAR

URS

1.25 0 1.25 2.5 Miles

SCALE: 1" = 2.5 Miles (1:158,400)

SCALE CORRECT WHEN PRINTED AT 11X17

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BIOLOGICAL ASSESSMENT FOR THE CALICO SOLAR SOLAR POWER GENERATING FACILITY, SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for

U.S. FISH AND WILDLIFE SERVICE
AND BUREAU OF LAND MANAGEMENT
Barstow Field Office
2601 Barstow Road
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April 1, 2010

URS

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San Diego, CA 92108-4314
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Table of Contents

Tables

Figures

Appendices

ACEC	Area of Critical Environmental Concern
AFC	Application for Certification
Afy	acre-feet per year
BA	Biological Assessment
BLM	Bureau of Land Management
BMP	Best Management Practices
BNSF	Burlington Northern Santa Fe
CAISO	California Independent System Operator
CDCA	California Desert Conservation Area
CDFG	California Department of Fish and Game
CNDDB	California Natural Diversity Database
dBA	A-weighted decibel
DCH	Designated Critical Habitat
DESCP	Drainage, Erosion and Sediment Control Plan
DWMA	Desert Wildlife Management Areas
ESA	Endangered Species Act
FESA	Federal Endangered Species Act
I-40	Interstate 40
kV	kilovolt
L_{eq}	Equivalent Sound Level
MOU	Memorandum of Understanding
mph	miles per hour
MW	megawatts
MWMA	Mojave Weed Management Area
NAP	Not a Part
NEPA	National Environmental Policy Act
OHV	off-highway vehicle
PCH	Proposed Critical Habitat
POD	Plan of Development
Project	Calico Solar Project
ROW	Right-of-Way
SCE	Southern California Edison
SES	Stirling Energy Systems
SIS	System Impact Study
URS	URS Corporation
URTD	upper respiratory tract disease
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WEMO	West Mojave Plan
WSA	Cady Mountain Wilderness Study Area

Executive Summary

This Biological Assessment (BA) has been prepared for Stirling Energy Systems' (SES) Calico Solar Project in support of a request from the Bureau of Land Management (BLM) for formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Federal Endangered Species Act (ESA) regarding the issuance of a Right-of-Way (ROW) grant for the Calico Solar Project (Project). The proposed Project includes the construction, operation, maintenance, and decommissioning of an 850-megawatt (MW) solar power generating facility and its ancillary systems. The facility would be constructed according to two phases: Phase 1 would be 275 MW and covers approximately 2,320 acres; Phase 2 would be 575 MW and covers approximately 5,910 acres. The Project also involves the interrelated construction of a connection from the onsite Calico substation to the Pisgah substation. Upgrades to the Pisgah substation and the Pisgah-Lugo transmission lines are separate projects proposed by Southern California Edison (SCE) that will serve a variety of energy and communication needs in the vicinity. The Project is located on 8,230 acres of land managed by the BLM approximately 37 miles east of Barstow in San Bernardino County in southern California (Figure 1). For the purposes of this BA, a 1,000-foot radius buffer was also included in the Project assessment boundary to account for potential offsite impacts. The sum of the Project boundary, 1,000-foot buffer, and Not a Part (NAP) areas is herein referred to as the "Biological Assessment area."

The following Federally listed species are known to occur, or have the potential to occur in the Project Biological Assessment Area:

Species	Listing Status	Critical Habitat within the Biological Assessment Area	Effects Determination
Desert Tortoise (*Gopherus agassizii*)	Threatened	No	May affect, likely to adversely affect

Desert tortoise are widely distributed in the deserts of California, southern Nevada, extreme southwestern Utah, western and southern Arizona, and throughout most of Sonora, Mexico. They typically have overlapping home ranges averaging between 5-131 acres, which additionally can fluctuate in size on a year-to-year basis based on several factors such as sex, rainfall, availability of resources, and others factors. The focused desert tortoise surveys were conducted using the survey design to estimate the population of desert tortoise on-site. Five live desert tortoises and one active burrow were detected within sample plots during the focused desert tortoise surveys. No designated critical habitat (DCH) or proposed critical habitat (PCH) is within the Biological Assessment area.

The implementation of the Calico Solar Project is likely to have an adverse effect on the desert tortoise. Take would occur in the form of harassment, potential mortality, and loss of occupied habitat. Implementation of the Translocation Plan, installation of exclusion fencing, and implementation of other conservation measures are intended to minimize direct mortality of tortoise. Mitigation is proposed to offset impacts to occupied habitat. Based on the amount of suitable habitat that would be impacted and estimated population derived from focused desert tortoise surveys conducted in the Project Biological Assessment area, approximately 36 to 66 desert tortoise (USFWS Pre-project Survey Protocol estimate of 66 individuals with a 95 percent confidence range of 30 to 145 individuals) and 8,230 acres of occupied tortoise habitat may be affected by the proposed Project.

SECTION 1 PROJECT DESCRIPTION

This Biological Assessment (BA) has been prepared to evaluate the potential effects of the Calico Solar Project (Project) on Federally listed species that are known to or have the potential to occur within the Project area, and on proposed critical habitat (PCH) or designated critical habitat (DCH) within the entire Biological Assessment area (defined in Section 1.2) pursuant to Section 7 of the Federal Endangered Species Act (ESA). The proposed Federal action will potentially affect one Federal listed species – desert tortoise (*Gopherus agassizii*). Potential effects on this species and DCH are evaluated in accordance with the requirements set forth under Section 7 of the ESA (16 United States Code [U.S.C.] 1536). No DCH or PCH occurs within the Biological Assessment area.

The effects of the Project within the Biological Assessment area on desert tortoise and its DCH include consideration of and implementation of the mitigation measures to avoid and/or reduce the environmental effects from the development, operation, and maintenance of the Project. The conservation measures proposed by the Applicant that will avoid or minimize take of desert tortoise and modification of DCH are presented in Section 4.

1.1 PROJECT LOCATION

The proposed federal action is the issuance of a Right-of-Way (ROW) grant for the Project. The Project consists of a solar-powered electric generating facility located in a relatively undeveloped area of San Bernardino County, California, approximately 37 miles east of Barstow, California and north of Interstate 40 (I-40) (Figure 1). The Project is located on Bureau of Land Management (BLM) land under management of the BLM Barstow Field Office. The area where the Project would be constructed is primarily open, relatively undeveloped land within the Mojave Desert between approximately 1,810 and 3,050 feet (550 and 930 meters) above mean sea level. The Cady Mountain Wilderness Study Area (WSA) is located north of the Project site. The BLM-designated Pisgah Crater Area of Critical Environmental Concern (ACEC) is located directly adjacent to the southeastern boundary of the Project. The Ord-Roadman Desert Wildlife Management Area (DWMA) is located adjacent to the southwestern boundary of the proposed Project. Several underground and above-ground utilities traverse the Biological Assessment area as does Burlington Northern Santa Fe (BNSF) railroad tracks. A transmission corridor runs along the eastern Biological Assessment area boundary. Undeveloped land extends west of the Biological Assessment area.

1.2 DEFINITION OF BIOLOGICAL ASSESSMENT AREA

The proposed Project is located on approximately 8,230 acres of land managed by the BLM. For the purposes of this BA, a 1,000-foot radius buffer was also implemented around the Project boundary and studied to account for potential offsite impacts (Figure 2). The sum of the two areas is herein referred to as the "Biological Assessment area." There are also portions of the Project site that are within the Biological Assessment area, but are Not a Part (NAP) of the POD. These locations are displayed on the attached figures as NAP. Although the results of surveys in these areas are noted in this report, they are not included as part of the Biological Assessment area. Additional desktop evaluations 10 miles beyond the Project boundary were conducted along with consideration of cumulative effects of other projects in the region. The original Biological Assessment area included a large section of land east of the

transmission line that was in the BLM ACEC and biological surveys were conducted in this additional area. This land east of the transmission line within the ACEC is not part of the currently proposed Project. The Project includes an access road within BNSF ROW that will be used for construction access prior to completion of a bridge spanning the railroad which should occur by approximately October of 2011. BNSF ROW will also be used to access the western-most portion of site and by trucks delivering water from the BNSF rail siding to the Main Services Complex, should the Project require rail delivery of water prior to completion of a waterline which should occur by approximately June of 2011 (Figure 3).

1.3 PROPOSED ACTION

The Calico Solar Project includes the construction, operation, maintenance, and decommissioning of up to 850 megawatts (MW) of capacity by a solar power generating facility and its ancillary systems in two phases (the first phase would be developed for 275MW and the second for 575MW). The Project will consist of approximately 34,000 SunCatchers. It is estimated that an average of approximately 400 and a high of 750 construction jobs and 180 long-term labor jobs will be required. Construction is tentatively scheduled to occur over an approximate three-year period beginning in 2010 through 2012 for Phase 1 and between 2013 and 2015 for Phase 2, assuming SCE completes the full transmission build-out necessary for Phase 2 by 12/31/13.

Approval of the Project ROW Grant Application (Form 299, Applications CACA 49539 and 49537) will result in the issuance of a ROW Grant Permit for use of federal lands administered by the BLM. The Project would require a plan amendment to the 1980 California Desert Conservation Area (CDCA) Plan.

An approved interconnection letter from California Independent System Operator (CAISO) has been issued for the Project. The associated System Impact Study (SIS) is located in Appendix H of the Application for Certification (AFC). The SIS indicates that additional upgrades to the SCE Lugo-Pisgah No. 2 Transmission Line and upgrades at the SCE Pisgah Substation will be required for the full build out of the 850MW Project, although the exact parameters of that project are as of yet undefined. These upgrades are designed to serve a variety of projects in the area. Supplemental studies performed by SCE and CAISO indicate that capacity is available on the existing transmission system to accommodate less than the 850MW Project.

An on-site substation (*i.e.,* Calico Solar Substation [approximately 15 acres]) will be constructed to deliver the electrical power generated by the Project to the SCE Pisgah Substation (Figure 3). Approximately twelve to fifteen 220 kilovolt (kV) transmission line structures (90 to 110 feet tall), would be required to make the interconnection from the Calico Solar Substation to the SCE Pisgah Substation. All of these structures would be constructed within the Project site.

The Project will include a centrally located Main Services Complex (37.6 acres) that includes three SunCatcher assembly buildings, administrative offices, operations control room, maintenance facilities, and a water treatment complex including a water treatment structure, raw water storage tank, demineralized water storage tank, basins, and potable water tank (Figure 3). Adjacent to the Main Services Complex, a 15-acre temporary construction laydown area will be developed.

The SunCatchers themselves will be installed in sets of two. Each set of two SunCatchers will have an approximately 10-foot-wide graded access road between them. The access road will be treated with

polymeric stablizers to bind the soil together to prevent dust. The area occupied by the SunCatchers will not be graded, but the vegetation will be trimmed to three inches and allowed to regenerate. SunCatchers will be installed in two steps. The base will be vibrated into place without the need for extra grading or disturbance. Once the base is installed, the actual SunCatcher unit will be installed onto the base. The combined width of the two SunCatchers and associated maintenance road is approximately 150 feet. Approximately 40 to 80 feet will be left intact and generally undisturbed between each alternate row, except for brush trimming as may be required to reduce fire hazard and shading of SunCatchers.

Long-term permanent access would be provided by a bridge over the BSNF railroad along a route north of I-40 (Figure 3). Equipment may be transported during construction via trucks and/or rail car (through the construction of a siding), that would be located on the north side of BNSF railroad and east of an existing route or as authorized by BNSF.

In addition to the access roads serving the Project, access roads will be provided from the BNSF ROW north, and along the eastern boundary to the detention basins in the northeastern portion of the Project site (Figure 3). These access roads will be outside of the Project fenceline in order to allow access to the proposed bighorn sheep guzzler north of the Project site.

Water for the Project will be provided by groundwater from a well located within the Cadiz basin. The water will be brought onsite either through the railroad or by trucks. The expected average water consumption for the Project during construction is approximately 136 acre-feet per year (afy). Under normal operation (inclusive of mirror cleaning, dust control, and potable water usage), approximately 20 afy of water will be required. Local wells are currently being tested as a back-up water supply.

1.3.1 Best Management Practices (BMPs)

The Project will be designed to minimize ground disturbances and resulting environmental effects wherever practicable. The number of roadways will be kept to a minimum, and roadways will be specifically located to provide main routes for quick access to the site for construction, maintenance, and operations. Access from the main roads to the individual SunCatchers will be on access roads treated with polymeric stabilizers between alternate rows of SunCatchers. The roadways will have a low-flow, unpaved swale or roadway dip as needed to convey nuisance runoff to existing and /or proposed drainage swales, and utilize low-flow culverts when necessary. Culverts will be installed in a limited number of locations, as necessary, for crossing of flood flow areas (specific locations and needs for culverts are unknown at this time).

Brush trimming will occur along roads and around each group of SunCatchers (an approximately 150 foot wide area). After brush has been trimmed, blading for maintenance roadways will be utilized between alternating rows of SunCatchers. There will not be grading to produce additional roads from these maintenance roads to individual SunCatchers, as vehicles will just drive on the trimmed vegetation to access SunCatchers; however, ground disturbance is likely to develop over time with repeated use. The maintenance roads will be treated with a polymeric stabilizer to bind the soil together to control dust issues.

The Project site will be developed utilizing the existing land features without major grading operations. Offsite flows will be accepted and conveyed through the site, with discharge follwing the existing

drainage patterns. Detention basins along the northern Project site boundary will intercept offsite flows from the Cady Mountains (Figure 3). The detention basins will also provide for peak runoff attenuation of the surface flows, thus protecting the Project site from flooding, sediment deposition and scour. The treated roadways will have a low-flow, unpaved swale or roadway dip, as needed, to convey runoff to proposed channels/swales. The treated roads will utilize low flow culverts where necessary. Localized channel grading will occur on a limited basis to improve channel function in the vicinity of the BNSF railway ROW to control the surface runoff. In addition, a channel will be constructed along the northeastern portion of the site to direct potential 100-year flooding away from the Main Services Complex building site. It is unknown at this time specifically how many culverts will be necessary or where they will be located.

1.3.2 Avoidance, Minimization, Mitigation, and Monitoring

The following section summarizes mandatory avoidance and minimization measures being proposed by the Applicant to avoid and/or compensate for the potential impacts of the proposed Project. These mitigation measures may be modified and/or supplemented based on discussions with the various permitting agencies (*i.e.*, during the consultation process with United States Fish and Wildlife Service [USFWS] and California Department of Fish and Game [CDFG], or during the National Environmental Policy Act [NEPA] process with BLM).

1.3.3 Construction Monitoring and Vegetation Clearing

Calico Solar will provide mitigation construction monitoring by USFWS and BLM approved qualified biologists. The biologists will be given authority to supervise the functions listed below.

- Erosion and sedimentation control, as outlined in the Draft Drainage, Erosion and Sediment Control Plan (DESCP), submitted in August 2009, will be implemented during Project construction to retain sediment on-site and to prevent violations of water quality standards (URS 2009a).
- Diversion ditches and/or berms will be constructed as necessary to divert runoff from off-site areas around the construction site.
- Awareness training for desert tortoise, Mojave fringed-toed lizard, and other special status resources will be provided to all construction crews and operations staff.
- A biologist will monitor the construction activities daily during the initial site disturbance (including installation of permanent desert tortoise exclusion fencing) and at weekly intervals after all tortoises have been removed from the site. Exclusionary fencing will be checked monthly and after any substantial rain event to ensure that they are effective barriers for tortoise.
- Implement the weed management plan that is consistent with the Mojave Weed Management Area (MWMA) Memorandum of Understanding (MOU), which includes prevention, control, and eradication of weeds and invasive plant species, and educating the public about weed control in the region (DMG 2002a). The MOU identifies a priority list of invasive species to control in the Mojave.

1.3.4 Focused Mitigation for Desert Tortoise

The following conservation measures will be performed by the Applicant.

- A Desert Tortoise Translocation Plan shall be developed by Calico Solar, and must be approved by BLM and the wildlife agencies, and be completed and approved by USFWS prior to issuance of a Biological Opinion. This plan will include the following details at a minimum: translocation protocol; disease testing of individuals that will be translocated greater than five kilometers; translocation habitat assessment and suitability; assessment of desert tortoise population and health in the area receiving translocated tortoise. Pre-construction surveys will be conducted to test desert tortoises that will be translocated greater than five kilometers from the boundary of the Project. Testing will entail bloodwork to determine whether any desert tortoises suffer from upper respiratory tract disease (URTD) and will include radio tagging each desert tortoise found to aid in relocation during pre-construction surveys.
- A temporary exclusionary fence will be constructed around the construction area in occupied desert tortoise habitat, pre-construction clearance surveys to remove tortoise from the construction area will be conducted , and roving biological monitors that will monitor the various construction crews in the active construction areas will be assigned. Biological monitoring would also occur during access road improvements in occupied desert tortoise habitat.
- A permanent perimeter fence will be designed to preclude tortoise from re-entering the site. After installation, all tortoises shall be removed from the area contained by the fencing. If the permanent fence is installed prior to construction, there will be no need for the temporary exclusion fence.
- Mitigation for permanent impacts to desert tortoise habitat would occur through an acreage-based compensatory mitigation formula as required by the BLM approved West Mojave Plan that was developed in consultation with CEC and CDFG. The West Mojave Plan determined that a ratio of 1:1 will provide compensatory mitigation. The formula includes payment into a habitat conservation fund at a rate of $770 per acre plus a 15 percent acquisition and 17.1 percent overhead fee. The CDFG may require additional mitigation which is still to be determined, pending discussions between CDFG and the Applicant.
- A biological monitor must be present during maintenance activities if occurring in occupied desert tortoise habitat located outside of the perimeter fence. Pre-maintenance clearance surveys followed by exclusionary fencing may also be required in occupied desert tortoise habitat, if the maintenance action requires ground or vegetation disturbance.
- Speed limits within the Project site will be restricted to less than 25 miles per hour (mph) during construction and in areas surrounding the Project Site during operation of the Project.
- Lighting will be focused in toward the project site and downward to avoid lighting habitats beyond the project perimeter fencing.
- Monitoring for the presence of ravens and other potential human subsidized predators of special status wildlife will be conducted and a control plan will be implemented if predator densities substantially increase in the vicinity of the facility. A raven control plan is being developed (plan must be approved by the wildlife agencies prior to the initiation of construction activities) to

minimize the potential of the Project in attracting ravens to the area. Best Management Practices (BMPs) will be instituted to minimize the subsidization of ravens. BMPs to discourage the presence of ravens onsite include trash management, elimination of available water sources, designing structures to discourage potential nest sites, use of hazing to discourage raven presence, and active monitoring of the site for presence of ravens.

- Kiosks or similar facilities with educational information on desert tortoise, ravens, trash, and impacts on desert tortoise, and the Calico Solar Project shall be installed at rest stops on I-40 near the AFC Assessment Area.
- A Weed Management Plan, which must be approved by the wildlife agencies (CDFG, USFWS and BLM), will be implemented prior to the initiation of ground disturbing activities. Mitigation measures in the Weed Management Plan include: worker awareness training; limiting ground disturbance to designated areas only; maintenance of vehicle wash and inspection stations and close monitoring of materials brought onto the site to minimize the potential for weed introduction; re-establishment of native vegetation in disturbed areas to prevent weeds from colonizing newly disturbed areas; and, regularly scheduled monitoring to quickly detect new infestations of weeds, coupled with rapid implementation of control measures to prevent further infiltration.
- The exclusion fencing at the northern boundary of the Project will be moved south of the detention basins. This will create a wider east-west movement corridor with greater distance between the Project site and the Cady Mountains. The basins will be constructed such that desert tortoise may move into, out of, and across the basins without risk of being trapped.

1.4 CONSULTATION HISTORY

Early informal consultation between the BLM and USFWS started on this proposed project in early 2007. The early discussions concerned the development of protocols for biological surveys. Between 2007 and the present, many e-mail and phone conversations have ensued. Below are listed the major milestones associated with this consultation process.

August 18, 2008: The BLM Barstow Field Office sent the USFWS Ventura Field Office an e-mail relating to the protocols used during the data collection for the development of the Biological Technical Report.

August 19, 2008: The USFWS Ventura Field Office sent a response e-mail to the BLM Barstow Field Office regarding the protocol discussion e-mail.

August 27, 2009: BLM District Office sent letter to USFWS Ventura Field Office requesting a species list for the proposed Project.

September 21, 2009: BLM District Office received species list for the proposed Project from the USFWS Ventura Field Office.

October 8, 2009: First meeting between BLM, CDFG, USFWS and Project proponent regarding potential mitigation measures for the proposed Project.

December 10, 2009: Second meeting between BLM, CDFG, USFWS and Project applicant regarding potential mitigation measures for the proposed Project.

January 28, 2010: Meeting between BLM, CDFG, USFWS and Project applicant regarding development of the draft Desert Tortoise Translocation Plan.

March 29, 2010: Meeting between BLM, CDFG, and USFWS to discuss translocation receptor sites.

April 1, 2010: Meeting between BLM, USFWS, and Project Applicant to discuss translocation receptor sites.

SECTION 2 DESCRIPTION OF LISTED SPECIES

Only one federally listed wildlife species was detected in the Biological Assessment area or immediate vicinity during field surveys: desert tortoise. Section 2.1 lists details of the implemented desert tortoise protocol survey methods and associated results. A listing of other special management status species known from the Project vicinity can be found in the Solar One Biotechnical Report (URS 2009b).

No federally listed plant species were found, or are expected to occur within the Biological Assessment area. A complete list of all plant species detected during the 2007 and 2008 surveys, and a listing of other special management status species known from the Project vicinity can be found in the Solar One Biotechnical Report (URS 2009b).

No Designated Critical Habitat for any listed plant or animal species occurs on site, though Designated Critical Habitat for the desert tortoise occurs directly adjacent to the southwestern edge of the Biological Assessment area.

2.1 DESERT TORTOISE

2.1.1 Literature/Database Search and Species Consultation

A search of the California Natural Diversity Database (CNDDB 2008) within a 10-mile radius of the Project boundary revealed several previously documented desert tortoises occurring approximately 4.5 miles south of the Project boundary (Figure 4). A literature search was also conducted which yielded relevant information pertaining to desert tortoise within the Biological Assessment area. Experts, authors, and consultation with appropriate agencies (including USFWS, CDFG, and BLM) are cited below in Sections 2.1.2 – 2.1.5.

2.1.2 Species Account

Regulatory Status: Federal: USFWS: Threatened; State: CDFG: Threatened

Desert tortoise is widely distributed in the deserts of California, southern Nevada, extreme southwestern Utah, western and southern Arizona, and throughout most of Sonora, Mexico. Desert tortoise populations are declining because of various factors including the spread of a fatal respiratory disease, increases in raven populations that prey on juvenile tortoises, and habitat loss and degradation because of various extensive and intensive land uses. Only the Mojave population of desert tortoise is Federal- and State-listed as threatened. Typical tortoise habitat consists of firm but not hard ground - usually soft sandy loams and loamy sands - to allow for burrow construction (Karl 1983). Desert tortoise primarily occurs in four subpopulations in the West Mojave Desert (Ord-Rodman, Superior-Cronese, Fremont-Kramer, and Joshua Tree DWMAs). Outside of these DWMAs, tortoises tend to occur in at much lower densities. This species is mostly found in creosote bush scrub, with lower densities occurring in Joshua tree woodland and saltbush scrub. The topography where this species is typically found includes flats, low valleys, bajadas, and low hills between 2,000 and 3,300 feet and occasionally above 4,100 feet.

The diet of desert tortoise consists mainly of annual plants and grasses, but also perennial plants such as cacti and native forbs when available, certain non-native plant species are also eaten (West Mojave

Planning Team 1999). Desert tortoise are most active when plants are available for forage or when pooled water is available for drinking, usually from March through early June and again between September and early November (Marlow 1979). They typically have overlapping home ranges averaging between 5-131 acres, which additionally can fluctuate in size on a year-to-year basis based on several factors such as sex, rainfall, availability of resources, and others factors (Berry 1986, Duda 1999, CDFG 2000). Individuals commonly traverse 1,500-2,600 feet/day within their home range, and males have been recorded traveling up to 0.62 miles within their home range. Mojave desert tortoises are also known to disperse more extended distances (1.9 miles in 16 days and 4.5 miles in 15 months; Berry 1986).

2.1.3 Protocol Survey Methods

Desert tortoise surveys were conducted in the Biological Assessment area and additional areas from May 15, 2007 through May 31, 2007 and from April 1, 2008 through May 7, 2008. No areas were surveyed for tortoise twice. The area north of the railroad was surveyed in 2007 for approximately 664 field hours, while the area between the railroad and I-40 was surveyed in 2008 for approximately 496 field hours (Figure 5). The Biological Assessment area is part of the larger Tessera Assessment Area (Figure 2). The northwest portion of theCalico Solar Assessment Area, northwest of the Biological Assessment area discussed in this report, is not a part of the currently proposed Project; however, this area was surveyed in conjunction with the surveys for the proposed Project. The land east of the transmission line within the BLM ACEC was also surveyed, but is currently not part of the proposed Project (Figure 2). The total area surveyed extends east and west of the Calico Solar Project Site as shown on Figure 5, and this survey area is referred to herein as the Total Desert Tortoise Survey Area (Figure 6). The Total Desert Tortoise Survey Area encompasses the Tessera Assessment Area, of which Calico Solar is a part of, and also the BLM ACEC to the southwest. Sample plot surveys were conducted according to the USFWS Field Survey Protocol for a Non-federal Action that may occur within the range of desert tortoise (USFWS 1992).

In lieu of the standard 100 percent survey of the entire Project Area plus zones of influence called for in protocol desert tortoise surveys, a sub-sampling approach that was approved by the BLM and USFWS was used. The sub-sampling approach was implemented because 100 percent coverage over such a large area was deemed impractical. The Total Desert Tortoise Survey Area was divided into 240-acre grid cells, and a sub-sample plot 80 acres in size (an area that one trained biologist can adequately survey in a single day) was established within each 240-acre grid cell (Figures 5-7). Each pair of biologists surveyed two 80-acre sample plots each day, walking transects ten meters apart, according to USFWS protocol. This approach resulted in 100 percent coverage of 33 percent of the total area, with sub-sampling areas uniformly distributed across the Total Desert Tortoise Survey Area. Incidental observations of desert tortoises and desert tortoise sign were also noted during the course of other field efforts, but these observations are not included in the population estimates because the observations were not made during the protocol surveys. Incidental observations include observations made during vegetation surveys and other work, such as monitoring for the geotechnical work in 2009 and burrowing owl surveys in 2010 (Figure 6). Figure 7 depicts desert tortoise data gathered during focused surveys only and does not include incidental observations. The sample plots included a 1000-foot perimeter buffer area beyond the actual Project site boundary as required by CEC guidelines, though surveys extended beyond this amount in areas east and west of the Project limits. Selection of the sample plots was spatially even with plot locations sited without bias toward habitat type or elevation (Figures 6 and 7). The sampling design also

allows for estimation of the total population of desert tortoise within the survey area. Biologists conducting desert tortoise surveys were trained in the desert tortoise transect survey protocol.

Locations of tortoise sign, burrows, and live tortoises within each sample plot were recorded with consumer-grade global positioning system (GPS) units (approximate 10-foot accuracy). Photographs of live desert tortoises were taken and data including condition of its burrow, if present, and habitat the tortoise was found in were recorded for each tortoise sighting. No tortoises were directly handled and care was taken to avoid disturbing detected tortoises. Incidental observations of tortoises and tortoise sign were also recorded during all field efforts, but these observations were not included in the calculations for population estimates. Specific protocol survey methods can be found in the Solar One Biotechnical Report (URS 2009b).

2.1.4 Protocol Survey Results

All observations of desert tortoise sign in the Total Desert Tortoise Survey Area are shown on Figure 6. Observations made during focused desert tortoise surveys and incidental observations made during all biological surveys conducted in 2007 and 2008 were noted. Additional incidental observations made in 2009 (Terracon geotechnical work) and 2010 (URS burrowing owl surveys) are also included on Figure 6. The 2009 incidental observations include six (four onsite, one in NAP Area A, and one west of the project site) live desert tortoise, while the 2010 incidental observations include two live desert tortoise and 10 active burrows, all located north of the BNSF railroad. Carcasses, scat, and burrows were also observed during these incidental surveys. No desert tortoise have been observed south of the BNSF railroad tracks during any surveys of the project site; however, two potential desert tortoise burrows were observed south of the BNSF railroad tracks in 2009, while approximately 30 burrows and three carcasses were observed during burrowing owl surveys in 2010. Incidental observations must be considered differently from the focused desert tortoise survey results because they may include repeat counts of individuals, burrows, and/or sign. A summary of observations made during both focused desert tortoise surveys and incidental observations from all surveys is provided in Table 1, and this compares to the data portrayed in Figure 6. However, this data is not valid for determining population estimates on-site, because it includes the incidental observations that may include repeat counts and were not part of a sampling design for estimation of populations.

The focused desert tortoise surveys were conducted using the survey design to estimate the population of desert tortoise on-site. Five live desert tortoises and one active burrow were detected within sample plots during the focused desert tortoise surveys (Table 2, Figure 7). An additional six live desert tortoise were detected in NAP Area A during the focused desert tortoise surveys, with all the detections occurring in the northern half of NAP Area A (Table 2, Figure 7).

Based on sample plot coverage (33 percent) and using tortoise detection rates of 55 percent (between 55 and 68 percent; Nussear *et. al.,* 2008) on the low end, and 100 percent detection on the high end, the Project area likely supports between 18 to 33 desert tortoise (Table 3). Calico Solar NAP Area A also potentially supports a population of 18 to 33 individuals (Table 3), with the individuals there clustered toward the northern half of NAP Area A. The total number of desert tortoise estimated to occur within the Biological Assessment area is approximately 36 to 66. Using the USFWS Pre-project Survey Protocol (USFWS 2009), the number of desert tortoise estimated to occur on the Calico Solar project site, the

1,000-foot buffer, and NAPs is 87 individuals with a 95 percent confidence range of 31 to 246 individuals. For planning purposes, up to 100 desert tortoise are likely to be impacted and expected to be translocated. Protocol surveys consisting of transects 10m apart will be conducted over 100 percent of the site in spring of 2010 to get a current estimate of the number of desert tortoise that will be impacted and require translocation.

A total of 43 desert tortoise and active burrows (28 live tortoise and 15 active burrows) were detected during focused surveys within the Total Desert Tortoise Survey Area, which includes the Biological Assessment area, remainder of the Tessera Assessment Area and BLM ACEC. Using the same assumptions as above, the Total Desert Tortoise Survey Area supports an estimated population of 129 to 235 tortoises (Table 4). Using these population estimates, the Total Desert Tortoise Survey Area potentially supports a desert tortoise population density of 2.4 to 4.3 tortoises per square mile (Table 4) (USFWS protocol estimate of 5 tortoise per square mile). The CDFG desert tortoise species account states that typical desert tortoise densities are 9.2 tortoises per square mile in the eastern Mojave Desert and 2,600 tortoises per square mile in the western Mojave Desert (CDFG 2000). Additionally, a 10-year research project conducted by the BLM estimated desert tortoise densities in the California Mojave Desert from 21-467 tortoise per square mile (8-184 tortoise per square kilometer) (Berry 1986). The estimated density of desert tortoise within the Total Desert Tortoise Survey Area ranges from 2.4 to 4.3 desert tortoise per square mile, which is substantially lower than these densities reported by the CDFG and BLM (USFWS 2008).

The distribution of tortoise and tortoise sign in the Biological Assessment area, as well as throughout the entire Total Desert Tortoise Survey Area, was not random and tended to be concentrated in the north-central portion of the Biological Assessment area (Figures 6 through 8). The portion of the Biological Assessment area between the BNSF railroad and I-40 had no tortoise or tortoise sign detected. I-40 and the BNSF railroad appear to form barriers to desert tortoise movement across either feature, with movement only possible through several culverts and bridges that provide opportunity for passage under these barriers. Based on the lack of sign, these existing barriers to desert tortoise movement appear to prevent desert tortoise from readily occupying and persisting in the area between the railroad and the highway.

2.1.5 Critical Habitat

The Biological Assessment area is not included within any DCH for listed species (Figure 4); however, the southwest corner of the Project site is north of, and adjacent to, DCH for desert tortoise that is located south of I-40 (Figure 4). Project activities are not anticipated to impact desert tortoise DCH.

SECTION 3 ENVIRONMENTAL BASELINE

3.1 BIOLOGICAL SETTING

The Project is located within the Mojave Desert in an area approximately 37 miles east of Barstow, California. The Mojave Desert is the transitional area between the hotter Sonoran Desert to the south and the cooler and higher elevation Great Basin Desert to the north. The Mojave Desert is within the rain shadow of the Transverse and Sierra Nevada mountain ranges, and is defined by a specific combination of latitude, elevation, geology, and indicator plant species.

The Mojave Desert is the driest desert in the continental United States with average precipitation ranging from 2.2 to 2.5 inches per year falling primarily between October and March, and temperatures ranging from 40 to 110 degrees Fahrenheit. Perennial rivers and streams are rare, with the Mojave River being the most prominent drainage feature in the greater region, although it is distant from the Project site. Elevations in the Mojave Desert range from below sea level at Death Valley, to an elevation of 7,929 feet. Plant communities in the region vary with topography, geology, elevation, and precipitation. These communities include pinyon-pine forests and frost-tolerant species above 5,500 feet, where local average precipitation may be as much as 10 inches per year (some of which falls as snow); Joshua tree woodland in the range of 4,000 to 6,000 feet; mixed desert shrub communities in the middle elevation regions and along the mountain range fronts; and creosote bush and other drought-tolerant species in the lower elevation regions where rainfall averages less than 2.5 inches per year (USGS 2004).

Vegetation across the Project site is dominated by Mojave creosote bush scrub through the rolling terrain, with less common and site-specific conditions allowing for saltbush scrub in the southwestern portion of the Project site (Figure 2). Developments in this area include the BNSF railroad, a maintained north-south dirt access road for the existing transmission line on the eastern border of the assessment area connecting to the existing Pisgah substation south of the site, and several east-west dirt roads that cross the site. The past land uses within the assessment area include a history of cattle grazing and limited mining. Currently, there is evidence of disturbance from off-highway vehicle (OHV) activities.

3.2 VEGETATION COMMUNITIES PRESENT

Vegetation in the Biological Assessment area is composed primarily of Mojave Desert creosote bush scrub with a smaller area of desert saltbush scrub as defined by the Holland (1986) classification of plant communities. Disturbed areas are associated with dirt roads and trails, areas adjacent to railroads and the interstate highway, along underground pipeline routes, and cleared areas from past land uses (*e.g.,* mining).

The Biological Assessment area supports two distinct vegetation communities. These vegetation communities were digitized and are displayed on aerial photographic maps (Figure 2). Each habitat description follows the Holland vegetation classification (Holland 1986). Table 5 - *Vegetation Communities Occurring within the Calico Solar Biological Assessment area* shows the estimated acreages of existing vegetation communities for areas within the Biological Assessment area.

3.2.1.1 Developed

Developed lands (Holland Code 12000) include roads, built structures, and associated infrastructure. Within the Biological Assessment area, these included dirt roads, transmission lines, underground gas pipelines, railroads, and any other built environments. Developed areas (which include paved roads, highway, railroad, and the transmission line) occurred in approximately 24.0 acres of the Project footprint, and 330.5 acres of the 1,000-foot buffer of the Project.

3.2.1.2 Desert Saltbush Scrub

Desert saltbush scrub (Holland Code 36110) is a low, sparse mixture of micophyllous shrubs and occasional succulent species. Stands of shrubs are usually spaced widely and are strongly dominated by desert saltbush (*Atriplex polycarpa*). Other species include white burrobush (*Hymenoclea salsola*), and inkweed (*Suaeda moquinii*). This habitat usually forms on fine-textured, poorly draining soils with high alkalinity and salinity, usually surrounding playas on elevated ground. Desert saltbush scrub is only found in the southwestern corner of the Project footprint (237.3 acres) in association with small patches of Mojave creosote bush scrub. In addition, approximately 289.1 acres of desert saltbush scrub occurs in the 1,000-foot buffer of the Project.

3.2.1.3 Mojave Creosote Bush Scrub

Mojave creosote bush scrub (Holland Code 34100) is a community dominated by creosote bush (*Larrea tridentata*) and white bur-sage (*Ambrosia dumosa*). Shrubs are typically widely spaced with bare ground between them. A diverse annual herb layer may flower in late March and April with sufficient winter rains. Other common plant species in this habitat include desert senna (*Senna armata*), Nevada ephedra (*Ephedra nevadensis*), white burrobush, encelia (*Encelia* spp.), ratany (*Krameria* spp.), and various cactus species (*e.g., Opuntia* spp.). This plant community is usually found on well-drained secondary soils with very low water-holding capacity on slopes, fans, and valleys. This vegetation type makes up the majority of the acreage within the Project footprint boundaries (7,812.5 acres undisturbed and 88.6 acres disturbed). Approximately 1,769.6 acres of undisturbed and 140.0 acres of disturbed Mojave creosote bush scrub occur within the 1,000-foot buffer.

3.2.1.4 Un-Vegetated Habitat

Un-vegetated habitat (Holland Code 13000) occurs on steep rocky slopes that dominate the northeastern boundary of the Project. Little vegetation is associated with this rocky habitat. A total of 67.6 acres of the un-vegetated habitat occurs along the northern boundary of the Project footprint, with an additional 134.8 acres within the 1,000-foot buffer.

3.3 WILDLIFE CORRIDORS

A wildlife corridor is defined as a linear landscape feature that allows animal movement between two patches of habitat or between occupied habitat and geographically discrete resources (*e.g.*, water). To function effectively, a corridor must accomplish two basic functions. First, it must effectively link two or more large patches of habitat. The corridor must conduct animals through the landscape to areas of suitable habitat without excessive risk of directing them to unsuitable areas where risk of mortality may

be very high. Second, the corridor must be suitable to the focal target species so that they will use the corridor frequently enough to achieve the desired demographic and genetic exchange between populations. Presence of wildlife corridors allow an exchange of individuals between populations, lowering inbreeding within populations, increasing effective population size, and facilitating re-establishment of populations that have been decimated or eliminated because of random events.

Focal species are those species that naturally occur in low densities and that may be unwilling or unable to cross extensive areas of development or otherwise unfavorable habitat. Animals have a natural aversion to situations or physical settings they perceive to be dangerous and will often shy away from situations in which they are exposed without cover or escape routes. The presence of disturbance outside of the animal's normal experience is also a situation that is often avoided by animals. In the Mojave Desert, potential focal species for wildlife movement assessment could include desert tortoise, mountain lion (*Felis concolor*), coyote, bighorn sheep (*Ovis canadensis nelsoni*), bobcat, and kit fox.

Generally, the Project site and surrounding vicinity is unrestricted and conducive to live-in habitat and movement of wildlife throughout the area, with uniform habitat composition throughout the area. Movement in the east-west direction is currently unconstrained. The primary constraints to wildlife movement are in the north-south direction. The existing BNSF railroad and I-40 run east-west across the lower one-third of the bajada that contains the Project site. I-40 adjacent to the Project site is fenced; however, tortoise exclusion fencing is not used, allowing animals to potentially move across the freeway. The BNSF railroad is not fenced, although the railroad is elevated several feet above surrounding grade, creating constraints to wildlife movement, especially for smaller terrestrial species such as reptiles and small mammals. Although animals can choose to cross over these features at any point, the only safe locations for general wildlife movement across both of these features are through existing culverts and railroad trestles (Figure 10). The majority of these features are large enough for large mammals to pass through, with the exception of a series of small pipes that run under I-40 at the far southwestern corner of the Project site. Regardless of the few culverts and bridges, north-south wildlife movement is greatly restricted by these existing landscape features.

Additionally, the Applicant will expand the east-west corridor remaining on the north side of the Project after Project implementation. The Applicant will move the Project exclusionary fencing south so that it is located below detention basins to be constructed on the northern edge of the Project. The detention basins would be constructed in a manner to allow animal movement in to, out of, and across the basins. This is anticipated to provide a wider animal movement corridor by increasing the distance between the Project and the Cady Mountains than was initially proposed.

3.4 SPECIAL MANAGEMENT AREAS

Figure 9 illustrates the additional management areas within the vicinity of the Biological Assessment area. North of the Project Area, the BLM has proposed an area for designation as wilderness (Cady Mountains Wilderness Study Area). The Project is also located within the planning area of the West Mojave Coordinated Management Plan (West Mojave Plan or WEMO, BLM 2006). WEMO designates a total of four DWMAs, each of which focuses on the protection and conservation of desert tortoise, Mohave ground squirrel (*Spermophilus mohavensis*), and other State- or Federal- listed special status

species that share their habitats. The Biological Assessment area is adjacent to the Ord-Rodman DWMA, but is not within it. The Pisgah ACEC is immediately to the southeast of the Project site (Figure 9).

SECTION 4 EFFECTS OF THE ACTION

4.1 IMPACTS ON DESERT TORTOISE

Impacts resulting from the implementation of the Project include:

- Estimate of incidental take;
- Loss of occupied desert tortoise habitat;
- Constriction of movement corridors;
- Disturbance from vibration during construction that could affect tortoise in burrows near the boundary;
- Potential for dust during construction to negatively affect adjacent intact vegetation, and therefore affect desert tortoise habitat;
- Potential for partial loss of habitat within desert tortoise territories along the Project boundary;
- Potential noise and lighting effects on tortoise behavior;
- Edge effects of the Calico Solar Project on desert tortoises occupying NAP Area A and the 1000-foot buffer;
- Introduction of weeds that may increase on the Project site and in the buffer area during construction and operation, and therefore affect desert tortoise habitat; and
- Potential increases in ravens and other predators of desert tortoise occupying adjacent lands as a result of perches provided by the SunCatcher structures, transmission towers, and perimeter fencing.

4.1.1 Estimate of Incidental Take

A federal take of a species listed pursuant to the Federal Endangered Species Act (FESA) is defined as "Take – to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct" (50 CFR 17.3). An estimated 18-33 desert tortoise occur within the Project area, and up to an additional 18 to 33 desert tortoise in NAP Area A (or between 31 and 246 total tortoises in the entire Biological Assessment area using 2009 USFWS protocol calculations). For planning purposes, construction of the Project may result in a federal take of up to 100 desert tortoise through harassment, direct mortality, and impacts on desert tortoise habitat. Desert tortoise exclusion fencing will be installed prior to construction and desert tortoise will be excluded (translocated) via clearance surveys before the construction phase of the Project. Translocation of desert tortoise can potentially represent take via harassment and/or mortality, as there is a possibility for tortoises to be killed or injured as a result of this process.

4.1.2 Loss of Occupied Habitat

The current Project description includes the installation of permanent desert tortoise exclusion fencing along the entire Project boundary. Approximately 8,230 acres of occupied desert tortoise habitat would be excluded as a result of the Project.

Construction equipment will not operate beyond the fenced Project boundary, other than on roads designated open by BLM. Roads that are not designated as open by BLM that may exist are not to be used. A map of BLM designated open routes is found in Figure 11. Therefore, temporary disturbance of NAP Area A or other areas beyond the Project boundary by equipment operation will not occur.

4.1.3 Constriction of Movement Corridors

Movement through the Project site north of the railroad is expected to be mostly in the east-west directions, and mostly along the lands in the northern half of the Project site and beyond up to the mountains, where tortoise densities are greater. East-west movement of tortoises in NAP Area A will be restricted, as the Project extends along the east, west, and south sides of NAP Area A; however, east-west movement is still possible north of the Project site. Movement corridors are not necessarily areas where animals spend most of their time (preferred habitat), but are merely areas that they periodically used to move between areas of preferred habitat. The area north of the Project site is not being proposed as desert tortoise live-in habitat, but rather as an area available as a movement corridor. The Project will not prevent east-west movement because sufficient lands north of the Project site will remain open to desert tortoise and these areas also tend to have the greatest concentrations of desert tortoise (Figure 8). Although tortoise movement may be constrained with the addition of the Calico Solar Project, significant impacts on desert tortoise movement at the landscape level are not expected to result from this project, as there is ample room north of the Project for tortoise movement. The mountainous terrain to the north of the Project may not be suitable habitat for desert tortoise occupation; however, it does allow tortoise to move in and east-west direction. The United States Geological Survey (USGS) modeled desert tortoise habitat was used to predict potential movement corridors (Figure 12).

No desert tortoise or desert tortoise sign was detected in the area between the BNSF railroad and I-40 during focused or incidental surveys in 2007 or 2008. In 2009, two class four (inactive potential desert tortoise) burrows were incidentally detected between the BNSF railroad and I-40. One of these burrows is located onsite, just south of the BNSF railroad, while the other burrow is located in the BLM ACEC area to the southeast of the Project site (Figure 6). According to the USFWS desert tortoise protocol (USFWS 1992), class four burrows are defined as burrows in a deteriorated condition that may potentially be desert tortoise burrows, but which cannot be confirmed as being desert tortoise burrows. In addition to the two potential burrows observed in 2009, three carapasses and approximately 30 potential desert tortoise burrows were detected between the BNSF railroad tracks and I-40 in 2010 during burrowing owl surveys (Figure 6). No desert tortoises were observed in this area during either of these surveys.

The absence of desert tortoise observations between the BNSF railroad and I-40 after two years of focused desert tortoise surveys (and incidental surveys), suggests that the area between the BNSF railroad and I-40 has not recently been utilized by desert tortoise. Potential desert tortoise habitat exists in the area between the BNSF railroad and I-40, and desert tortoise can access this area through existing culverts and

trestles; however, the absence of observed desert tortoise individuals in this area leads to the expectation that desert tortoise do not prefer this area. Desert tortoise are not expected to effectively colonize or persist within the area between the BNSF railroad and I-40 because these linear features act as an access filter, deterring individual desert tortoise movement into this area. Based on this information, it is likely that the movement of desert tortoise from north to south between the mountains and the lands south of I-40 is likely constrained by the BNSF railroad and I-40.

4.1.4 Vibration

Equipment that will cause surface disturbance and otherwise operate during construction will be limited to what would be needed to develop dirt roads that are generally at existing landform grades, equipment to install the SunCatcher pedestals and the actual SunCatchers, equipment to install cables, and equipment to construct the few buildings that are part of the Project plan. This equipment will cause limited vibration in the ground near them; however, the potential effects of such short-term (just a few minutes at a time) ground vibration are unlikely to be noticeable farther than a few tens of feet beyond the source of the vibration. As the Project site will be enclosed in exclusion fencing, little or no effects of ground vibration that could affect existing burrows are expected to extend beyond the Project boundary, especially into NAP Area A. Activity during operations will be substantially less than during Project construction, such that no adverse effects from ground vibration on desert tortoise are expected to occur during Project operations.

4.1.5 Dust

The Project plan also does not include the wholesale grading of the entire site; however, SunCatcher maintenance roads will be installed between every other row of SunCatchers. Construction activities and operational vehicle traffic on the roads within the Project could generate dust that would affect vegetation adjacent to the Project site in the short-term, although long-term adverse effects on vegetation are not expected to occur. In the short-term, dust may settle on leaves of plants affecting their ability to photosynthesize and uptake nutrient and water; however, any dust that settles is likely to be washed away during rainstorms. These roads will not be paved, but will be treated with polymeric stabilizers to control dust impacts.

4.1.6 Partial Loss of Desert Tortoise Territories

The linear extent of the Project footprint (length of exclusion fence) is approximately 32.2 miles (Figure 3). A total of approximately four miles of this amount occurs along either side of the BNSF railroad. Because the site is completely fenced, there is likely to be a partial loss of occupied territories along the Project boundary, notably the estimated 18-33 desert tortoise that occupy NAP Area A. Estimated desert tortoise density onsite is low (2.4 to 4.3 desert tortoise per square mile; USFWS protocol estimates 5 tortoise per square mile), with all desert tortoise observations occurring well north of the BNSF railroad. It is unknown how many desert tortoises exist outside of the surveyed area; however, partial territory loss is anticipated to affect additional individuals outside the Biological Assessment area, including a minimum of three tortoises observed in the 1000-ft buffer.

4.1.7 Noise and Lighting

The existing noise conditions at the Project site vary with the distance from I-40 and the adjacent railroad. Current ambient noise levels near the Project site vary from the mid 40s to nearly 80 dBA L_{eq}. The main sources of noise currently found onsite are from vehicular traffic on I-40 and railroad activity. The highest level of current ambient noise is expected to center along these two sources, fading to the low range with increased distance from these sources. Construction activities will generate noise that will vary from 48 to 76 dBA L_{eq} that would extend into the 1000-foot buffer area for construction activities directly adjacent to the Project boundary. Project operation will generate noise of 63 to 70 dBA L_{eq}. The source of noise during Project operation will primarily be the SunCatchers themselves. The SunCatchers are spread evenly throughout the majority of the site aside from large portions in the northern end where the detention/infiltration basins will be located. The amount of noise generated by the Project is not a significant change from existing conditions nearest the freeway and railroad, but does represent an increase of approximately 20 dBA L_{eq} farthest away from the two sources near northern boundary of the Project. Tortoise near the foothills of the Cady Mountains, north of the Project site, would experience an increase in sound levels, which may affect their behavior and use of the area to the north of the site, although studies indicate noise effects may be less than adverse (Bowles *et al.* 1999). The level of disturbance experienced by an individual species would be dependent on the level of habituation possessed by individual species. Species observed in the Project vicinity are also considered tolerant of noise and would not be substantially affected by temporary construction noise. Species remaining onsite during Project operation are expected to adapt to the new noise levels. The potential effects on wildlife from noise are considered less than significant because of the temporary nature (construction) of the highest noise events, and slightly increased levels above ambient conditions during operation, some of which are within the noise levels currently found on-site.

Effects of lighting are expected to be minimal along the project perimeter. Lighting will be minimized to the extent practicable and limited to meeting safety/security requirements. Lighting will be focused in toward the Project site and downward to avoid lighting habitats beyond the Project perimeter fencing.

4.1.8 Edge Effects

An additional 18 to 33 desert tortoise are estimated to occur within NAP Area A (Figure 7 and Table 4) and will likely be affected by the adjacent construction and operation of the Project with partial loss of territories. Project construction will not occur in this area, although construction will occur up to the boundary on three sides of NAP Area A. The NAP Area A is a contiguous parcel of land bounded by the Project site on the east, west and south sides. It is approximately one mile wide from east to west and two miles long from north to south (approximately 1,280 acres in size). The estimated 18 to 33 desert tortoise in NAP Area A were detected in the northern half of this area.

Three live desert tortoises and one active burrow were incidentally detected outside of the associated survey plots in the 1000-foot buffer near the existing transmission line ROW. Impacts resulting from the Project may potentially affect tortoise occurring in the 1,000-foot buffer area surrounding the site, as well as desert tortoise occurring outside of the 1,000-foot buffer. Specifically, the entire buffer area contains 2,664 acres of land, a portion of which is already impacted by existing development, such as the BNSF railroad and I-40 to the south, and the existing transmission line along the eastern boundary. Impacts in

the buffer areas as a result of the Project may affect approximately 2,198 acres of suitable habitat. Impacts may also potentially extend into suitable habitat beyond the 1,000-foot buffer area.

The overall distribution of desert tortoise in the entire Biological Assessment area is toward the north-central portion of the Project site and that distribution is expected to continue northward on the plains of the bajada up to the foothills of the northern bounding mountains. After Project implementation, the movement of desert tortoise from NAP Area A would be northward due to Project constraints in the east, west, and southern sides. The proposed Project already includes placement of exclusionary fencing along the Project boundary during construction and for the life of the Project, such that effects on desert tortoise in NAP Area A moving into the Project area would be eliminated.

4.1.9 Introduction of Weeds

Introduction of weeds will be controlled via the wildlife agency approved weed management plan and will prevent the spread/colonization of weed onsite and off-site.

The existing study area, including the Project area and surrounding lands is not currently infested with weed species, although several non-native plant species occur throughout the general area. Areas that are adjacent to the Project boundary, such as NAP Area A, already support these non-native plant species. There is some potential that non-native plant species densities may increase within the Project boundary in areas of surface land disturbance and shading, namely Sahara mustard. In addition to planned ground disturbance, each SunCatcher unit will be periodically washed with approximately 14 gallons of water. Although the majority of the water is expected to evaporate, the introduction of a minimal amount of water under the SunCatchers may occur. This could potentially contribute to the establishment and spread of non-native species onsite. A weed management plan will be implemented to address potential issues stemming from planned ground disturbance and SunCatcher wash water. The goal of this plan would be to minimize potential effects from weeds within the Project boundary and adjacent lands, as well as to avoid adverse effects on desert tortoise forage habitat off-site. Given the preparation of a weed management plan to address effects of potential weed issues, it is unlikely that these issues would result in substantial increases in non-native species such that adjacent lands beyond the Project boundaries would be at substantial risk from weeds. With implementation of a weed management plan as discussed in Section 1.3.4 no adverse effects on desert tortoise from weeds within the Project boundary or in adjacent lands are expected to occur.

4.1.10 Attraction of Human Subsidized Predators

Substantial development within the desert often attracts ravens and coyotes at higher densities than in areas of undeveloped desert landscapes (Boarman *et al.,* 2006). Ravens may be attracted to the SunCatchers and perimeter fencing and transmission lines as perches, as well as to other facilities for the Project. Boarman *et al.* (2006) demonstrate that ravens are primarily attracted to areas with human influence that provide supplemental nesting, food or water resources. There will not be increased sources of food or water for ravens at the SunCatchers. There is some potential for increased sources of food or water at the few buildings onsite where people will concentrate; however, a wildlife agency approved raven management plan must be developed prior to the initiation of construction activities which will eliminate potential raven related impacts to desert tortoise. Education regarding control of food/trash

sources and minimization of water resources are the main focus of the plan. Ravens may also be attracted to potential detention basins (Figure 3); however, these features will only have water in them after rainstorms and are not intended to be inundated for long periods of time. Ravens may also be attracted to a waste water treatment pond that may or may not be included in the final Project design plans. If included, covering the pond may be an option to prevent raven use. Operation and maintenance of the facility could allow for predator densities to increase because of the potentially increased presence of limited resources (*e.g.*, freshwater, nest sites, food resources) that is currently absent from the site and these potential impacts would be eliminated by: eliminating sources of water that is attractive to ravens, such as designing evaporation ponds/detention basins that only hold water for a maximum of a few days; designing structures to eliminate locations where ravens can build nests, or installing measures to prevent nesting in structures; limiting the creation of trash and keeping the site trash free; using hazing to deter raven occupation of the site (with approval from the wildlife agencies only); routine monitoring of the site for ravens to identify occupation and formulate adaptive strategies to deter further occupation; and education of workers to follow these measures.

The effect of attracting human subsidized predators could extend to the adjacent lands within the assessment buffer and beyond. This impact is potentially significant. A raven control plan will be created by the client and approved by the wildlife agencies (CDFG, USFWS and BLM) prior to the initiation of ground disturbing activities. At a minimum, this plan will describe methods for adaptive management to control potential adverse effects from ravens and contain the above measures to mitigate this potential impact.

4.2 CUMULATIVE EFFECTS

Under the ESA, other federal actions, such as those occurring on BLM lands, are not subject to cumulative effects analysis because their effects are accounted for through Section 7 consultations under the ESA. No known tribal, state, local government, or commercial projects are reasonably certain to occur in the future within a 10-mile vicinity of the Calico Solar Project. Non-federal activities that occur on federal land, specifically the maintenance of power transmission lines, are subject to federal ESA requirements and, therefore, would not contribute to cumulative effects. The Calico Solar Project is not expected to result in significant cumulative effects on desert tortoise.

The proposed Project is consistent with the Biological Opinion issued for the West Mojave Plan, because the Project area is outside areas conserved under the plan, the mitigation ratio for this area is 1:1 as proposed, with the cost per acre defined by the West Mojave Plan, and construction BMPs required by the plan will be implemented.

SECTION 5 DETERMINATION OF EFFECT

The implementation of the Calico Solar Project is likely to have an adverse effect on the desert tortoise. Take would occur in the form of harassment, potential mortality, and loss of occupied habitat. Implementation of the Translocation Plan and exclusion fencing is intended to minimize direct mortality of tortoise. Based on the amount of suitable habitat that would be impacted and estimated population estimates based on focused desert tortoise surveys conducted in the Project Biological Assessment area, approximately 36 to 66 desert tortoise (USFWS Pre-project Survey Protocol estimate of 87 individuals with a 95 percent confidence range of 31 to 246 individuals) and 8,230 acres of potential tortoise habitat may be affected by the proposed Project.

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Table 1
All Desert Tortoise and Desert Tortoise Sign Detected within the Calico Solar Biological Assessment area

	Focus Survey Detections in Biological Assessment area	Incidental Detections in Biological Assessment area[1]	Focus Survey Detections in NAP Area A	Incidental Detections in NAP Area A[1]
Live Desert Tortoise	5	19	6	5
Active Tortoise Burrow	1	18	0	0
Inactive Tortoise Burrow [2]	8	208	0	0
Tortoise Carcass	1	67	0	1
Tortoise Scat	1	17	0	0
Tortoise Drinking Pan	0	1	0	0
Tortoise Pallet	0	5	0	0
Total	16	89	6	6

[1] Numbers listed may include repeat counts of the same tortoise or sign.
[2] This total does not include the class four potential tortoise burrow found in the AFC Assessment Area south of the BNSF railroad.

Table 2
Desert Tortoise Detected within the Calico Solar Biological Assessment area During Focused Desert Tortoise Surveys

	Focus Survey Detections in Biological Assessment Area	Focus Survey Detections in NAP Area A
Live Desert Tortoise	5	6
Active Tortoise Burrow	1	0
Total Tortoise Detected	6	6

Table 3
Desert Tortoise Population Estimates within the Calico Solar Biological Assessment Area (Project Area and NAP Areas) Based on Results of Focused Desert Tortoise Surveys

	Biological Assessment Area			NAP Area		
Assumed Detection Rate	100%*	55%*	68%*	100%*	55%*	68%*
Population Estimate	18	33	27	18	33	27

* Detection rates based on 100% rate and rates described in Nussear et al 2008.

Table 4
Desert Tortoise Population Density Estimates within the Total Desert Tortoise Survey Area

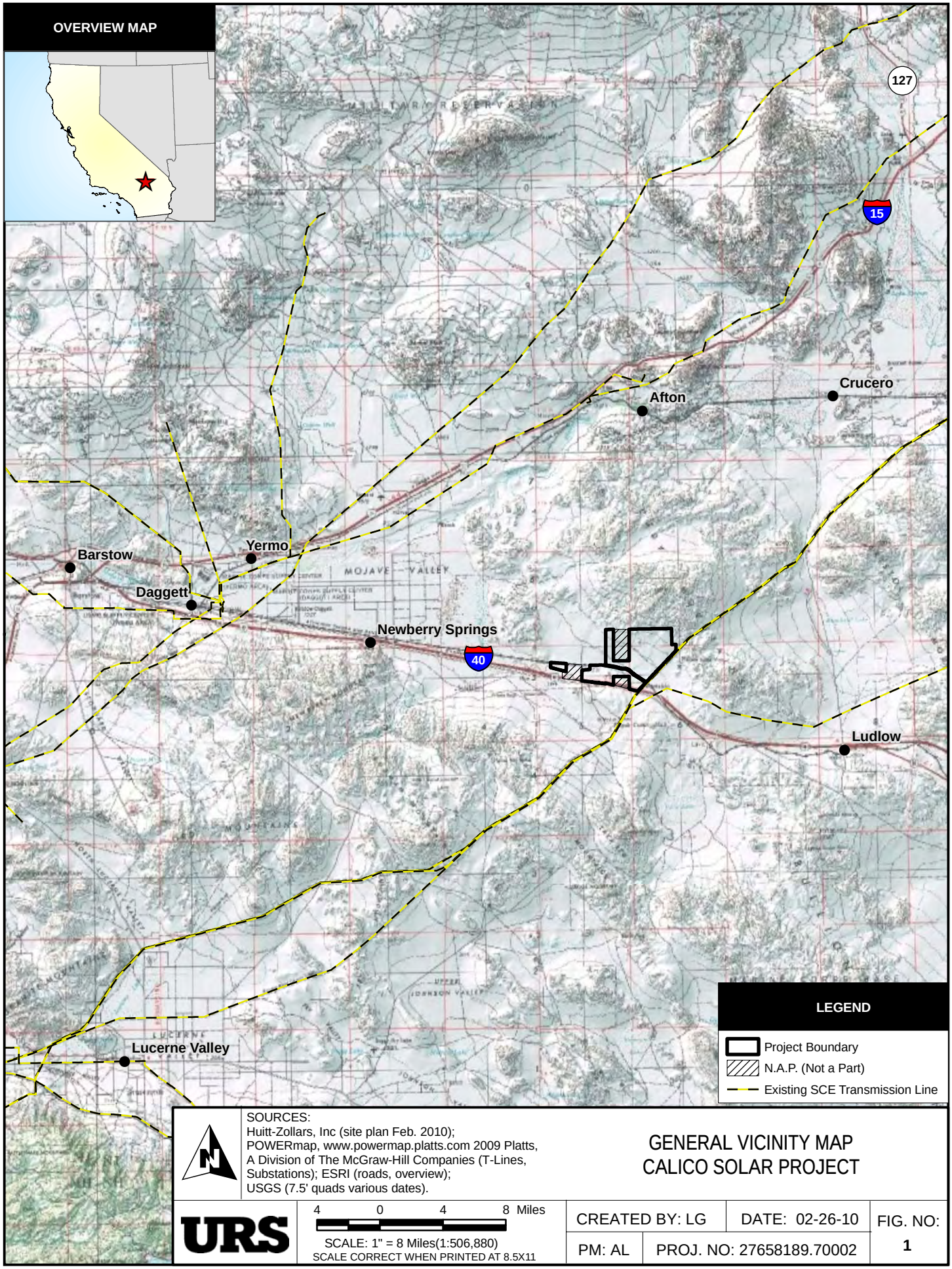
	Total Desert Tortoise Survey Area		
Assumed Detection Rate	100%[1]	55%[1]	68%[1]
Population Estimate	129	235	190
Desert Tortoise Density[2] (per square mile)	2.4	4.3	3.5

[1] Detection rates based on 100% rate and rates described in Nussear et al. 2008

[2] Density is calculated by dividing tortoise population estimates of the Total Desert Tortoise Survey Area by total square miles of the entire survey area of 34,800 acres (240 acres x 145 240-acre survey cells) or 54.4 square miles. This is greater than the combined SES Assessment and BLM ACEC areas because of the nature of the grid system of survey cells utilized.

Table 5
Vegetation Communities Occurring within the Calico Solar Biological Assessment Area

Community Name	Holland Code	Project Boundary Acreage	1000-foot Buffer Acreage
Developed	12000	24.0	330.5
Desert Saltbush Scrub	36110	237.3	289.1
Disturbed Mojave Creosote Bush Scrub	34100	88.6	139.9
Mojave Creosote Bush Scrub	34100	7812.5	1769.6
Un-Vegetated Habitat	13000	67.6	134.8
Total		8,230.0	2,663.9



SOURCES:
Huitt-Zollars, Inc (site plan Feb. 2010);
POWERmap, www.powermap.platts.com 2009 Platts, A Division of The McGraw-Hill Companies (T-Lines, Substations); ESRI (roads, overview);
USGS (7.5' quads various dates).

GENERAL VICINITY MAP
CALICO SOLAR PROJECT

URS

4 0 4 8 Miles

SCALE: 1" = 8 Miles(1:506,880)
SCALE CORRECT WHEN PRINTED AT 8.5X11

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Phase 1

Phase 2

N.A.P "Area A"

Proposed Main Services Complex

Proposed Bridge

Proposed Substation

Phase 2

Phase 2

N.A.P

N.A.P

NATIONAL TRAILS HWY

PISGAH RD

Pisgah Substation

Proposed Site

Kern

Ventura

Los Angeles

San Bernardino

Riverside

Orange

San Diego

Imperial

Mexico

LEGEND

- Project Boundary/AFC Assessment Area
- N.A.P. (Not a Part)
- Proposed Transmission Line
- Proposed Construction Staging Area
- Main Access Road
- Existing Transmission Line
- Access Road
- Tessera Assessment Area
- BLM ACEC Area
- 1,000-Ft Buffer
- BNSF Railroad

Vegetation Communities (Holland Code)

- Desert Saltbush Scrub (36110)
- Mojave Creosote Bush Scrub (34250)
- Mojave Creosote Bush Scrub (34000)
- Mojave Creosote Bush Scrub (34100)
- Un-Vegetated Habitat (13000)
- Developed (12000)
- Disturbed (11000)
- Disturbed Vegetation (Mapped As Overlay)

SOURCES: ESRI (overview);
Huitt-Zollars, Inc (project features Feb. 2010 except main access rd and t-line)
TIGER (railroad 2000); POWERmap (existing utilities 2009).
URS (vegetation survey 2007-2008);
USDA (NAIP aerial 2005).

VEGETATION MAP
CALICO SOLAR PROJECT

URS

2700 0 2700 5400 Feet

SCALE: 1" = 5400' (1:64,800)
SCALE CORRECT WHEN PRINTED AT 11X17

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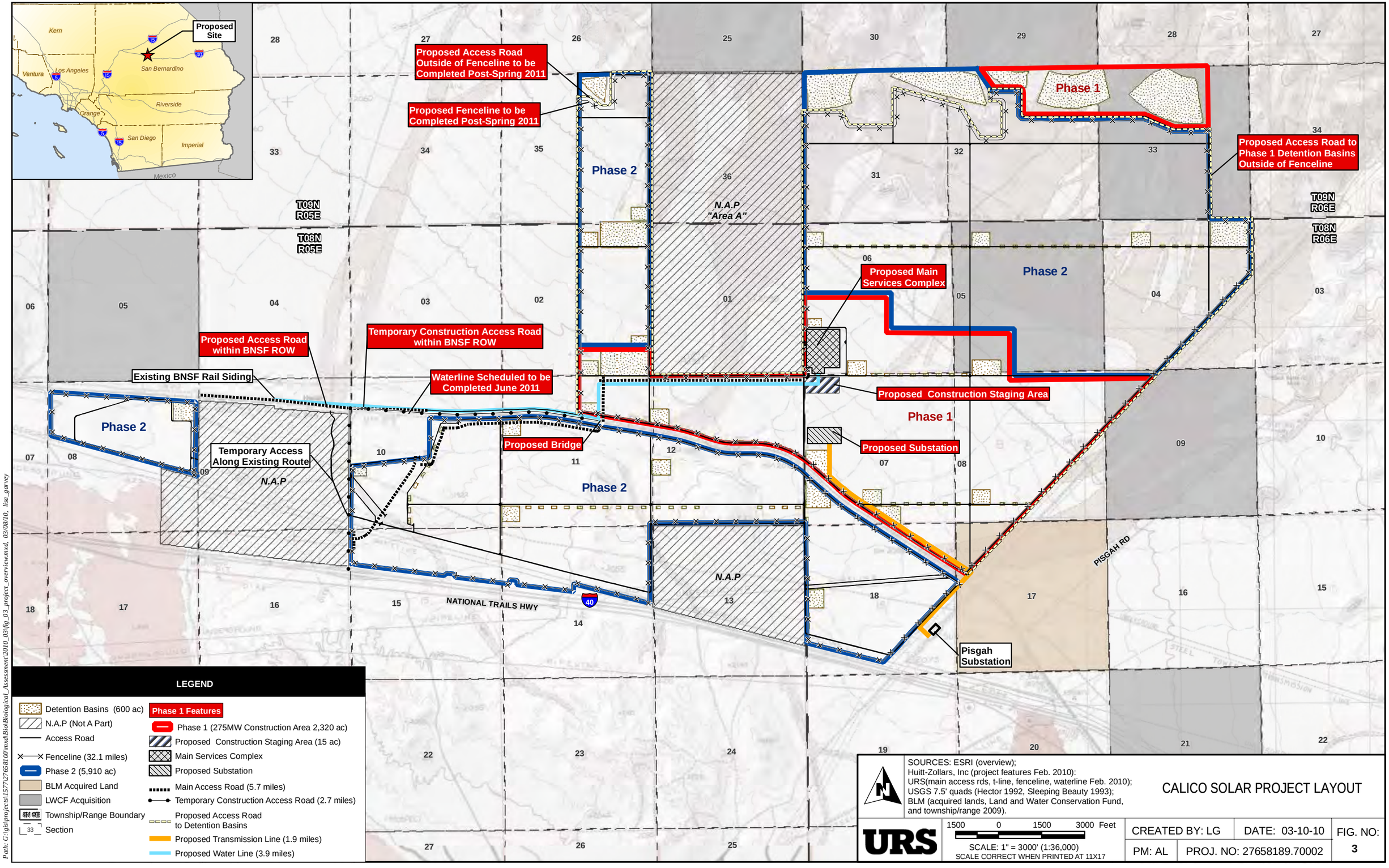

LEGEND

- Detention Basins (600 ac)
- N.A.P (Not A Part)
- Access Road
- Fenceline (32.1 miles)
- Phase 2 (5,910 ac)
- BLM Acquired Land
- LWCF Acquisition
- Township/Range Boundary
- Section

Phase 1 Features

- Phase 1 (275MW Construction Area 2,320 ac)
- Proposed Construction Staging Area (15 ac)
- Main Services Complex
- Proposed Substation
- Main Access Road (5.7 miles)
- Temporary Construction Access Road (2.7 miles)
- Proposed Access Road to Detention Basins
- Proposed Transmission Line (1.9 miles)
- Proposed Water Line (3.9 miles)

SOURCES: ESRI (overview);
Huitt-Zollars, Inc (project features Feb. 2010):
URS(main access rds, t-line, fenceline, waterline Feb. 2010);
USGS 7.5' quads (Hector 1992, Sleeping Beauty 1993);
BLM (acquired lands, Land and Water Conservation Fund, and township/range 2009).

CALICO SOLAR PROJECT LAYOUT

URS

1500 0 1500 3000 Feet

SCALE: 1" = 3000' (1:36,000)
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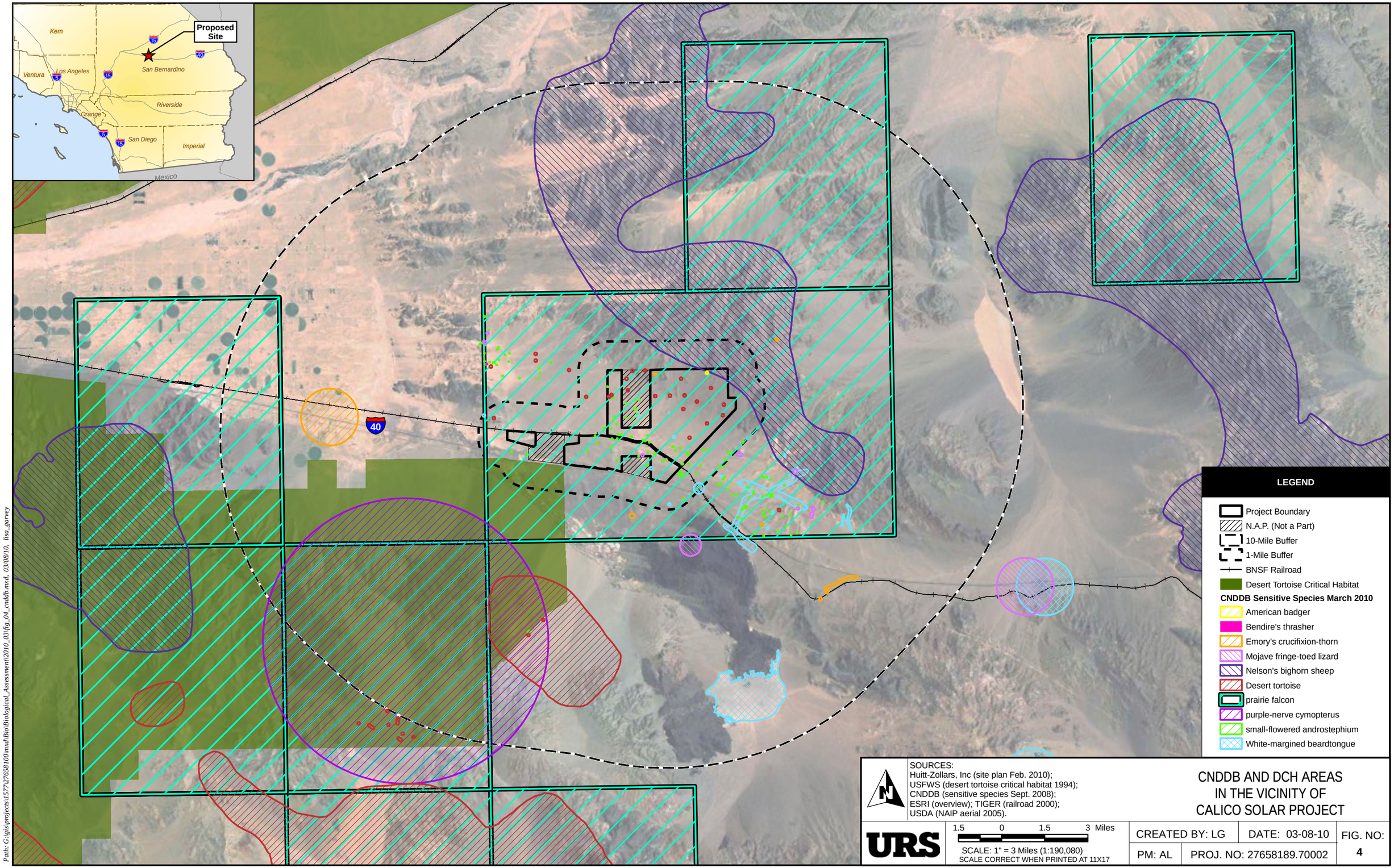

SOURCES:
Huitt-Zollars, Inc (site plan Feb. 2010);
USFWS (desert tortoise critical habitat 1994);
CNDDB (sensitive species Sept. 2008);
ESRI (overview); TIGER (railroad 2000);
USDA (NAIP aerial 2005).

CNDDB AND DCH AREAS IN THE VICINITY OF CALICO SOLAR PROJECT

URS

1.5 0 1.5 3 Miles

SCALE: 1" = 3 Miles (1:190,080)
SCALE CORRECT WHEN PRINTED AT 11X17

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Phase 1
Phase 2
N.A.P. "Area A"
Phase 2
Phase 1
Phase 2
N.A.P.
Phase 2
N.A.P.

LEGEND

- Project Boundary/AFC Assessment Area
- N.A.P. (Not a Part)
- Areas of private land where landowners have not yet provided approval for disclosure of data
- 1,000-Ft Buffer
- BNSF Railroad
- 240 Acre Survey Grid
- 80 Acre Survey Grid (Desert Tortoise)
- Surveyed In 2007
- Surveyed In 2008

SOURCES:
Huitt-Zollars, Inc (site plan Feb. 2010);
TIGER (railroad 2000); ESRI (overview);
URS (MFTL and sensitive species surveys).

URS DESERT TORTOISE SURVEY AREAS CALICO SOLAR PROJECT

URS

2700 0 2700 5400 Feet

SCALE: 1" = 5400' (1:64,800)
SCALE CORRECT WHEN PRINTED AT 11X17

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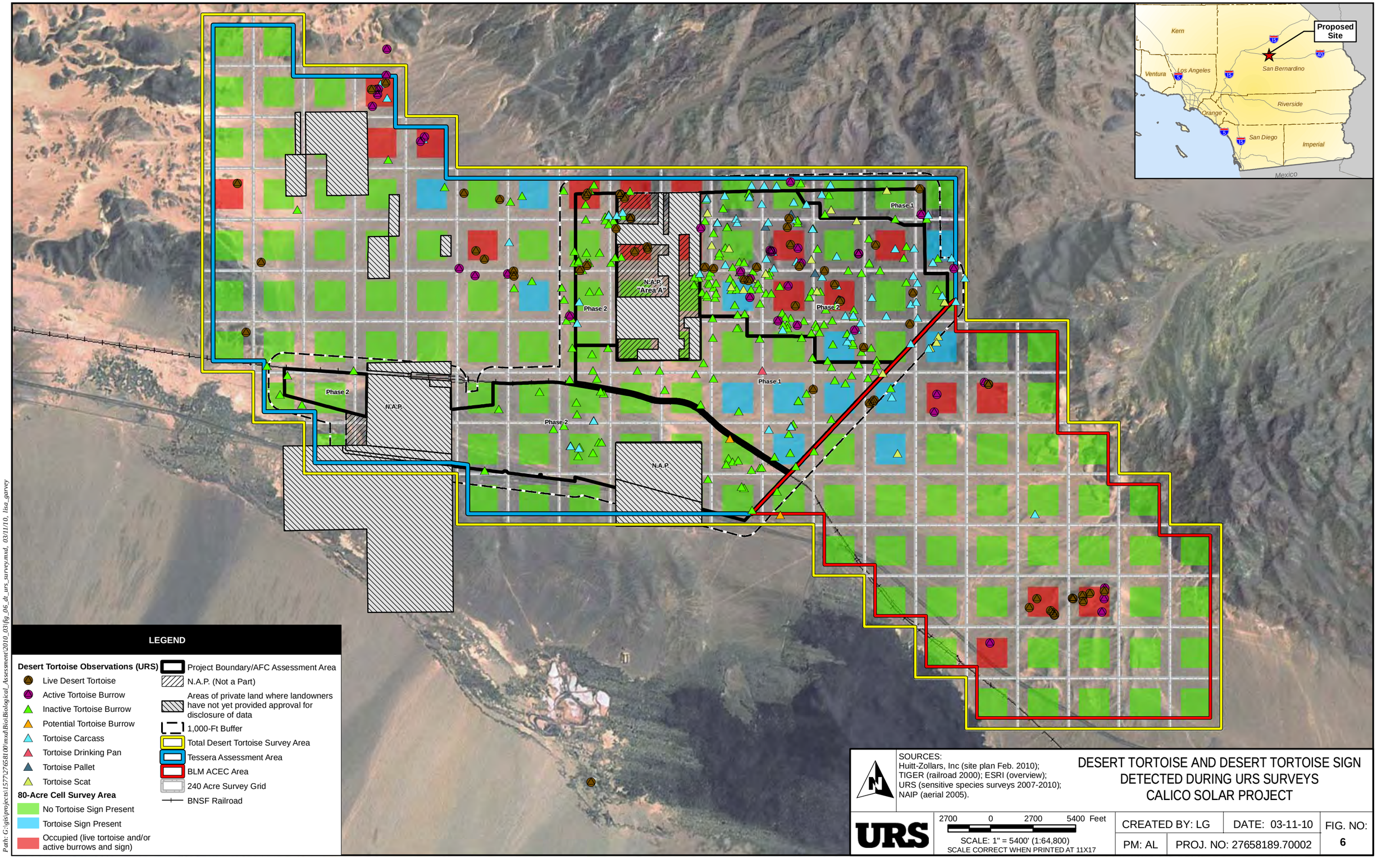

SOURCES:
Huitt-Zollars, Inc (site plan Feb. 2010);
TIGER (railroad 2000); ESRI (overview);
URS (sensitive species surveys 2007-2010);
NAIP (aerial 2005).

DESERT TORTOISE AND DESERT TORTOISE SIGN DETECTED DURING URS SURVEYS CALICO SOLAR PROJECT

URS

2700 0 2700 5400 Feet

SCALE: 1" = 5400' (1:64,800)
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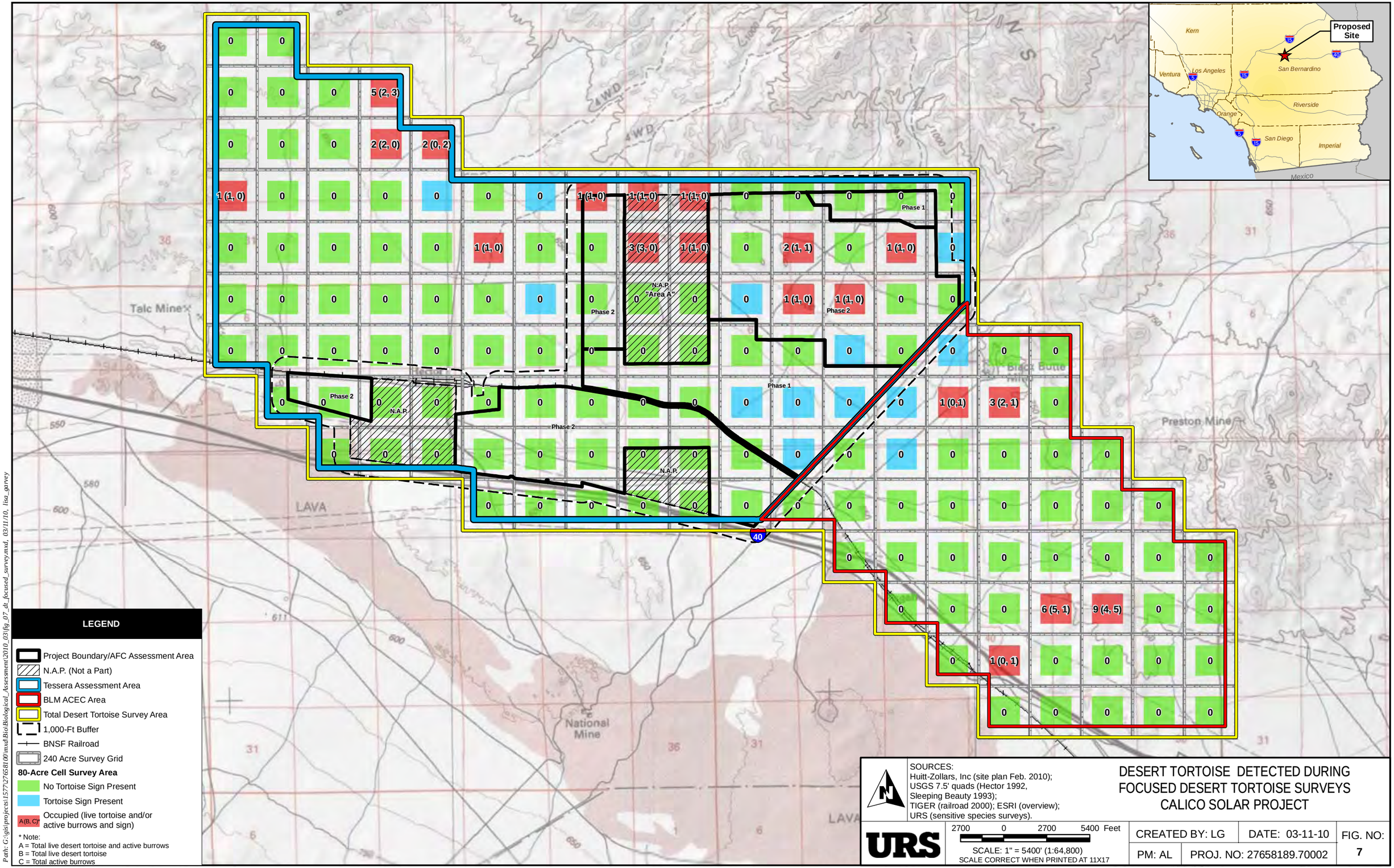

LEGEND

- Project Boundary/AFC Assessment Area
- N.A.P. (Not a Part)
- Tessera Assessment Area
- BLM ACEC Area
- Total Desert Tortoise Survey Area
- 1,000-Ft Buffer
- BNSF Railroad
- 240 Acre Survey Grid

80-Acre Cell Survey Area

- No Tortoise Sign Present
- Tortoise Sign Present
- A(B, C)* Occupied (live tortoise and/or active burrows and sign)

* Note:
A = Total live desert tortoise and active burrows
B = Total live desert tortoise
C = Total active burrows

SOURCES:
Huitt-Zollars, Inc (site plan Feb. 2010);
USGS 7.5' quads (Hector 1992, Sleeping Beauty 1993);
TIGER (railroad 2000); ESRI (overview);
URS (sensitive species surveys).

DESERT TORTOISE DETECTED DURING FOCUSED DESERT TORTOISE SURVEYS CALICO SOLAR PROJECT

URS

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SCALE: 1" = 5400' (1:64,800)
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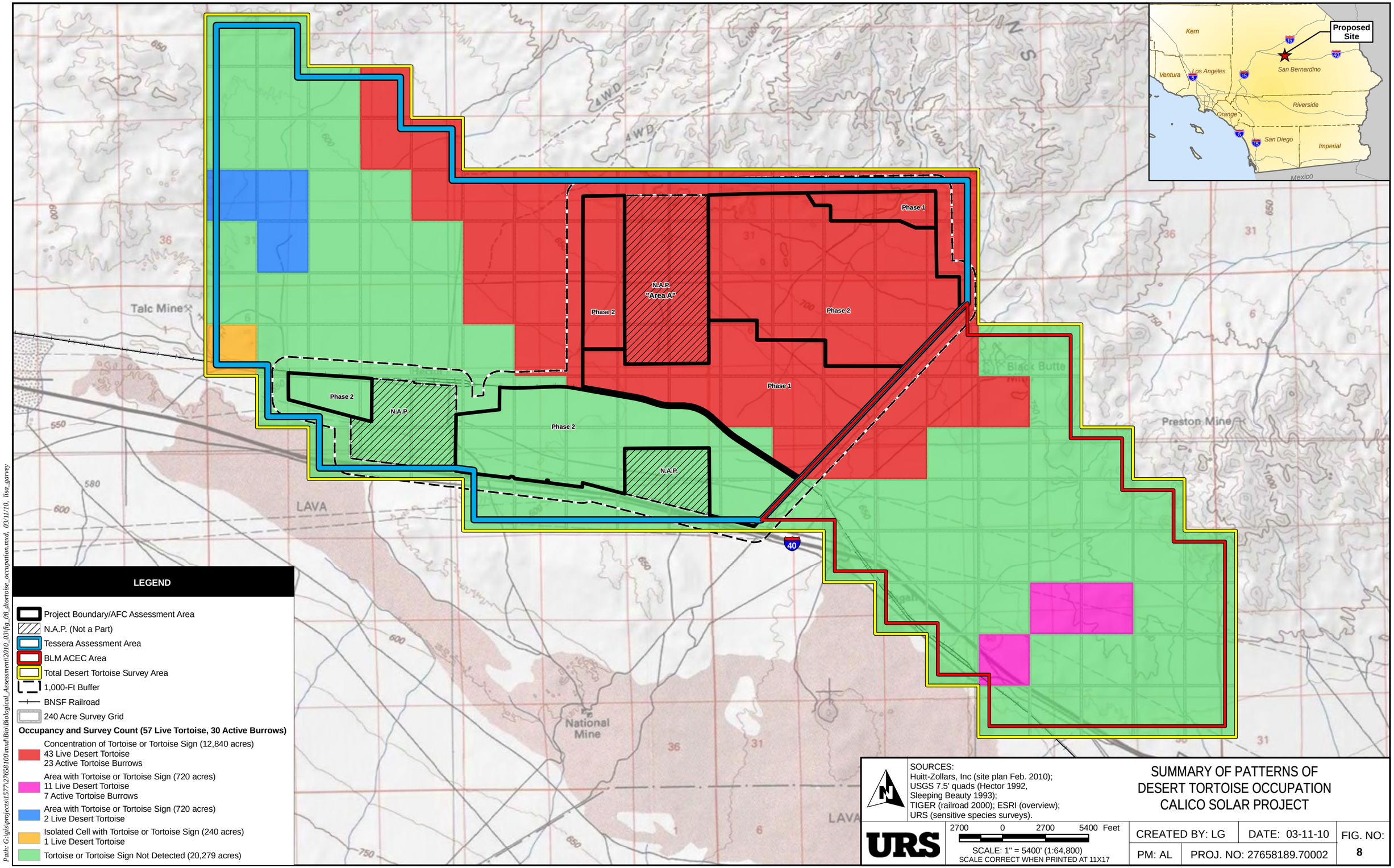

SUMMARY OF PATTERNS OF DESERT TORTOISE OCCUPATION CALICO SOLAR PROJECT

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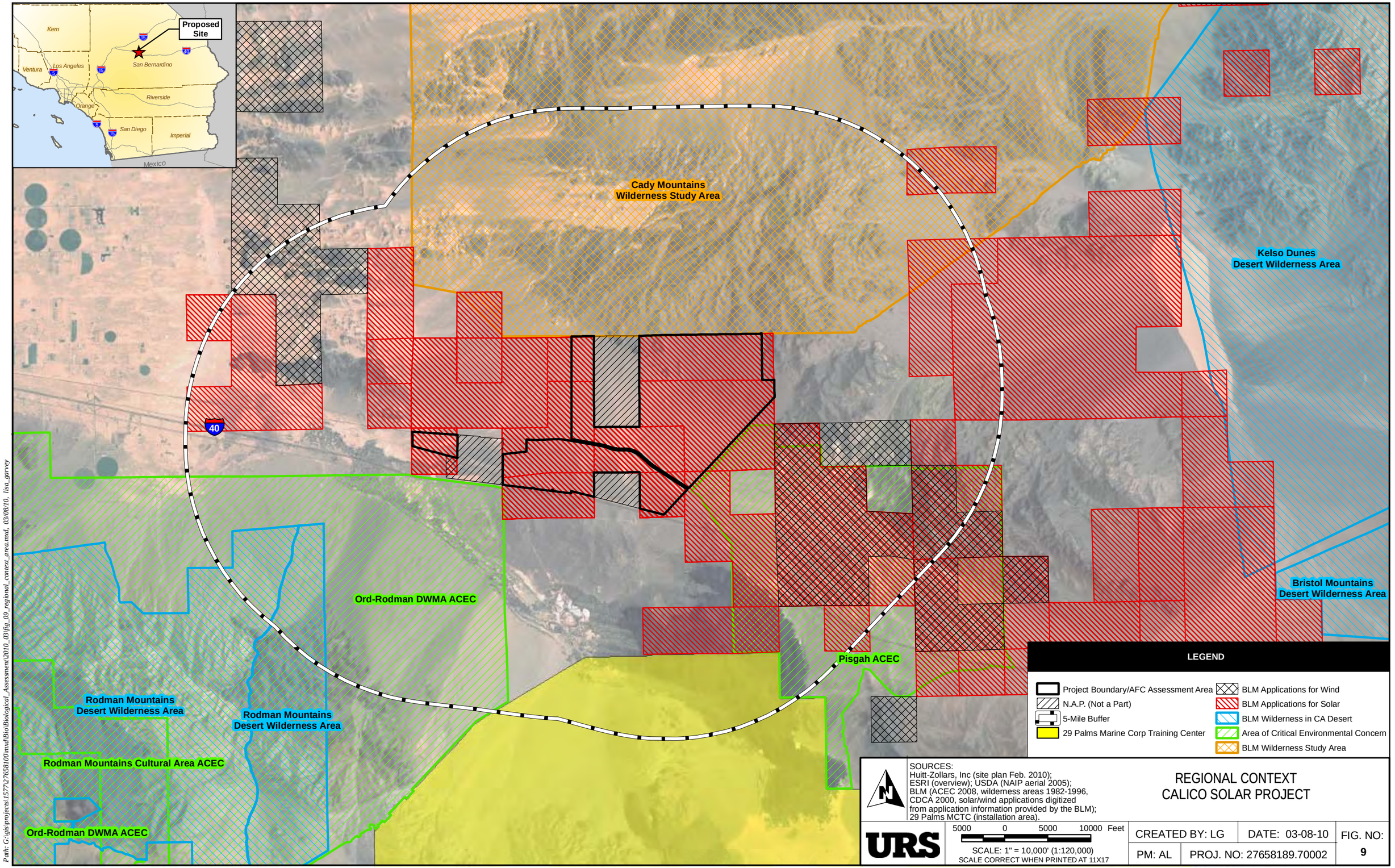

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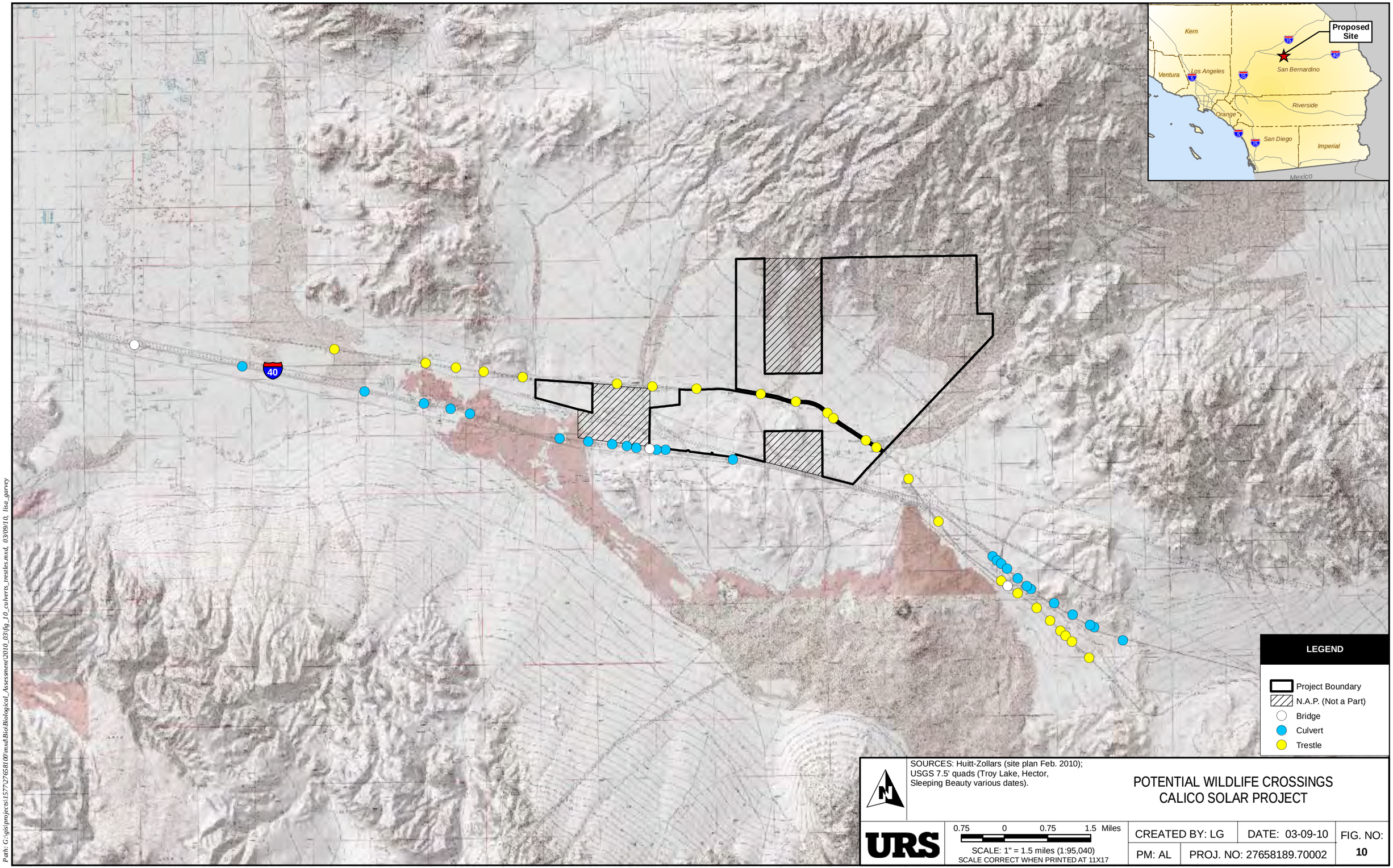

SOURCES: Huitt-Zollars (site plan Feb. 2010);
USGS 7.5' quads (Troy Lake, Hector, Sleeping Beauty various dates).

POTENTIAL WILDLIFE CROSSINGS
CALICO SOLAR PROJECT

URS

0.75 0 0.75 1.5 Miles

SCALE: 1" = 1.5 miles (1:95,040)
SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: LG	DATE: 03-09-10	FIG. NO:
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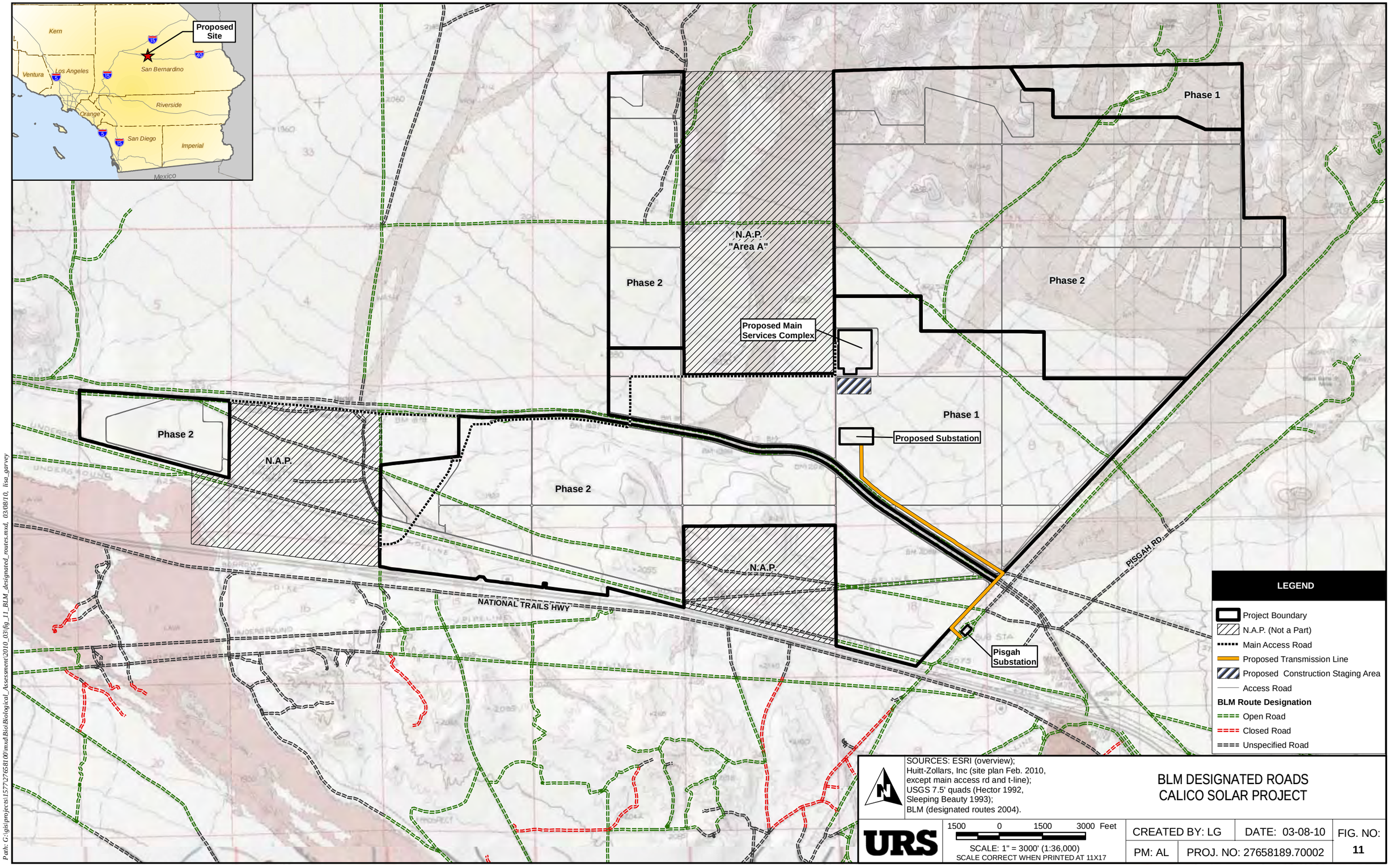

SOURCES: ESRI (overview);
Huitt-Zollars, Inc (site plan Feb. 2010, except main access rd and t-line);
USGS 7.5' quads (Hector 1992, Sleeping Beauty 1993);
BLM (designated routes 2004).

BLM DESIGNATED ROADS
CALICO SOLAR PROJECT

URS

1500 0 1500 3000 Feet

SCALE: 1" = 3000' (1:36,000)
SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: LG	DATE: 03-08-10	FIG. NO: 11
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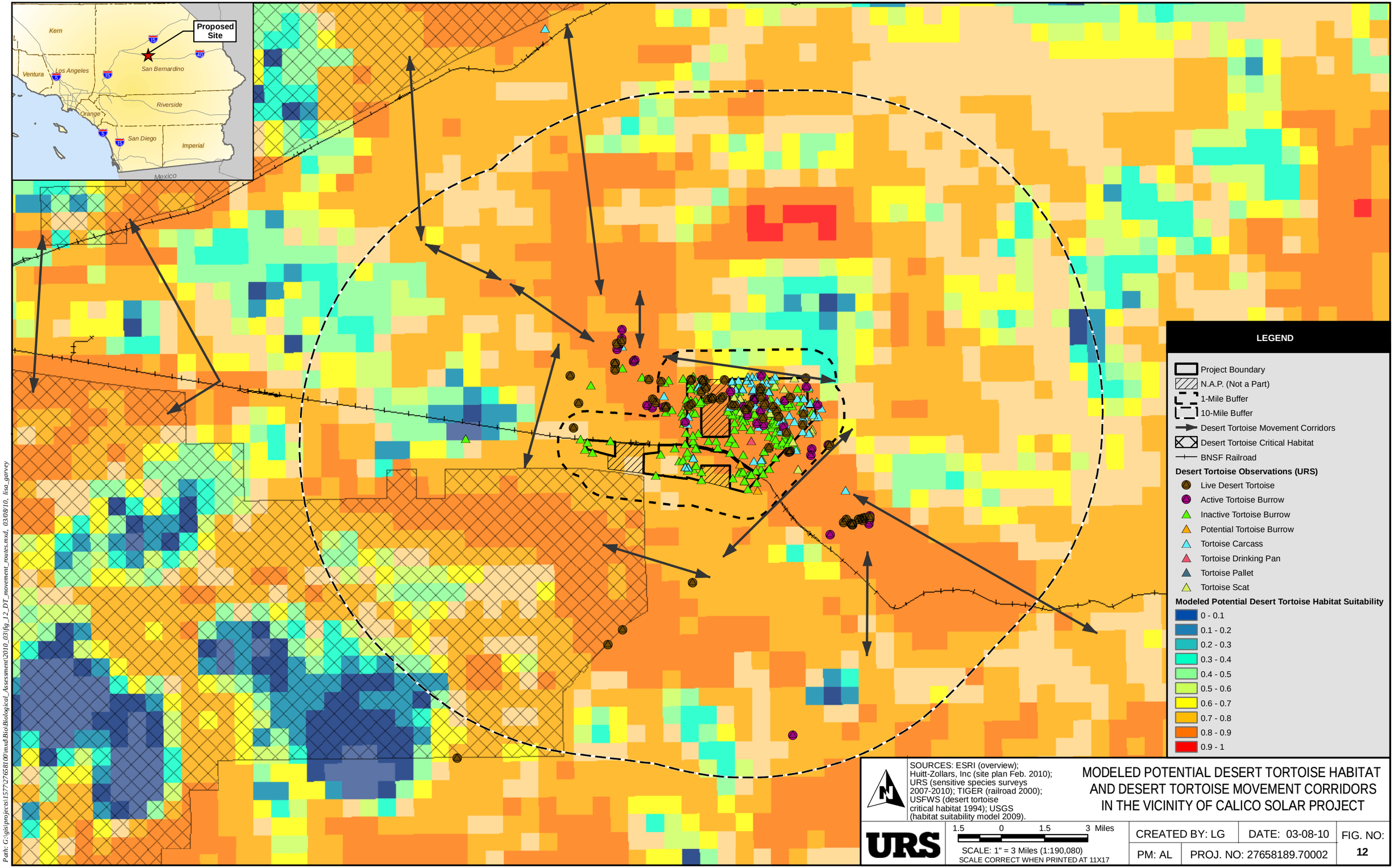

SOURCES: ESRI (overview); Huitt-Zollars, Inc (site plan Feb. 2010); URS (sensitive species surveys 2007-2010); TIGER (railroad 2000); USFWS (desert tortoise critical habitat 1994); USGS (habitat suitability model 2009).

MODELED POTENTIAL DESERT TORTOISE HABITAT AND DESERT TORTOISE MOVEMENT CORRIDORS IN THE VICINITY OF CALICO SOLAR PROJECT

URS

1.5 0 1.5 3 Miles

SCALE: 1" = 3 Miles (1:190,080)
SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: LG	DATE: 03-08-10	FIG. NO:
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Photograph #1

March 11, 2008.

View from the hillside of the northeast corner of assessment area looking into the distance toward Interstate-40 and the Burlington Northern Santa Fe Railroad (BNSF). Note the uniformity of Mojave creosote bush scrub habitat on the lower elevations of the site.

Photograph #2

March 26, 2008.

View of the overall assessment area from Interstate-40 looking in a northerly direction. Note the interspersion of desert pavement and volcanic rock among Mojave creosote bush scrub.

Photograph #3

March 24, 2007.

Desert pavement is scattered throughout the project site. Desert pavement is the arrangement of stones left behind as infrequent rain showers slowly wash away the supporting soil, leaving behind a layer of rocks.

Photograph #4

March 28, 2008.

View of mountains to the north from the area that was designated by the Bureau of Land Management as an Area of Critical Environmental Concern (ACEC). Portions of ACEC were surveyed along with the project assessment area.

Photograph #5

March 25, 2008.

Representative photo of desert dandelion (*Malacothrix glabrata*) found blooming in large swaths throughout Mojave creosote bush scrub found on-site.

Photograph #6

March 21, 2008.

The BNSF railroad runs through the site in an east-west direction parallel to Interstate-40. Interstate-40 runs along the southern boundary of the project site.

Photograph #7

March 27, 2008.

View of the southeast corner of assessment area looking northwest. Note the prevalence and uniform distribution of creosote bush throughout the habitat; creosote bush is a dominant species in Mojave creosote bush scrub habitat.

Photograph #8

June 3, 2008.

Westward view from the foothills in the northwest corner of the assessment area. The topography of the project site is dominated by broad, flat valleys, but also includes portions of very steep terrain as pictured here.

Photograph #9

June 3, 2008.

Sandy, almost dune-like Mojave creosote bush scrub habitat. This type of habitat was found in isolated patches of the Assessment and ACEC areas and supports Mojave fringe-toed lizard.

Photograph #10

April 3, 2008.

Partial glimpse of a desert tortoise (*Gopherus agassizii*) inside its typical half-moon shaped burrow. The light source seen in picture is provided by mirrors used by biologists to shine light inside burrows to determine presence of desert tortoise.

Photograph #11

April 3, 2008.

Desert tortoise found walking through an area of desert pavement. Note the abundance of native herbaceous plants surrounding the tortoise. Herbaceous plants are the tortoise's primary source of food.

Photograph #12

April 15, 2008.

Sand dunes in the ACEC forming along the southern face of a hill surrounded by Mojave creosote bush scrub. Windblown sand dunes with low-growing vegetation are the primary habitat type preferred by the Mojave fringe-toed lizard (*Uma scoparia*).

Photograph #13

March 31, 2008.

Desert tortoise found just as it was exiting its burrow. Presence of dirt on the shell could be indicative of fresh excavation activity.

Photograph #14

May 10, 2008.

Two desert tortoises found together. Note the long gular horn visible on the tortoise to the left; the pronounced length of the horn indicates that the tortoise is male. Also note the variation in shell color.

Photograph #15

March 20, 2008.

Desert tortoise plastron. The disarticulating scutes and carapace, and bleached (white) appearance of the shell are indicative of prolonged exposure to the elements.

SUPPLEMENTAL BIOLOGICAL ASSESSMENT FOR THE CALICO SOLAR PROJECT, SAN BERNARDINO COUNTY, CALIFORNIA

Prepared for

U.S. FISH AND WILDLIFE SERVICE
AND BUREAU OF LAND MANAGEMENT
Barstow Field Office
2401 Barstow Road
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July 19, 2010

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Appendices

ACEC	Area of Critical Environmental Concern
AFC	Application for Certification
AFY	acre-feet per year
BA	Biological Assessment
BLM	Bureau of Land Management
BMP	Best Management Practices
BNSF	Burlington Northern Santa Fe
CAISO	California Independent System Operator
CDCA	California Desert Conservation Area
CDFG	California Department of Fish and Game
CNDDB	California Natural Diversity Database
DB	Decibel
dBA	A-weighted decibel
DCH	Designated Critical Habitat
DESCP	Drainage, Erosion and Sediment Control Plan
DWMA	Desert Wildlife Management Areas
ESA	Endangered Species Act
FESA	Federal Endangered Species Act
I-40	Interstate 40
km	kilometer
kV	kilovolt
L_{eq}	Equivalent Sound Level
MOU	Memorandum of Understanding
mph	miles per hour
MW	megawatts
MWMA	Mojave Weed Management Area
NAP	Not a Part
NEPA	National Environmental Policy Act
OHV	off-highway vehicle
PCH	Proposed Critical Habitat
POD	Plan of Development
PUP	Pesticide Use Proposal
Project	Calico Solar Project
ROW	Right-of-Way
SCE	Southern California Edison
SES	Stirling Energy Systems
SIS	System Impact Study
sq mi	square mile
URS	URS Corporation
URTD	upper respiratory tract disease
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WEMO	West Mojave Plan
WSA	Cady Mountain Wilderness Study Area

This Supplemental Biological Assessment represents the culmination of changes made to the original Biological Assessment for the Calico Solar Power Generating Facility, San Bernardino County, California. The original Biological Assessment was provided to the United Stated Fish and Wildlife Service (USFWS) as an attachment to a Request to Initiate Formal Consultation Memorandum which the Bureau of Land Management (BLM) sent to the USFWS on April 1, 2010. The original Biological Assessment was docketed to the California Energy Commission's web site on April 12, 2010. In response to the initiation request, the USFWS responded with an Insufficiency Memorandum (dated April 22, 2010) which outlined deficiencies in the original Biological Assessment which made it inadequate to initiate formal consultation. After further discussion with USFWS, the BLM provided the USFWS with a revised Biological Assessment on May 17, 2010. In response to this submittal, the USFWS sent a Sufficiency Letter (dated June 21, 2010) which indicated that the revised Biological Assessment was sufficient to initiate formal consultation. However, the Sufficiency Letter stated that there were clarifications that needed to be addressed in order for the USFWS to complete their Biological Opinion. Upon further discussions with the USFWS, the BLM addressed these clarification needs. This Supplemental Biological Assessment represents the culmination of the changes made in the revised Biological Assessment as well as changes made as a result of addressing the clarification needs of the USFWS. A summary of the changes made since the issuance of the original Biological Assessment are presented in Appendix F of this document.

EXECUTIVE SUMMARY

This Biological Assessment (BA) has been prepared for Tessera Solar's (TSA) Calico Solar Project (Calico Solar Project) in support of a request from the Bureau of Land Management (BLM) for formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Federal Endangered Species Act (ESA) regarding the issuance of a Right-of-Way (ROW) grant for the Calico Solar Project. The Project is located on 6,215 acres of land managed by the BLM approximately 37 miles east of Barstow in San Bernardino County in southern California (Figure 1). The proposed Project includes the construction, operation, maintenance, and decommissioning of an 850-megawatt (MW) solar power generating facility and its ancillary systems. The facility would be constructed according to two phases: Phase 1 would be 275 MW and covers approximately 2,327 acres; Phase 2 would be 575 MW and covers approximately 3,887 acres in San Bernardino County, CA (Figure 2). The Project also involves the interrelated construction of a connection from the onsite Calico substation to the Pisgah substation. Upgrades to the Pisgah substation and the Pisgah-Lugo transmission lines are separate projects proposed by Southern California Edison (SCE) that will serve a variety of energy and communication needs in the vicinity. For the purposes of this BA, the action area (Figure 3) includes:

- The project site and any necessary components (*i.e.*, access roads).
- A 1,000- foot radius buffer from project boundary to account for impacts to home ranges.
- Not a Part areas (NAP Areas).
- The Desert Tortoise recipient sites.
- The translocation control sites.
- All contiguous Desert Tortoise habitat within 6.2 miles of long-distance translocation sites - based on the average distance Desert Tortoise may range following a translocation.

The following Federally listed species are known to occur, or have the potential to occur in the Action Area:

Species	Listing Status	Critical Habitat within the Action Area	Effects Determination
Desert Tortoise (*Gopherus agassizii*)	Threatened	Yes	May affect, likely to adversely affect tortoise. May affect, not likely to adversely modify critical habitat.

Desert tortoise are widely distributed in the deserts of California, southern Nevada, extreme southwestern Utah, western and southern Arizona, and throughout most of Sonora, Mexico. They typically have overlapping home ranges averaging between 5-131 acres, which additionally can fluctuate in size on a year-to-year basis based on several factors such as sex, rainfall, availability of resources, and others factors. The 100% 10m transect desert tortoise surveys were conducted in April 2010 to estimate the population of desert tortoise on-site. A total of 48 live adult/subadult desert tortoise and 9 juveniles were

SECTION 1 PROJECT DESCRIPTION

This Biological Assessment (BA) has been prepared to evaluate the potential effects of the Calico Solar Project (Project) on Federally listed species that are known to or have the potential to occur within the Project area, and on proposed critical habitat (PCH) or DCH within the entire Action Area (defined in Section 1.2) pursuant to Section 7 of the Federal Endangered Species Act (ESA). The proposed Federal action will potentially affect one Federal listed species – desert tortoise (*Gopherus agassizii*). Potential effects on this species and DCH are evaluated in accordance with the requirements set forth under Section 7 of the ESA (16 United States Code [U.S.C.] 1536). DCH occurs within the Action Area.

The effects of the Project within the Action Area on desert tortoise and its DCH include consideration of and implementation of the mitigation measures to avoid and/or reduce the environmental effects from the development, operation, and maintenance of the Project. The conservation measures proposed by the Applicant that will avoid or minimize effects on desert tortoise and modification of DCH are presented in Section 4.

1.1 PROJECT LOCATION

The proposed federal action is the issuance of a Right-of-Way (ROW) grant for the Project. The Project consists of a solar-powered electric generating facility located in a relatively undeveloped area of San Bernardino County, California, approximately 37 miles east of Barstow, California and north of Interstate 40 (I-40) (Figure 1). The Project is located on Bureau of Land Management (BLM) land under management of the BLM Barstow Field Office (Figure 2). The area where the Project would be constructed is primarily open, relatively undeveloped land within the Mojave Desert between approximately 1,810 and 3,050 feet (550 and 930 meters) above mean sea level. The Cady Mountain Wilderness Study Area (WSA) is located north of the Project site. The BLM-designated Pisgah Crater Area of Critical Environmental Concern (ACEC) is located directly adjacent to the southeastern boundary of the Project. The Ord-Roadman DWMA is located adjacent to the southwestern boundary of the proposed Project. Several underground and above-ground utilities traverse the Project area as does Burlington Northern Santa Fe (BNSF) railroad tracks. A transmission corridor runs along the eastern Project area boundary. Undeveloped land extends west of the Project area. The Project includes an access road within BNSF ROW that will be used for construction access prior to completion of a bridge spanning the railroad which should occur by approximately March 2011. Burlington Northern Santa Fe (BNSF) ROW will also be used to access the western-most portion of the site and by trucks delivering water from the BNSF rail siding to the Main Services Complex, should the Project require rail delivery of water prior to completion of a waterline which should occur by approximately June of 2011.

1.2 DEFINITION OF ACTION AREA

The proposed Project is located on approximately 6,215 acres of land managed by the BLM. For the purposes of this BA, the Biological Assessment or "action area" includes the following: the Project area, a 1,000-foot buffer around the project area, the NAP areas, the DT recipient sites, the control sites, and all contiguous DT habitat within 6.2 miles of long-distance translocation (based on the average distance DT may range following a translocation). The combination of these areas is hereby referred to as the "Action Area" (Figure 3). It should be noted that there are portions of the Project site that are within the Action

detected on the current Project site during the 100% desert tortoise 10m transect surveys. Designated critical habitat (DCH) is located within the Ord-Rodman Desert Wildlife Management Area (DWMA) Area of Critical Environmental Concern (ACEC), which is south of I-40 and included within the Action Area.

The implementation of the Calico Solar Project is likely to have an adverse affect on the desert tortoise. Potentially adverse affects would occur in the form of behavioral harassment, potential direct or indirect injury or mortality, and reduction of occupied habitat and local habitat capacity due to habitat disturbance and indirect edge effects along the project boundary. Implementation of the Translocation Plan, installation of exclusion fencing, and implementation of other conservation measures are intended to minimize direct mortality of tortoise. Mitigation (a mix of off-site habitat acquisition and off-site habitat enhancement) is proposed to offset impacts to occupied habitat. Based on the amount of suitable habitat that would be impacted and estimated population derived from focused desert tortoise surveys conducted on the Action Area, based on best available data, approximately 93 adult desert tortoise (95 percent confidence range of 47 to 185 individuals) and 6,215 acres of occupied tortoise habitat may be affected by the proposed project. An estimated 39 juvenile tortoises may also be affected. An estimated 83 tortoise may be indirectly affected due to edge effects in habitat directly adjacent to the project site. Additional tortoise would be affected through implementation of the Translocation Plan, based on best available data, potentially 264 (= 2 x (93 + 39) tortoise could be handled, blood sampled and radio transmitters attached so that these individuals can be used as resident or control individuals for comparison to the translocated individuals. Therefore, it is estimated that 764 tortoise (633 directly and 83 indirectly) may be affected by this proposed project.

Juvenile desert tortoises are extremely difficult to detect because of their small size and their cryptic nature. Based on a 4-year study of their population ecology, Turner et al. (1987) determined that juveniles accounted for 31.1 to 51.1 percent of the overall population. Using this range and a maximum 93 adult desert tortoises on the proposed site, we estimate that the 6,215-acre project area may support from 29 to 48 juveniles.

To estimate the number of eggs that could be present on the project site, we used the average number of clutches per reproductive female in a given year, (i.e., 1.6, see Turner et al. 1984), multiplied by the average number of eggs found in a clutch (i.e., 5.8, see Service 1994). By approximating a 1:1 sex ratio, we assumed that 47 out of the 93 adult desert tortoises onsite are reproductive females and that, together, they could produce approximately 436 eggs in a given year. Fewer eggs are likely to be onsite at any given time because the territories of the female desert tortoises likely extend, at least in part, off of the project site and individuals may establish nests in these areas.

The Project site itself does not contain any designated critical habitat (DCH) for the desert tortoise. However, the implementation of the Translocation Plan will require the movement of tortoises into the Ord-Rodman Desert Wildlife Management Area (DWMA) which encompasses DCH. Increasing tortoise densities within the critical habitat along with the potential to introduce diseased animals into DCH has the potential to adversely affect the constituent elements of the critical habitat unit. In total, the long-distance translocation receiver site is composed of 9,833 acres of critical habitat. Also, activities such as driving vehicles through critical habitat could impact vegetation, and thus degrade the Primary Constituent Elements of the DCH. While the implementation of the Translocation Plan has the potential to adversely affect critical habitat, the BLM has determined that implementation will not adversely

modify DCH given that the Translocation Plan has protocols which will prevent the translocation of diseased animals and will limit translocation densities to levels which will not exceed the habitat carrying capacity. Furthermore, we have reached this conclusion because most activities associated with the translocation would be conducted on existing roads, which do not support the primary constituent elements.

Project Activity	Construction Time Frame	DT Clearance and Exclusionary Fencing Time Frame
Phase 2 Project Construction	June 2013	Late March – early June 2013
Phase 2 Project Fencing Construction (Above Railroad)	June 2013	Late March – early June 2013

The SunCatcher field itself will cover approximately 6,215 acres. The SunCatchers will be installed in two steps. The hollow base will be vibrated into place without the need for extra grading or disturbance. Once the base is installed, the actual SunCatcher unit will be installed onto the base. Rows of SunCatchers will include access roads between them. The combined width of two SunCatchers and associated maintenance road between them is approximately 150 feet. Access roads will only be needed every other row since one road can service SunCatchers on either side of the roads. The access roads will be treated with polymeric stabilizers that contain vinyl acetate and/or acrylic polymers, such as SoilTac, to bind the soil together to minimize dust. The Department of Defense evaluated the environmental fate and effects of this and other commercially available dust stabilizer products used for pavements and soil stabilization (Steevens et al. 2007). This study showed that vinyl acetate and acrylic polymers are stable in soils after curing and are unlikely to be available to terrestrial organisms or be transported in runoff water in their solid form, and appear to be relatively nontoxic to the environment. The most likely receptors of soil stabilizers are less mobile species such as plants and soil invertebrates (e.g., pill bugs and earthworms) that may be contacted during application of the stabilizer. It is unlikely that trophic transfer will be observed for the soil stabilization materials based on chemical composition, chemical properties, and large polymer size. Therefore, chronic impacts to tortoise and other wildlife in the Project area are not expected. However, polymeric stabilizers are a biodegradable material that can cause skin and eye irritation if exposed in liquid form, thus application of polymeric stabilizers to the dirt roads should be made only after all tortoise are cleared from the project site.

Where practicable, the area occupied by the SunCatchers will not be graded. Approximately 40 to 80 feet will be left intact and generally undisturbed between each alternate row of SunCatchers. Shrub vegetation will be trimmed to three inches and allowed to regenerate throughout the solar array fields, as practicable. It is estimated up to 30% of the solar array field area will not be directly disturbed. Minimal mowing and brush trimming may be required to reduce fire hazard and shading of SunCatchers.

Long-term permanent access would be provided by a bridge over the BSNF railroad along a route north of I-40 (Figure 2). Temporary construction access roads and a main access road are depicted on Figures 2 and 4. In addition, there is a proposed access road to the northern detention basins that will run along the outside of the project boundary. Permanent desert tortoise exclusionary fence will surround the road.

Detention basins will be located throughout the Project site, inside of the Project boundary (Figure 2). These will range from small detention basins along the proposed access roads, to larger detention basins at road intersections to the larger detention basins south of the Cady Mountains within the Project site (Figure 2). No tortoise habitat or individuals would be affected by maintenance activities

Area, but are Not a Part (NAP) of the BLM's Plan of Development (POD). These locations are displayed on the attached figures as NAP. The NAP areas are included in the Action Area due to indirect effects similar to that which would occur within the 1000-foot buffer. Translocation receiver sites and control sites and a 6.2 mile buffer around the receiver sites are also considered part of the Action Area due to the handling of tortoise in these areas. The Action Area encompasses nearly 283,000 acres, and includes over 244,000 acres of USGS modeled tortoise habitat.

1.3 PROPOSED ACTION

The Calico Solar Project includes the construction, operation, maintenance, and decommissioning of up to 850 megawatts (MW) of capacity by a solar power generating facility and its ancillary systems in two phases (the first phase would be developed for 275MW and the second for 575MW). The Project will consist of approximately 34,000 SunCatchers. It is estimated that an average of approximately 400 and a high of 750 construction jobs and 180 long-term labor jobs will be required. Construction is tentatively scheduled to occur over an approximate five-year period beginning in 2010 through 2012 for Phase 1 and between 2013 and 2015 for Phase 2. A detailed breakdown of project component phasing is provided in Table 1, assuming SCE completes the full transmission build-out necessary for Phase 2 before 2014.

Approval of the Project ROW Grant Application (Form 299, Applications CACA 49539 and 49537) will result in the issuance of a ROW Grant Permit for use of federal lands administered by the BLM. The Project would require a plan amendment to the 1980 California Desert Conservation Area (CDCA) Plan.

An approved interconnection letter from California Independent System Operator (CAISO) has been issued for the Project. The associated System Impact Study (SIS) is located in Appendix H of the Application for Certification (AFC). The SIS indicates that additional upgrades to the SCE Lugo-Pisgah No. 2 Transmission Line and upgrades at the SCE Pisgah Substation will be required for the full build out of the 850MW Project, although the exact parameters of that project are as of yet undefined. These upgrades are designed to serve a variety of projects in the area. Supplemental studies performed by SCE and CAISO indicate that capacity is available on the existing transmission system to accommodate less than the 850MW Project by incorporating a minor and much less time consuming upgrade to the Pisgah substation. This first part of the upgrade will allow SCE to take 275 MW of the project's generation by the second semester of 2011. Both of these system upgrades are being considered as separate stand alone projects that are not part of the proposed Calico Solar Project (see Appendix A).

An on-site substation (*i.e.*, Calico Solar Substation [approximately 15 acres]) will be constructed to deliver the electrical power generated by the Project to the existing SCE Pisgah Substation. Approximately twelve to fifteen 220 kilovolt (kV) transmission line structures (90 to 110 feet tall), would be required to make the interconnection from the Calico Solar Substation to the SCE Pisgah Substation. All of these structures would be constructed within the Project site, except for a portion of the transmission line that would extend off site for approximately 2,800 feet, and would include a maximum of a 200-foot temporary impact buffer area (12.9 acres). Water will be delivered to the Project site through an underground pipeline from a production well that is located in N.A.P. Area 1. Approximately 990 feet of pipeline will be required within NAP Area 1, with a maximum temporary construction buffer area of 200 feet (4.5 acres). Measures to reduce impacts to desert tortoise would include pre-construction clearance surveys, installing temporary exclusionary fencing prior to construction, and removal of the

temporary exclusion fence after construction. Temporary impacts to up to 12.9 acres of tortoise habitat would be restored to pre-construction conditions upon completion of construction as described in the Restoration Plan for temporary impacts.

The Project will include a centrally located Main Services Complex (37.6 acres) that includes three SunCatcher assembly buildings, administrative offices, operations control room, maintenance facilities, and a water treatment complex including a water treatment structure, raw water storage tank, demineralized water storage tank, basins, and a potable water tank. Adjacent to the Main Services Complex, a 15-acre temporary construction laydown area will be developed and an approximately 6-acre construction laydown area will be provided adjacent to the Satellite Services Complex south of the BNSF railroad

Table 1
Calico Solar Project Construction Schedule

Project Activity	Construction Time Frame	DT Clearance and Exclusionary Fencing Time Frame
Proposed Phase 1 Fenceline Construction	October 2010	October 2010
Proposed Phase 1 Construction	October 2010	October 2010
Transmission Line Construction	October 2010	October 2010
Waterline Construction	October 2010	October 2010
Temporary Construction Road within BNSF ROW Construction	October 2010	October 2010
Proposed Access Road within BNSF ROW Construction	October 2010	October 2010
Proposed Phase 1 Fenceline Construction	October 2010	October 2010
Proposed Main Access Route Construction	November 2010	October 2010
Proposed Main Services Complex Construction	November 2010	October 2010
Proposed Substation Construction	December 2010	October 2010
Proposed Bridge Construction	January 2011	October 2010
Detention Basins Phase 1 Construction	July 2011	Late March – early June 2011
Proposed Access Road to Phase 1 Detention Basins	July 2011	Late March – early June 2011
Phase 2 Project Fenceline Construction (Below Railroad)	October 2010	October 2010

- Implement the Weed Management Plan that is consistent with the Mojave Weed Management Area (MWMA) Memorandum of Understanding (MOU), which includes prevention, control, and eradication of weeds and invasive plant species, and educating the public about weed control in the region (DMG 2002a). The MOU identifies a priority list of invasive species to control in the Mojave. Use of herbicides will be avoided, but if necessary, only those herbicides approved by the USFWS and BLM that have shown empirically proven low toxicity to test animals in the Pesticide Use Proposal (PUP) process will be used. This would include post-emergent herbicide formulations such as Accord SP with the active ingredient glyphosate, and pre-emergent herbicide formulations such as Korvar I DF with the active ingredients bromacil and/or diuron (R. Chavez, BLM, pers. comm. 2010).

1.3.6 Focused Mitigation for Desert Tortoise

The following conservation measures will be performed by the Applicant.

A Desert Tortoise Translocation Plan (Appendix D to this document) shall be developed by Calico Solar, and must be approved by BLM and the wildlife agencies, and be completed and approved by USFWS prior to issuance of a Biological Opinion. This plan will include the following details at a minimum: translocation protocol; health assessments for all tortoise handled; disease testing of individuals that will be translocated greater than 500 meters; translocation habitat assessment and suitability; assessment of desert tortoise population and health in the area receiving translocated tortoise. Pre-construction surveys will be conducted to locate and test all desert tortoises that will be translocated greater than 500 meters from the area where they are collected to the translocation location outside of the Project site. Testing will entail bloodwork to determine whether any desert tortoises suffer from upper respiratory tract disease (URTD) and will include radio tagging each desert tortoise found to aid in subsequent relocation after blood test results are available. Desert tortoises from Phase One will be held in temporary holding pens in the Pisgah Crater ACEC, which has been identified and approved as the short-distance translocation area (Figure 3). Those desert tortoises found to be healthy will be released into this translocation area. Tortoise found within 500 meters of the boundary of the detention basin area of Phase 1 will be moved into the desert tortoise linkage area. Approximately 12 tortoise are located within 500 meters of the boundary of the Phase 1 detention basin areas and can be moved without requiring blood testing; however, the number of tortoise that would be placed in the linkage will be limited to avoid raising the tortoise density of the linkage above 10% of its current density (4.5 tortoise per kilometer). Any additional individuals that are detected in the detention basins will be placed in temporary holding pens within the short-distance translocation area (Figure 3) and once they are found to be healthy will be released.

Two desert tortoises were detected in an area that was recently identified as an environmentally sensitive area on the west side of NAP Area 2 and has been excluded from the Project footprint. To avoid and minimize loss of tortoise in this recently excluded area, the Applicant proposes to relocate the tortoise found in this area by following the methods identified in the approved Desert Tortoise Translocation Plan. These tortoises would be relocated greater than 500 meters from this location, which would require blood testing prior to moving them to the long-distance translocation site. The Applicant proposes to install temporary fencing around the Project line (on the west side of NAP Area 2) that surrounds this environmentally sensitive area while waiting for blood test results (Figure 4) to avoid moving the tortoise more than one time. The fencing would be removed once the tortoises are relocated to the long-distance translocation areas in Spring 2010. An unknown (but

Water for the Project will be provided by groundwater from an existing well located within the Cadiz basin. The water will be brought onsite by rail using the existing rail line. The expected average water consumption for the Project during construction is approximately 136 acre-feet per year (afy). Under normal operation (inclusive of mirror cleaning, dust control, and potable water usage), approximately 20 afy of water will be required. Use of the Cadiz Basin water source is not expected to impact tortoise. Local wells are currently being tested as a back-up water supply. If these local wells are utilized, water will be delivered to the site through an underground pipeline from a production well that is located in N.A.P. Area 1. Approximately 990 feet of pipeline will be required within NAP Area 1, with a maximum construction buffer of 200 feet. Temporary impacts (4.5 acres) to tortoise and tortoise habitat will be minimized through installation of a temporary exclusion fence while the new pipeline is buried. Once the pipeline is buried, the fence will be removed and the temporary impacts of up to 4.5 acres of tortoise habitat would be revegetated as described in the Restoration Plan associated with this Project. A permanent fence around the production well is not expected, but will be placed if found to be necessary.

1.3.1 Reduced Footprint Alternative 1

At the request of agency representatives and interested parties and to help lessen potential impacts to biological resources, the Applicant modified the northern Project boundary by moving it south approximately 0.55 miles (2900 feet), allowing an approximate 0.65 mile wildlife corridor between the revised northern project boundary and the toe of slope of the Cady Mountains. The Project boundary modification resulted in a reduction of the Project area from approximately 8,230 acres to approximately 7,130 acres. The modified Project boundary avoided direct impacts to occupied habitats for tortoise and other species of concern (e.g., special status plants, burrowing owls, and bighorn sheep). The modifications to the Project boundary would expand the east-west movement corridor by about 2,900 feet and allow for tortoise to move past the steeper topography that may hinder regular movement through this area. Additionally, the boundary modifications increased the distance between the Project and the nearest known golden eagle nest site, from approximately 2.5 miles from the previously proposed boundary to three miles from the modified Project boundary (URS 2010a).

1.3.2 Reduced Footprint Alternative 2

Based on input from the U.S. Fish and Wildlife Service's Desert Tortoise Recovery Office (DTRO) and the BLM, the northern boundary of the Project site has been further modified to include a 4,000-foot desert tortoise linkage between the Project (exclusive of all detention basins) and the base of the Cady Mountains. This is also the preferred alternative and identified throughout this document as Alternative 2. To accommodate this modification, the detention basins were re-configured to extend east to west along the northern Project boundary and the boundary between Phases 1 and 2, which allows the detention basins to be included within the Project fenceline and outside of the 4,000-foot wildlife linkage. The detention basin design also maintains the natural drainage patterns of the site. Additional modifications were made to the overall project, resulting in a decrease in project acreage to 6,215 acres (a 2,015-acre reduction). Several support facilities were adjusted, and the remainder of the Phase two solar field footprint was decreased to avoid the majority of the biological and flood prone areas of the site and minimize the distance needed for desert tortoise translocation. This new footprint will allow the Applicant to meet the requirements of the PPA, avoid environmentally sensitive areas, reduce the loss of desert tortoise, avoid or reduce impacts to special status plants, and pull away from the toe of the Cady

Mountains. It should be noted that the spacing between and the number of the SunCatchers is not being changed.

1.3.3 Best Management Practices (BMPs)

Project construction will occur in two phases. Phase I and Phase II, as denoted on Figure 2, represent geographic location. The Applicant is currently working with the agencies and public to determine the temporal phasing that will minimize environmental impacts. It is anticipated that the first phase of the Project would be developed for 275 MW and be built above the BNSF railroad, while staying as close to the railroad as practicable. A detailed breakdown of project component phasing is provided in Table 1.

Maintenance shall be restricted to within the tortoise exclusion fence. If unanticipated circumstances require altering such boundaries, the potential expanded work areas shall be surveyed for listed species prior to use of the area. All appropriate mitigation measures for protecting listed species and their associated habitats shall be implemented within the expanded work areas. No expanded work areas shall be authorized without the express written concurrence of the BLM and USFWS.

1.3.4 Avoidance, Minimization, Mitigation, and Monitoring

The following section summarizes mandatory avoidance and minimization measures being proposed by the Applicant to avoid and/or compensate for the potential impacts of the proposed Project. These mitigation measures may be modified and/or supplemented based on discussions with the various permitting agencies (*i.e.*, during the consultation process with United States Fish and Wildlife Service [USFWS] and California Department of Fish and Game [CDFG], or during the National Environmental Policy Act [NEPA] process with BLM).

1.3.5 Construction Monitoring and Vegetation Clearing

Calico Solar will provide mitigation construction monitoring by USFWS and BLM approved qualified biologists. The biologists will be given authority to monitor the functions listed below.

- Awareness training for desert tortoise, Mojave fringed-toed lizard, and other special status resources will be provided to all construction crews and operations staff.
- A biologist will monitor the construction activities daily during the initial site disturbance (including installation of temporary and permanent desert tortoise exclusion fencing). After all tortoises have been removed from the active construction area, an authorized biologist shall be on-call and available at all times. Should a tortoise be located within the perimeter exclusion fence, the authorized biologist will be contacted to move the tortoise to outside the exclusion fence and to notify BLM within 1 business day. Exclusionary fencing will be checked monthly and after any substantial rain event to ensure that they are effective barriers for tortoise. A monitoring biologist will be notified should construction crews or operations staff detect a tortoise within the exclusion fence and the biologist would go to the site to move the tortoise outside the fence.

small) number of tortoises reside in the NAP Area 2, and these tortoises will be blood tested and translocated to the long-distance translocation site if the individuals are found disease free. Since these tortoises are on private lands in NAP 2, these tortoise will be identified and translocated to the extent that land owner approval can be obtained.

A temporary exclusionary fence will be constructed around the construction area in occupied desert tortoise habitat, pre-construction clearance surveys to remove tortoise from the construction area will be conducted, and roving biological monitors that will monitor the various construction crews in the active construction areas will be assigned. Biological monitoring would also be present during access road improvements in occupied desert tortoise habitat. The temporary exclusionary fencing will be in place for over one year; therefore, in compliance with USFWS guidelines, a 4-strand wire exclusion fence that is made of galvanized material or an ERTEC polymer matrix (USFWS 2005, ERTEC 2010; Appendix E) will be placed during construction and removed after construction has been completed. This type of fencing is usually used for permanent fencing, thus providing the level of protection needed for the extended length of Project construction, which is expected to be approximately 4 years. Figure 4 shows the phasing of exclusion fencing.

A permanent security fence will surround the Project site. To continue to allow access to the public lands north of the Project site, the perimeter road surrounding the Project site will be left open to the public. A permanent tortoise exclusionary fence will be constructed on the outside of this perimeter road to minimize the potential for tortoise mortality from traffic (Figure 4). Where there are intersections with other roads, the fence will remain on the outside of the perimeter road (creating a 'T' of fencing on the outside of each road) thereby allowing uninterrupted use of the road. These intersections are shown in detail on Figure 4. The exclusionary fence will be consistent with USFWS design criteria as described above.

Following installation of the desert tortoise exclusion fencing for both the permanent site fencing and temporary fencing exclusion areas, the fencing shall be regularly inspected. If tortoise were moved out of harm's way during fence construction, permanent and temporary fencing shall be inspected at least two times a day for the first 7 days to ensure a recently moved tortoise has not been trapped within the fence. Thereafter, permanent and temporary fencing shall be inspected monthly and within 24 hours following all major rainfall events. A major rainfall event is defined as one for which flow is detectable within the fenced drainage. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within 48 hours of observing damage. Inspections of permanent site fencing shall occur for the life of the Project. All fencing shall be repaired immediately upon discovery and, if the fence may have permitted tortoise entry while damaged, the Designated Biologist shall inspect the area for tortoise. If fencing is not repaired within 48 hours, the BLM Wildlife Biologist shall be notified within 5 business days to determine if additional remedial action is required, such as the need for conducting additional clearance surveys within the Project footprint.

In addition to the exclusionary fencing, cattle guards will be placed where the perimeter access road meets the permanent security fencing near the southeast and northeast boundaries of Section 9, and in two locations where additional breaks are needed in the permanent security fence for access to the NAP 1 Area (Figure 4).

project site will be conducted to document the baseline level of raven occupation in the project vicinity. Best Management Practices (BMPs) will be instituted to minimize the subsidization of ravens. BMPs to discourage the presence of ravens onsite include trash management, elimination of available water sources, designing structures to discourage potential nest sites, use of hazing to discourage raven presence, and active monitoring of the site for presence of ravens.

Calico Solar Weed Management Plan, which must be approved by the wildlife agencies (CDFG, USFWS and BLM), will be implemented prior to the initiation of ground disturbing activities. Mitigation measures in the Weed Management Plan include: worker awareness training; limiting ground disturbance to designated areas only; maintenance of vehicle wash and inspection stations and close monitoring of materials brought onto the site to minimize the potential for weed introduction; re-establishment of native vegetation in disturbed areas to prevent weeds from colonizing newly disturbed areas; and, regularly scheduled monitoring to quickly detect new infestations of weeds, coupled with rapid implementation of control measures to prevent further infiltration. Herbicides that may be used include post-emergent herbicide formulations such as Accord SP with the active ingredient glyphosate, and pre-emergent herbicide formulations such as Korvar I DF with the active ingredients bromacil and/or diuron. These herbicides have shown empirically proven low toxicity to test animals, and are approved by BLM and USFWS.

1.4 CONSULTATION HISTORY

Early informal consultation between the BLM and USFWS started on this proposed project in early 2007. The early discussions concerned the development of protocols for biological surveys. Between 2007 and the present, many e-mail and phone conversations have ensued. Below are listed the major milestones associated with this consultation process.

August 18, 2008:

The BLM Barstow Field Office sent the USFWS Ventura Field Office an e-mail relating to the protocols used during the data collection for the development of the Biological Technical Report.

August 19, 2008:

The USFWS Ventura Field Office sent a response e-mail to the BLM Barstow Field Office regarding the protocol discussion e-mail.

August 27, 2009:

BLM District Office sent letter to USFWS Ventura Field Office requesting a species list for the proposed Project.

September 21, 2009:

BLM District Office received species list for the proposed Project from the USFWS Ventura Field Office.

Consistent with BLM and CDFG requirements, mitigation for loss of desert tortoise habitat will be achieved by a combination of habitat acquisition and habitat enhancement. The lands to be acquired and the specific habitat enhancement actions have not presently been determined. These specifics shall be developed through discussions among BLM, CDFG, and USFWS. Acquired lands will be purchased either by the applicant or the applicant can deposit funds with the National Fish and Wildlife Foundation (NFWF) in conformance with a Memorandum of Agreement (MOA) being developed by the wildlife agencies. If these lands are acquired through the NFWF MOA, a compensation fee will be assessed based on current fair market appraised value for the specific geographic area in which the acquisition occurs. The acquired lands shall occur in desert tortoise habitat with equivalent function and value. The replacement habitat is intended to benefit the population of tortoises adversely affected by the project, and shall be located within the same Desert Tortoise Recovery Unit (as identified in the 2009 draft Recovery Plan) with comparable or better habitat value. The BLM, USFWS, and CDFG shall coordinate to reach mutual agreement on the selection and ownership/management of acquired lands.

If acquisition funds are provided to NFWF, the compensation (1) funds will be provided prior to Project construction, (2) lands will be acquired prior to completion of Project construction, and (3) lands will be conserved in perpetuity by a legal mechanism agreed to by the three agencies. If the conservation lands are acquired directly by the applicant, then steps #2 and #3 will apply.

Regardless of the acquisition method (by applicant or NFWF), the Applicant will establish a management fund for the agency that owns and manages the acquired lands. The management fund will consist of an interest-bearing account, with the amount of non-wasting capital commensurate to generate sufficient interest to fund all monitoring, management, and protection of the acquired lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and other actions designed to protect or improve the habitat values of the acquired lands. A Property Analysis Record (*http://cnlm.org/cms/index.php?option=com_content&task=view&id=21&Itemid=155*), or comparable method, will be conducted by the Applicant and Agencies, to determine the management needs and costs described above, which then will be used to calculate the amount of capital needed for the management fund. This management fund will be held and managed by NFWF. A portion of the lost desert tortoise habitat may be offset by habitat enhancement activities. The proportion of the habitat loss to be offset by habitat enhancement activities shall be determined through discussions among the BLM, CDFG, USFWS and the Applicant. Funds for implementing these management actions, as determined by the wildlife agencies, shall be deposited in the same NFWF fund described above.

Speed limits within the Project site will be restricted to less than 25 miles per hour (mph) during construction and on non-public access roads in areas surrounding the Project Site during operation of the Project. All construction and operations personnel will be limited to this speed limit unless the speed limit is posted on public paved roads.

Lighting will be focused in toward the project site and downward to avoid lighting habitats beyond the project perimeter fencing.

A Raven Monitoring, Management, and Control Plan must be approved by BLM, CDFG and USFWS prior to the initiation of any earth disturbing events. Monitoring for the presence of ravens and other potential human subsidized predators of special status wildlife and implement a management plan if predator densities substantially increase in the vicinity of the facility. A pre-construction survey of the

SECTION 2 DESCRIPTION OF LISTED SPECIES

Only one federally listed wildlife species was detected in the Project site or immediate vicinity during field surveys: desert tortoise. Section 2.1 lists details of the implemented desert tortoise protocol survey methods and associated results. A listing of other special management status species known from the Project vicinity can be found in the Solar One Biotechnical Report (URS 2009b).

No federally listed plant species were found, or are expected to occur within the Project site. A complete list of all plant species detected during the 2007 and 2008 surveys, and a listing of other special management status species known from the Project vicinity can be found in the Solar One Biotechnical Report (URS 2009b).

Designated critical habitat for the desert tortoise occurs in the Action Area directly adjacent to the southwestern edge of the Project site south of I-40 within the Ord-Rodman DWMA. A total of 9,833 acres of DCH has been targeted for use as long-distance translocation receptor sites.

2.1 DESERT TORTOISE

2.1.1 Literature/Database Search and Species Consultation

A search of the California Natural Diversity Database (CNDDB 2008) within a 10-mile radius of the Project boundary revealed several previously documented desert tortoises occurring approximately 4.5 miles south of the Project boundary (Figure 5). A literature search was also conducted that yielded relevant information pertaining to desert tortoise within the Action Area. Experts, authors, and consultation with appropriate agencies (including USFWS, CDFG, and BLM) are cited below.

2.1.2 Species Account

Regulatory Status: Federal: USFWS: Threatened; State: CDFG: Threatened

Desert tortoise is widely distributed in the deserts of California, southern Nevada, extreme southwestern Utah, western and southern Arizona, and throughout most of Sonora, Mexico. Desert tortoise populations are declining because of various factors including the spread of a fatal respiratory disease, increases in raven populations that prey on juvenile tortoises, and habitat loss and degradation because of various extensive and intensive land uses. Only the Mojave population of desert tortoise is Federal- and State-listed as threatened. Typical tortoise habitat consists of firm but not hard ground - usually soft sandy loams and loamy sands - to allow for burrow construction (Karl 1983). Desert tortoise primarily occurs in four subpopulations in the West Mojave Desert (Ord-Rodman, Superior-Cronese, Fremont-Kramer, and Joshua Tree DWMAs). Outside of these DWMAs, tortoises tend to occur in at much lower densities. This species is mostly found in creosote bush scrub, with lower densities occurring in Joshua tree woodland and saltbush scrub. The topography where this species is typically found includes flats, low valleys, bajadas, and low hills between 2,000 and 3,300 feet and occasionally above 4,100 feet.

The diet of desert tortoise consists mainly of annual plants and grasses, but also perennial plants such as cacti and native forbs when available, certain non-native plant species are also eaten (West Mojave

October 8, 2009:

First meeting between BLM, CDFG, USFWS and Project proponent regarding potential mitigation measures for the proposed Project.

December 10, 2009:

Second meeting between BLM, CDFG, USFWS and Project applicant regarding potential mitigation measures for the proposed Project.

January 28, 2010:

Meeting between BLM, CDFG, USFWS and Project applicant regarding development of the draft Desert Tortoise Translocation Plan.

March 29, 2010:

Meeting between BLM, CDFG, and USFWS to discuss translocation receptor sites.

April 1, 2010:

Meeting between BLM, USFWS, and Project Applicant to discuss translocation receptor sites.

April 20, 2010:

BLM received an early alert phone call that an Insufficiency Letter was forthcoming from the USFWS.

April 26, 2010:

BLM received an Insufficiency Letter from USFWS, dated April 22, 2010, indicating that the consultation package was incomplete and that the formal consultation had not been initiated pending revisions of the original Biological Assessment.

April 27, 2010:

BLM met with USFWS to discuss the insufficiencies outlined in the April 22, 2010 letter.

April 30, 2010:

USFWS provided written comments on the original BA to BLM and the Applicant.

May 5, 2010:

USFWS met with BLM and Applicant to discuss BA revisions.

May 10, 2010:

BLM and USFWS received revised BA from the Applicant.

May 12, 2010:

BLM provided comments to USFWS and applicant on the revised BA.

May 17, 2010:

BLM provided a revised BA to the USFWS.

June 21, 2010:

The USFWS sent the BLM a Sufficiency Letter stating that the revised BA was sufficient to initiate consultation. The Sufficiency Letter requested clarification regarding the Alternative #2 Reduced Footprint Proposed Action.

July 2, 2010: BLM provided USFWS with an Appendix to the revised BA which addressed the USFWS information needs.

Planning Team 1999). Desert tortoise are most active when plants are available for forage or when pooled water is available for drinking, usually from March through early June and again between September and early November (Marlow 1979). They typically have overlapping home ranges averaging between 5-131 acres, which additionally can fluctuate in size on a year-to-year basis based on several factors such as sex, rainfall, availability of resources, and others factors (Berry 1986, Duda 1999, CDFG 2000). Individuals commonly traverse 1,500-2,400 feet/day within their home range, and males have been recorded traveling up to 0.62 miles within their home range. Mojave desert tortoises are also known to disperse more extended distances (1.9 miles in 16 days and 4.5 miles in 15 months; Berry 1986).

2.1.3 Protocol Survey Methods

URS conducted a 2010 10m transect survey of the 6,215-acre Calico Solar Project site. The survey implemented the 2010 USFWS survey protocol (USFWS 2010) and represents a 100% coverage survey. The survey was completed between March 29 and April 15. The Project site map (Figure 6) was overlaid with 183 survey cells that typically encompassed 50 acres (mean cell size 45 acres, range: 13 – 64 acres). Typical rates of coverage were 5 to 6 acres per person-hour and 1.25 transect km per person-hour. Each cell was surveyed by four or five experienced biologists using the 10m transect protocol. All detected tortoise were visually measured and assessed for signs of disease, and field forms were completed (see URS 2010). Tortoise locations were recorded with consumer-grade GPS units. All potential tortoise burrows detected were recorded with GPS units and classified according to USFWS burrow categories (Class 1 through 5).

2.1.4 Protocol Survey Results

The survey required a total of 335 field days to complete and a total of 3,334 km of 10m transects were walked. Table 2 summarizes the results of the survey. A total of 57 individual tortoise were detected, including 48 adults, and 9 juveniles (Figures 6 and 7). The distribution of tortoise onsite is similar to that assessed in the project biological technical report (URS 2009). As suggested by the 2007-2008 plot surveys, tortoise tend to be more common on the northern half of the site north of the railroad, less common on the southern half of the site north of the railroad, and rare south of the railroad (Figures 7 and 8).

Phase One areas support 18 individuals; 6 tortoise in the 1,876-acre Phase One area immediately north of the railroad and 12 tortoise within the northern detention basin area (451 acres; Figure 7). The 1,747-acre Phase Two area between the two Phase One areas supports 39 individuals. No tortoises were detected within the current 2,139-acre Phase Two area between Interstate 40 and the railroad (Figure 7); however, 2 tortoise were detected in the recently excluded Environmentally Sensitive Area. Two of the tortoise detected in Phase 2 showed sign of disease or ill health. A total of 347 burrows categorized as Class 1 through 5 were recorded on the site during the surveys. Table 3 and Figure 8 show the distribution of burrows by Phase area.

Using the USFWS formula to estimate tortoise population based on 10 m transect survey data, approximately 93 desert tortoise (95 percent confidence range of 47 to 185 individuals) may occupy the 6,215-acre Calico Project site (See Appendix B). It is expected that an additional 31.1-51.1% of the

individuals detected during 5m clearance surveys will be juveniles (Turner et al. 1987); therefore, an estimated 29-48 (= 93 x 0.311 and 93 x 0.511) juveniles may need to be relocated.

Table 2
2010 Desert Tortoise Observations on Calico Solar Project Site

Tortoise by Age and Location	Acres Surveyed	Adult on surface	Adult In Burrow	Sub-Adult	Juvenile	Total Detected	Tortoise Per 1000 Acres
Phase 1 - North of Railroad	2,000	4	0	0	4	8	4.0
Phase 1 - Northern Detention Basins	320	3	1	0	0	4	12.5
Phase 2 - North of Railroad between Phase One	3,780	69	10	1	10	90	23.8
Phase 2- South of Railroad	2,130	1	0	0	1	2	0.94
Total on Calico Solar Site	8,230	77	11	1	15	104	12.64

Table 3
Distribution of Tortoise Burrows Classes 1 through 5* at Calico Solar Site

	Class 1	Class 2	Class 3	Class 4	Class 5	Total
Phase 1 - North of Railroad	9	13	25	6	7	60
Phase 1 - Northern Detention Basins	14	3	6	0	0	23
Phase 2 - North of Railroad between Phase One	137	122	117	9	3	388
Phase 2- South of Railroad	3	6	26	5	0	40
Total	163	144	174	20	10	511

*Tortoise Burrow Classification
1. Currently active, with tortoise or recent tortoise sign
2. Good condition, definitely tortoise, no evidence of recent use
3. Deteriorated condition definitely tortoise, no evident of recent use
4. Deteriorated condition and possibly tortoise, no evident of recent use
5. Good condition and possibly tortoise, no evident of recent use

2.1.5 Critical Habitat

DCH for desert tortoise has five Primary Constituent Elements:

1) sufficient space to support viable populations within each of the six recovery units and to provide for movement, dispersal, and gene flow;

2) sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species;

3) suitable substrates for burrowing, nesting, and overwintering; burrows, caliche caves, and other shelter sites;

4) sufficient vegetation for shelter from temperature extremes and predators; and

5) habitat protected from disturbance and human-caused mortality.

The Project site is not located within any DCH for listed species (Figure 3); however, the Project Action Area includes areas of DCH for desert tortoise (i.e., Ord-Rodman DWMA/ACEC) (Figure 3). Project activities are not anticipated to impact desert tortoise DCH, but implementation of the Translocation Plan may adversely affect DCH. Areas of DCH are needed to be used as long-distance recipient sites (up to 9,833 acres), therefore there is a potential for moving diseased individuals into DCH and in increasing population densities of tortoise within DCH.

The translocation of tortoises from the Project Site to the Ord-Rodman Desert Wildlife Management Area may adversely affect DCH through the introduction of additional animals into occupied critical habitat, through the potential introduction of diseased animals into the DCH, and through increasing the population density in DCH. Also, activities such as driving vehicles through critical habitat could impact vegetation, and thus degrade the Primary Constituent Elements of the DCH.

SECTION 3 ENVIRONMENTAL BASELINE

3.1 BIOLOGICAL SETTING

The Project is located within the Mojave Desert in an area approximately 37 miles east of Barstow, California. The Mojave Desert is the transitional area between the hotter Sonoran Desert to the south and the cooler and higher elevation Great Basin Desert to the north. The Mojave Desert is within the rain shadow of the Transverse and Sierra Nevada mountain ranges, and is defined by a specific combination of latitude, elevation, geology, and indicator plant species.

The Mojave Desert is the driest desert in the continental United States with average precipitation ranging from 2.2 to 2.5 inches per year falling primarily between October and March, and temperatures ranging from 40 to 110 degrees Fahrenheit. Perennial rivers and streams are rare, with the Mojave River being the most prominent drainage feature in the greater region, although it is distant from the Project site. Elevations in the Mojave Desert range from below sea level at Death Valley, to an elevation of 7,929 feet. Plant communities in the region vary with topography, geology, elevation, and precipitation. These communities include pinyon-pine forests and frost-tolerant species above 5,500 feet, where local average precipitation may be as much as 10 inches per year (some of which falls as snow); Joshua tree woodland in the range of 4,000 to 6,000 feet; mixed desert shrub communities in the middle elevation regions and along the mountain range fronts; and creosote bush and other drought-tolerant species in the lower elevation regions where rainfall averages less than 2.5 inches per year (USGS 2004).

Vegetation across the Project site is dominated by Mojave creosote bush scrub through the rolling terrain, with less common and site-specific conditions allowing for saltbush scrub in the southwestern portion of the Project site (Figure 9). Developments in this area include the BNSF railroad, the Kinder-Morgan pipeline that bisects the southern portion of the Project site, a maintained north-south dirt access road for the existing transmission line on the eastern border of the assessment area connecting to the existing Pisgah substation south of the site, and several east-west dirt roads that cross the site. The past land uses within the assessment area include a history of cattle grazing and limited mining. Currently, there is evidence of disturbance from off-highway vehicle (OHV) activities.

3.2 VEGETATION COMMUNITIES PRESENT

Vegetation in the Project site is composed primarily of Mojave Desert creosote bush scrub with a smaller area of desert saltbush scrub as defined by the Holland (1986) classification of plant communities (Figure 9). Disturbed areas are associated with dirt roads and trails, areas adjacent to railroads and the interstate highway, along underground pipeline routes, and cleared areas from past land uses (*e.g.*, mining).

The Project site supports two distinct vegetation communities. These vegetation communities were digitized and are displayed on aerial photographic maps. Each habitat description follows the Holland vegetation classification (Holland 1986). Table 4 shows the estimated acreages of existing vegetation communities for areas within the Project site.

The remainder of the Action Area is composed of generally the same habitats, dominated by Mojave Desert creosote bush scrub, with many areas of disturbance, and dirt and paved roads. A habitat assessment was conducted on the translocation recipient sites and the control sites in spring 2010, to ensure that tortoise are relocated to habitat that is of equal or better quality than the habitat from which they are moved.

Portions of the DWMA were surveyed in the spring, and the remaining areas that were identified as long-distance translocation receiver sites will be surveyed in the fall of 2010. The habitat in the southern long-distance translocation area in the DWMA is comprised of Mojave Desert creosote bush scrub, with a diverse assemblage of vegetation and little to no disturbance. Large erosional features with braided washes with areas of large boulders and cobbles dominate the landscape with a gravelly substrate and few areas of pure sand. This area is excellent DT habitat and is also about 30 minutes down the transmission line road south of I-40 so it is relatively isolated. The area on the western side of the DWMA that was surveyed in the spring contains several deep washes, with variable terrain and sandy loam soils with gravel, rocks and cobble. The vegetation is diverse, but is lower in cover than the Project site. DT density was lower here than in the southern DWMA survey area, and several desert tortoise carcasses were observed.

Table 4
Vegetation Communities Occurring within the Calico Solar Biological Assessment Area

Community Name	Holland Code	Project Boundary Acreage	1000-foot Buffer Acreage
Developed	12000	27.84	239.9
Desert Saltbush Scrub	36110	241.7	278.7
Disturbed Mojave Creosote Bush Scrub	34000	70.64	68.5
Mojave Creosote Bush Scrub	34000	5,874.5	2,543.7
Total		6,215.0	3,130.8

3.2.1 Developed

Developed lands (Holland Code 12000) include roads, built structures, and associated infrastructure. Within the Action Area, these included dirt roads, transmission lines, underground gas pipelines, railroads, and any other built environments. Developed areas (which include paved roads, highway, railroad, and the transmission line) occurred in approximately 27.84 acres of the Project footprint, and 239.9 acres of the 1,000-foot buffer of the Project.

3.2.2 Desert Saltbush Scrub

Desert saltbush scrub (Holland Code 36110) is a low, sparse mixture of micophyllous shrubs and occasional succulent species. Stands of shrubs are usually spaced widely and are strongly dominated by desert saltbush (*Atriplex polycarpa*). Other species include white burrobush (*Hymenoclea salsola*), and inkweed (*Suaeda moquinii*). This habitat usually forms on fine-textured, poorly draining soils with high alkalinity and salinity, usually surrounding playas on elevated ground. Desert saltbush scrub is only found

in the southwestern corner of the Project footprint (241.7 acres) in association with small patches of Mojave creosote bush scrub. In addition, approximately 278.7 acres of desert saltbush scrub occurs in the 1,000-foot buffer of the Project.

3.2.3 Mojave Creosote Bush Scrub

Mojave creosote bush scrub (Holland Code 34000) is a community dominated by creosote bush (*Larrea tridentata*) and white bur-sage (*Ambrosia dumosa*). Shrubs are typically widely spaced with bare ground between them. A diverse annual herb layer may flower in late March and April with sufficient winter rains. Other common plant species in this habitat include desert senna (*Senna armata*), Nevada ephedra (*Ephedra nevadensis*), white burrobush, encelia (*Encelia* spp.), ratany (*Krameria* spp.), and various cactus species (*e.g.*, *Opuntia* spp.). This plant community is usually found on well-drained secondary soils with very low water-holding capacity on slopes, fans, and valleys. This vegetation type makes up the majority of the acreage within the Project footprint boundaries (5,874.5 acres undisturbed and 70.6 acres disturbed). Approximately 2,543.7 acres of undisturbed and 68.5 acres of disturbed Mojave creosote bush scrub occur within the 1,000-foot buffer, and is shown on Figure 9 as a hatched overlay on top of the Mojave creosote scrub habitat.

3.2.4 Catclaw acacia thorn scrub

Within the mapped creosote bush scrub, dry desert washes in the northern portion of the proposed project site (i.e., foothills of the Cady Mountains and the upper bajada) often support catclaw acacia (*Acacia greggii*). Scattered blue palo verde (*Parkinsonia florida*) and smoke tree (*Psorothamnus spinosus*) are also found in these washes. These stands match the Catclaw acacia thorn scrub (*Acacia greggii shrubland alliance*) described by Thomas et al. (2004) and Sawyer et al. (2009). Catclaw acacia thorn scrub is synonymous, in part, with “Mojave wash scrub” and “Mojave desert wash scrub” as described by Holland (1986); Catclaw acacia is a large, deep-rooted shrub or small tree, characteristic of desert washes, occurring in habitats similar to other desert microphyllous wash woodland species. It resprouts rapidly following disturbance by floods, and seed dispersal and germination are apparently initiated by flooding. Catclaw acacia thorn scrub has no special conservation status ranking (CDFG 2003; 2007).

3.2.5 Lower elevation wash and sandfield vegetation

Areas mapped as creosote bush scrub in the southern part of the project area, generally from about 0.25 mile north of the BNSF railroad tracks and southward to the southern project area boundary, include patches of two additional vegetation associations not previously mapped. These areas are characterized by sandy soils, in deep sandy washes, open sandfields, and active windblown sandfields. Sediments from the Cady Mountains, upslope, are transported by fluvial and aeolian processes toward the southern part of the project site, particularly the southeastern part of the site, where fine windblown sands spread across the lower bajada and small hills in a small dune system, associated with active channels and partially stabilized sandfields. Vegetation types of these dunes, sandfields, and washes include smoke tree woodland, big galleta shrub-steppe, desert saltbush scrub, and unvegetated habitat. These vegetation types are described in the following paragraphs.

3.2.6 Smoke tree woodland (*Psorothamnus spinosus* woodland alliance)

Smoke tree woodland is characteristic of desert washes and arroyos. Smoke tree is a shrub or small tree. It may be the dominant or co-dominant species, often occurring with other desert wash species (see catclaw acacia thorn scrub, above). Mixed stands, where smoke trees occur with smaller creosote bush or white bursage present, are classified as smoke tree woodland, even where smaller shrubs constitute as much as twice the overall cover (Thomas et al. 2004; Sawyer et al. 2009). On the project site, smoke trees occur in washes of the upper bajadas, but they are not dominant there. In lower washes smoke tree is the visually dominant plant, even where it occurs with other shrubs. Smoke tree is relatively short lived (to approximately 50 years), and is strongly tied to active washes. Its stands regenerate following floods, which abrade dormant seeds, permitting them to germinate (Sawyer et al. 2009). Smoke tree woodland has been included within "Mojave wash scrub" and "Mojave Desert Wash Scrub" (Holland 1986). Smoke tree woodland has no special conservation status ranking (CDFG 2003; 2007).

3.2.7 Big galleta shrub-steppe (*Pleuraphis rigida* herbaceous alliance)

On the proposed project site, big galleta (*Pleuraphis rigid = Hilaria rigida*) occurs in low sandy areas and around the margins of dunes in the southeastern portion of the site. In dune areas, it is often interspersed with small stands of the desert sand verbena (*Abronia villosa*) or desert panic grass (*Panicum urvilleanum*). Throughout the Mojave Desert, it commonly occurs in patches within creosote bush shrublands and has often been included within that vegetation description (Thomas *et al.*, 2004).

3.3 WILDLIFE CORRIDORS

A wildlife corridor is defined as a linear landscape feature that allows animal movement between two patches of habitat or between occupied habitat and geographically discrete resources (*e.g.*, water). To function effectively, a corridor must accomplish two basic functions. First, it must effectively link two or more large patches of habitat. The corridor must conduct animals through the landscape to areas of suitable habitat without excessive risk of directing them to unsuitable areas where risk of mortality may be very high. Second, the corridor must be suitable to the focal target species so that they will use the corridor frequently enough to achieve the desired demographic and genetic exchange between populations. Presence of wildlife corridors allow an exchange of individuals between populations, lowering inbreeding within populations, increasing effective population size, and facilitating re-establishment of populations that have been decimated or eliminated because of random events.

Focal species are those species that naturally occur in low densities and that may be unwilling or unable to cross extensive areas of development or otherwise unfavorable habitat. Animals have a natural aversion to situations or physical settings they perceive to be dangerous and will often shy away from situations in which they are exposed without cover or escape routes. The presence of disturbance outside of the animal's normal experience is also a situation that is often avoided by animals. In the Mojave Desert, potential focal species for wildlife movement assessment could include desert tortoise, mountain lion (*Felis concolor*), coyote, bighorn sheep (*Ovis canadensis nelsoni*), bobcat, and kit fox.

Generally, the Project site and surrounding vicinity is unrestricted and conducive to live-in habitat and movement of wildlife throughout the area, with variable habitat composition and desert tortoise densities

throughout the area. Movement in the east-west direction is currently unconstrained. The primary constraints to wildlife movement are in the north-south direction. The existing BNSF railroad and I-40 run east-west across the lower one-third of the bajada that contains the Project site. I-40 adjacent to the Project site is fenced; however, tortoise exclusion fencing is not used, allowing animals to potentially move across the freeway. The BNSF railroad is not fenced, although the railroad is elevated several feet above surrounding grade, creating constraints to wildlife movement, especially for smaller terrestrial species such as reptiles and small mammals. Although animals can choose to cross over these features at any point, the only safe locations for general wildlife movement across both of these features are through existing culverts and railroad trestles (Figure 10). The majority of these features are large enough for large mammals to pass through, with the exception of a series of small pipes that run under I-40 at the far southwestern corner of the Project site. Regardless of the few culverts and bridges, north-south wildlife movement is greatly restricted by these existing linear landscape features.

The recently proposed and accepted Reduced Footprint Alternative 2 would expand the wildlife linkage by about 4,000 feet south, and reduce the project area by 2,015 acres (Figure 12). The expanded undeveloped area between the Project and the Cady Mountains also creates a functional tortoise linkage with live-in and move-through habitat instead of only move-through habitat that would have been provided with the original Project footprint. The modified Project boundary also avoids direct impacts to other species of concern (e.g., special status plants, burrowing owl, and bighorn sheep). Additionally, the boundary modification increases the distance between the Project and the nearest known potential golden eagle nest site, from approximately 2.5 miles from the previously proposed boundary to over three miles from the modified Project boundary.

3.3.1 Special Management Areas

Figure 13 illustrates the additional management areas within the vicinity of the Action Area. North of the Project Area, the BLM has proposed an area for designation as wilderness (Cady Mountains Wilderness Study Area). The Project is also located within the planning area of the West Mojave Coordinated Management Plan (West Mojave Plan or WEMO, BLM 2006). WEMO designates a total of four DWMAs, each of which focuses on the protection and conservation of desert tortoise, Mohave ground squirrel (*Spermophilus mohavensis*), and other State- or Federal- listed special status species that share their habitats. The Action Area includes portions of the Ord-Rodman DWMA because this area will be used as a long-distance receiver site for tortoises found on the Project site. The Pisgah ACEC is immediately to the southeast of the Project site (Figure 12) and portions of the Pisgah ACEC will be used as a short-distance recipient site. There is a total of 80,563 acres of DCH within the Action Area, up to 9,833 acres of which will be used as a receptor site during implementation of the Desert Tortoise Translocation Plan (Figure 3).

SECTION 4 EFFECTS OF THE ACTION

4.1 IMPACTS ON DESERT TORTOISE

Impacts resulting from the implementation of the Project include:

- Number of tortoise affected;
- Loss of occupied desert tortoise habitat;
- Constriction of movement corridors;
- Adverse edge effects of the Calico Solar Project on desert tortoise occupying NAP Area 1 and within the 1000-foot buffer;
- Potential for partial loss of habitat within desert tortoise territories along the Project boundary;
- Potential for dust during construction to negatively affect adjacent intact vegetation, and therefore affect desert tortoise habitat quality;
- Potential noise and lighting effects on tortoise behavior near the Project boundary;
- Disturbance from vibration during construction that could affect tortoise in burrows near the Project boundary;
- Introduction of weeds that may increase on the Project site and within the buffer area during construction and operation, and therefore affect desert tortoise habitat quality; and
- Potential increases in ravens and other predators of desert tortoise occupying adjacent lands as a result of perches provided by the SunCatcher structures, transmission towers, and perimeter fencing.

4.1.1 Number of Tortoise Directly Affected

A federal take of a species listed pursuant to the Federal Endangered Species Act (FESA) is defined as "Take – to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct" (50 CFR 17.3). A total of 48 adults, plus 9 juveniles were detected in the revised Project boundary during 10m transect surveys of the project site in 2010. Desert tortoise exclusion fencing will be installed prior to construction and desert tortoise will be excluded (translocated) via clearance surveys before the construction phase of the Project. Desert tortoise will be affected due to handling, blood sampling, transmitter attachment, transportation, and there is a possibility for tortoises to be killed or injured as a result of the translocation process. Tortoise monitored as recipient site resident or control area individuals for comparison to monitored translocated individuals will also be affected by attachment of radio transmitters, handling, and blood testing. Affects could also result from increasing local population densities in the recipient areas.

Using the USFWS formula for population estimate from transect survey data for the original Project boundary, a total of 176 adult individuals may occupy the project site (95% C.I. Range: 92 to 337). For the Reduced Footprint Alternative 1, modifying the Project boundary to exclude 1,100 acres of habitat avoids approximately 25 percent of the adult desert tortoise found on the project site. Of the 104 total

tortoise found during 2010 surveys, 26 desert tortoise (*Gopherus agassizii*) would now be avoided. In addition, 86 desert tortoise burrows would also be avoided by the project boundary change. Of the 425 total burrow locations on site, this Project modification will result in approximately a 20 percent reduction of direct impacts. Using the USFWS formula to estimate tortoise population based on 10-meter transect survey data, it is estimated that direct impacts to approximately 49 individuals may be avoided due to the Project boundary modifications.

With the Reduced Footprint Alternative 2, modifying the Project boundary to exclude 2,015 acres of habitat avoids approximately 39 percent of the adult desert tortoise found on the project site. Of the 104 total tortoise found during 2010 surveys on the original Project footprint, 47 desert tortoise would now be avoided (Table 5). In addition, 164 desert tortoise burrows will also be avoided by the project boundary change. With a total of 511 burrow locations on the original Project site, this Project modification will result in approximately a 47 percent reduction of direct impacts to 347 burrow locations within the new boundary (Table 6). Using the USFWS formula to estimate tortoise population based on 10-meter transect survey data, it is estimated that direct impacts to approximately 93 individual adult tortoise may be avoided due to the Project boundary modifications.

The Project boundary modifications reduce the estimate of desert tortoises requiring translocation for the Project from 176 to 93 adult individuals and from 32-53 to 29-48 juveniles. These excluded desert tortoise may be indirectly affected due to being adjacent to the Project perimeter, though direct impacts to habitat will be reduced by 2,015 acres.

The modifications to the Project boundary would expand the east-west movement corridor by about 4,000 feet and create a functional habitat linkage that is adequate as live-in habitat as well as move-through habitat. Approximately 12 tortoise found in the Phase 1 detention basin area during the clearance surveys could be placed into this new linkage without requiring blood testing as long as they are not moved further than 500 meters from the location which they were found. The number of individuals that will be placed into this new linkage will be limited to avoid raising the tortoise density above 10% of its current density (4.5 tortoise per square kilometer). The carrying capacity of the linkage will also not be exceeded.

Some areas of DCH (inside the Ord-Rodman DWMA) will be used as long-distance recipient sites (up to 9,833 acres), creating a potential of moving diseased individuals into DCH; however, all long distance translocations will only involve individuals that have been tested for disease to minimize this potential adverse effect. Animals showing clinical signs of disease or testing positive in blood tests will not be moved. In addition, to minimize the potential effects of increased populations in the recipient sites, the number of individuals relocated into a given area will be limited in order to avoid raising the local tortoise density above 30% of the current density and the local habitat carrying capacity will not be exceeded. Most activities associated with the translocation would be conducted on existing roads, which do not support the primary constituent elements of DCH. A small amount of DCH adjacent to roads may be temporarily disturbed; we expect the size of this disturbance to be minimal and its effects on the function of DCH to not be measurable. All vehicular access will occur on authorized open routes of travel, where the primary constituent elements of DCH are absent. Only foot traffic will occur away from designated open routes of travel; we anticipate that the effects of foot traffic on the primary constituent elements of DCH would not be measurable.

4.1.2 Loss of Occupied Habitat

The current Project description includes the installation of permanent desert tortoise exclusion fencing along the entire Project boundary. Approximately 6,215 acres of occupied desert tortoise habitat would be excluded as a result of Project fencing.

Table 5
2010 Desert Tortoise Observations on Calico Solar Project Site
Reduced Footprint Alternative 2

Tortoise by Age and Location	Acres Surveyed	Adult on surface	Adult In Burrow	Sub-Adult	Juvenile	Total Detected	Tortoise Detected Per 1000 Acres
Excluded Area along northern boundary	1,746	25	3	1	5	34	19.4
Phase 1 - North of Railroad	1,876	2	0	0	4	6	3.2
Phase 1 - Northern Detention Basins	451	9	1	0	2	12	26.6
Phase 2 - North of Railroad between Phase One	1,747	32	0	0	3	39	22.3
Phase 2- South of Railroad	2,139	0	0	0	0	0	0
Total on Calico Solar Site - Reduced Footprint	6,215	43	4	0	9	57	9.17

Table 6
2010 Desert Tortoise Burrow Observations on Calico Solar Project Site
Reduced Footprint Alternative 2

	Class 1	Class 2	Class 3	Class 4	Class 5	Total
Phase 1 - North of Railroad	9	17	24	6	6	62
Phase 1 - Northern Detention Basins	16	13	12	1	0	42
Phase 2 - North of Railroad between Phase One	74	57	75	4	2	212
Phase 2- South of Railroad	0	4	23	4	0	31
Total	91	91	134	15	8	347

*Tortoise Burrow Classification
1. Currently active, with tortoise or recent tortoise sign
2. Good condition, definitely tortoise, no evidence of recent use
3. Deteriorated condition definitely tortoise, no evident of recent use
4. Deteriorated condition and possibly tortoise, no evident of recent use

5. Good condition and possibly tortoise, no evident of recent use

Construction equipment will not operate beyond the fenced Project boundary, other than on roads designated open by BLM. Roads that are not designated as open by BLM that may exist are not to be used by project personnel. A map of BLM designated open routes is found in Figure 14. Therefore, temporary disturbance of NAP Area 1 or other areas beyond the Project boundary by equipment operation will not occur.

4.1.3 Constriction of Movement Corridors

Movement through the Project site north of the railroad is expected to be mostly in the east-west directions, and mostly along the lands in the northern half of the Project site and beyond up to the mountains, where tortoise densities are greater. East-west movement of tortoises in NAP Area 1 will be restricted, as the Project extends along the east, west, and south sides of NAP Area 1; however, east-west movement is still possible north of the Project site. Movement corridors are not necessarily areas where animals spend most of their time (preferred habitat), but are merely areas that they periodically used to move between areas of preferred habitat. The area north of the Project site is not being proposed as desert tortoise to function as live-in habitat, but rather as an area available as a movement corridor. The Project will not prevent east-west movement because lands north of the Project site will remain open to desert tortoise and these areas also tend to have the greatest concentrations of desert tortoise (Figure 11). The mountainous terrain to the north of the Project may not be suitable habitat for desert tortoise occupation; however, it does allow tortoise to move in and east-west direction. The United States Geological Survey (USGS) modeled desert tortoise habitat was used to predict potential movement corridors (Figure 11).

The limited number of desert tortoise observations between the BNSF railroad and I-40 after one year of focused desert tortoise surveys (plus incidental surveys in two years), suggests that the area between the BNSF railroad and I-40 is not easily accessible to desert tortoise. Potential desert tortoise habitat exists in the area between the BNSF railroad and I-40, and desert tortoise have limited access to this area through existing culverts and trestles (Figure 10). The limited number of desert tortoise individuals and active burrows detected in this area compared to the area north of the railroad tracks leads to the expectation that desert tortoise do not currently prefer this area. The habitat quality is considered to be lower than habitat north of the railroad. Desert tortoise are not expected to effectively colonize or persist within the area between the BNSF railroad and I-40 because these linear features likely act as an access filter, deterring frequent individual desert tortoise movement into this area. Based on this information, it is likely that the movement of desert tortoise from north to south between the mountains and the lands south of I-40 is likely constrained by the BNSF railroad and I-40.

The reduced footprint alternative 2 would expand the east-west linkage corridor by about 4,000 feet and allow for tortoise and other wildlife to move past the steeper topography that may hinder regular movement through this area (Figure 12). The expanded linkage is also large enough to support desert tortoise and is designed to function as live-in habitat. A total of 25 adult tortoises and 5 juveniles were detected in this 1591-acre excluded area during 2010 surveys. About 93 adult/subadult individuals may use this area based on the USFWS formula. An additional 29-48 juveniles may be present in this area,

based on a 4-year study of tortoise population ecology (Turner et al. 1987) which determined that juveniles account for 31.1 to 51.1 percent of the overall population.

4.1.4 Edge Effects

A total of 45 adult tortoises may be affected indirectly by the proposed project. Assuming a local density of 16 individuals per sq mi based on the population estimate for areas north of the railroad, about 40 desert tortoise may occur within NAP Area 1 and will likely be affected by the adjacent construction and operation of the Project with partial loss of home ranges. The NAP Area 1 is a contiguous parcel of land bounded by the Project site on the east, west and south sides. It is approximately one mile wide from east to west and two miles long from north to south (approximately 960 acres in size). Most of the desert tortoises in NAP Area 1 were detected in the northern half of this area. Project construction will occur up to the boundary on three sides of NAP Area 1, and approximately 990 feet into the south end of the NAP Area 1 parcel for installation of the underground water pipeline. All impacts as a result of the pipeline will be temporary; once the pipeline is buried and construction is completed in that area, the pipeline impact area will be revegetated according to the Restoration Plan.

About 45 adult individuals may have portions of their home ranges within this buffer area. Juveniles would be an additional 31.1-51.1 percent of this adult estimate (14-23 juveniles). Specifically, the entire buffer area contains 1,495 acres of land, a portion of which is already impacted by existing development, such as the BNSF railroad and I-40 to the south, the Kinder-Morgan gas pipeline that crosses the southern portion of the site and to the east of the site, and the existing transmission line along the eastern boundary. Impacts in the buffer areas as a result of the Project may affect approximately 1,495 acres of suitable habitat. Impacts may also potentially extend into suitable habitat beyond the 1,000-foot buffer area. Edge effects are difficult to quantify, but generally entail reduced habitat quality due to weeds and adjacent disturbance, increased predation, and ongoing harassment due to chronic human activity (construction and ongoing project operations) adjacent to tortoise occupied habitat that tends to result in reduced occupation by tortoise (Boarman and Sazaki 2006, but see Lovich and Daniels 2000).

The overall distribution of desert tortoise is toward the north-central portion of the Project site and that distribution is expected to continue northward on the plains of the bajada up to the foothills of the northern bounding mountains. After Project implementation, the movement of desert tortoise from NAP Area 1 would be northward due to Project constraints in the east, west, and southern sides. The proposed Project already includes placement of exclusionary fencing along the Project boundary during construction and for the life of the Project, such that effects on desert tortoise in NAP Area 1 moving into the Project area would be minimized. The expanded habitat associated with the reduced footprint alternative would provide a functional linkage and movement corridor and a greater opportunity for tortoise to move into and out of NAP Area 1, and it would provide approximately 1,591 acres of live-in habitat for desert tortoise.

4.1.5 Partial Loss of Desert Tortoise Territories

The linear extent of the Project footprint which is also the length of permanent perimeter and tortoise exclusion fencing, is approximately 45 miles (Figure 4). Because the site is completely fenced with desert tortoise exclusion fencing, there is likely to be a partial loss of occupied territories along the Project

boundary, notably the estimated 24 desert tortoise that may occupy NAP Area 1. Estimated desert tortoise density north of the railroad is 16.0 adult desert tortoise per square mile assuming a population of 93 adults, with most desert tortoise observations occurring north of the BNSF railroad. It is unknown how many desert tortoises exist outside of the surveyed area; however, partial territory loss is anticipated to affect additional individuals outside the action area. Based on a buffer area of about 1,495 acres, and using the density indicated above for the areas north of the railroad, perhaps 45 additional tortoise may inhabit the buffer area. The 960-acre NAP Area 1 may support about 24 tortoise using the same density estimate. Assuming 31.1%-51.1% of the population are juveniles, an additional 22-36 juveniles may be affected in the 1000-foot buffer area and NAP Area 1.

The partial loss of occupied habitat would reduce the amount of potential forage habitat for resident tortoise. Affected individuals would need to expand their home range away from the project boundary if suitable habitat is available to do so. Initially, local population densities would be elevated until the extent of new home range boundaries are established by the partially displaced individuals.

A similar number of tortoise would likely be affected due to partial loss of their home range for the reduced footprint alternative.

4.1.6 Dust

The Project plan also does not include the wholesale grading of the entire site; however, SunCatcher maintenance roads will be installed between every other row of SunCatchers. Construction activities and operational vehicle traffic on the roads within the Project could generate dust that would affect vegetation adjacent to the Project site in the short-term, although long-term adverse effects on vegetation are not expected to occur. In the short-term, dust may settle on leaves of plants affecting their ability to photosynthesize and uptake nutrient and water; however, any dust that settles is likely to be washed away during rainstorms. These roads will not be paved, but will be treated with polymeric stabilizers to control dust impacts. Dusted vegetation may be less suitable for tortoise as forage.

Polymeric stabilizers are a biodegradable material that can cause skin and eye irritation if exposed in liquid form. Application of polymeric stabilizers to the dirt roads should be made only after all tortoises are cleared from the project site.

4.1.7 Noise and Lighting

The existing noise conditions at the Project site vary with the distance from I-40 and the adjacent railroad. Current ambient noise levels near the Project site vary from the mid 40s to nearly 80 dBA L_{eq}. The main sources of noise currently found onsite are from vehicular traffic on I-40 and railroad activity. The highest level of current ambient noise is expected to center along these two sources, fading to the low range with increased distance from these sources. Construction activities will generate noise that will vary from 48 to 76 dBA L_{eq} that would extend into the 1000-foot buffer area for construction activities directly adjacent to the Project boundary. Project operation will generate noise of 63 to 74 dBA L_{eq}. The source of noise during Project operation will primarily be the SunCatchers themselves. The SunCatchers are spread evenly throughout the majority of the site aside from large portions in the northern end where the detention/infiltration basins will be located. The amount of noise generated by the Project is not a significant change from existing conditions nearest the freeway and railroad, but does represent an

increase of approximately 20 dBA L_{eq} farthest away from the two sources near northern boundary of the Project. Tortoise near the foothills of the Cady Mountains, north of the Project site, would experience an increase in sound levels, which may affect their behavior and use of the area to the north of the site, although studies indicate noise effects may be less than adverse (Bowles *et al*. 1999). No biologically significant effect was documented by Bowles et al. 1999.

The potential effects on tortoise from noise are considered less than significant because of the temporary nature (construction) of the highest intermittent noise events, and moderate to low increased levels of constant noise above ambient conditions during operation, some of which are within the noise levels currently found on-site due to the presence of the highway and railroad. The modeled 60 dBA Leq contour during project operations will be located 500 to 1800 feet from the project boundary and is dependent on the location relative to the railroad and highway. Studies have consistently failed to find significant non-auditory health effects in laboratory animals (rats, mice, chickens, pigeons, small birds, amphibians, and some reptiles) and humans for noise levels less than 70 dB (Bowles & Thompson 1996). Tortoise do not appear to utilize hearing as a significant means of avoiding predation due to their low locomotive abilities. Lovich & Daniels (2000) document sustained tortoise use of an established wind farm where ambient noise levels in the turbine field may exceed 90-118 dB (Rabin et al. 2006). Lovich & Daniels (2000) conclude "*The results challenge the paradigm that desert tortoises are negatively affected by all forms of anthropogenic disturbance and suggest that with proper planning, some forms of development in the desert are compatible with conservation of sensitive species.*"

Effects of lighting are expected to be minimal along the project perimeter. Lighting will be minimized to the extent practicable and limited to meeting safety/security requirements. Lighting will be focused in toward the Project site and downward to avoid lighting habitats beyond the Project perimeter fencing. If light levels were to substantially increase along the project perimeter, some of the smaller tortoise inhabiting the 1000-foot buffer area may be subjected to increased predation by nocturnal predators. The lighting associated with washing the SunCatchers will be mostly retained onsite due to the 100-200 foot setback from the perimeter fence and the relative location of the access roads in the array fields to the perimeter fence.

4.1.8 Vibration

Equipment that will cause surface disturbance and otherwise operate during construction will be limited to what would be needed to develop dirt roads that are generally at existing landform grades, equipment to install the SunCatcher pedestals and the actual SunCatchers, equipment to install cables, and equipment to construct the few buildings that are part of the Project plan. This equipment will cause limited vibration in the ground near them; however, the potential effects of such short-term (just a few minutes at a time) ground vibration are unlikely to be noticeable farther than a few tens of feet beyond the source of the vibration. The impact buffer for vibration is assumed to be less than 100 feet. The typical setback distance between the perimeter fence and nearest SunCatcher pedestal is 100 to 200 feet. Since activity during operations will be substantially less than during Project construction, no adverse effects from ground vibration on desert tortoise are expected to occur during Project operations. Also, because the Project site will be enclosed with exclusion fencing, little or no effects of ground vibration would affect existing offsite burrows beyond the Project boundary, especially into NAP Area 1 and the 1000-foot

buffer area. Operational SunCatchers do not produce a measurable vibration that would be expected to affect tortoise in burrows in adjacent offsite habitat greater than 100 feet from the nearest SunCatcher.

4.1.9 Introduction of Weeds

Introduction of weeds will be controlled via the wildlife agency approved weed management plan and will prevent the spread/colonization of weed onsite and off-site. The existing study area, including the Project area and surrounding lands is not currently infested with weed species, although several non-native plant species occur throughout the general area. Areas that are adjacent to the Project boundary, such as NAP Area 1, already support these non-native plant species. There is some potential that non-native plant species densities may increase within the Project boundary in areas of surface land disturbance and shading, namely Sahara mustard. In addition to planned ground disturbance, each SunCatcher unit will be periodically washed with approximately 14 gallons of water. Although the majority of the water is expected to evaporate, the introduction of a minimal amount of water under the SunCatchers may occur. This could potentially contribute to the establishment and spread of non-native species onsite and within the 1000-foot buffer area. Increased weed cover within occupied tortoise habitat may reduce the forage quality of the habitat and thereby reduce the long-term tortoise carrying capacity of occupied and potential habitat affected by weeds. All Project-related vehicles traveling in the recipient sites and control areas (Action Area) must follow the requirements of the Calico Weed Management Plan to minimize the potential for the introduction of substantial numbers of non-native species in the Action Area. All vehicles are required to go through vehicle wash stations before leaving the Project site, especially when heading to the recipient and control sites.

The weed management plan allows for the use of herbicides in the management of weeds. Use of herbicides will be avoided, but if necessary, only those herbicides approved by the USFWS and BLM that have been empirically proven low toxicity to test animals in the PUP process will be used. This would include post-emergent herbicide formulations such as Accord SP with the active ingredient glyphosate, and pre-emergent herbicide formulations such as Korvar I DF with the active ingredients bromacil and/or diuron (R. Chavez, BLM, pers. comm. 2010).

A weed management plan will be implemented to address potential issues stemming from planned ground disturbance and SunCatcher wash water. The goal of this plan would be to minimize potential effects from weeds within the Project boundary and adjacent lands, as well as to avoid adverse effects on desert tortoise forage habitat off-site. Given the preparation of a weed management plan to address effects of potential weed issues, it is unlikely that these issues would result in substantial increases in non-native species such that adjacent lands beyond the Project boundaries would be at substantial risk from weeds. With implementation of a weed management plan adverse effects on tortoise habitat from weeds within the Project boundary or in adjacent lands are expected to be minimized.

4.1.10 Attraction of Human Subsidized Predators

Substantial development within the desert often attracts ravens and coyotes at higher densities than in areas of undeveloped desert landscapes (Boarman *et al.,* 2006). Ravens may be attracted to the SunCatchers and perimeter fencing and transmission lines as perches, as well as to other facilities for the Project. Boarman *et al.* (2006) demonstrate that ravens are primarily attracted to areas with human

influence that provide supplemental nesting, food or water resources. There will not be increased sources of food or water for ravens at the SunCatchers. There is some potential for increased sources of food or water at the few buildings onsite where people will concentrate and water will be increased at the evaporation ponds; however, a wildlife agency approved raven management plan must be developed prior to the initiation of construction activities which will reduce potential raven related impacts to desert tortoise. The evaporation pond would be fenced and covered with a fine mesh material that is small enough to prevent wildlife and small birds from accessing the water in the pond, but will still allow evaporation of the water within the ponds.

Education regarding control of food/trash sources and minimization of water resources are the main focus of the plan. Ravens may also be attracted to potential detention basins (Figure 3); however, these features will only have water in them after rainstorms and are not intended to be inundated for long periods of time. Ravens may also be attracted to a waste water treatment pond that may or may not be included in the final Project design plans. If included, covering the pond to prevent raven use will be implemented. Operation and maintenance of the facility could allow for predator densities to increase because of the increased presence of limited resources (*e.g.*, freshwater, nest sites, food resources) that is currently absent from the site. These potential attractants would be eliminated by:

- Eliminating sources of water that is attractive to ravens, such as designing evaporation ponds/detention basins that only hold water for a maximum of a few days. The evaporation pond facility will be designed to exclude wildlife from the pond water.
- Designing structures to eliminate locations where ravens can build nests or installing measures to prevent nesting in structures.
- Limiting the creation of trash and keeping the site trash free.
- Using hazing to deter raven occupation of the site (with approval from the wildlife agencies only).
- Routine monitoring of the site for ravens to identify occupation and formulate adaptive strategies to deter further occupation; and education of workers to follow these measures.

The effect of attracting human subsidized predators could extend to the adjacent lands within the 1000-foot buffer area and beyond. This impact is potentially significant. A raven control plan has been created by the client and is under review by the wildlife agencies (CDFG, USFWS and BLM). The plan must be approved prior to the initiation of earth disturbing events. The plan describes methods for adaptive management to control potential adverse effects from ravens in the vicinity of the Proposed Project by implementing the above measures and on a regional basis by contributing funding to a regional raven management plan being implemented by the USFWS.

4.2 CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area. Based on consultation with the Planning Department of San Bernardino County and the Bureau of Indian Affairs, no known tribal, state, local government, or private projects are reasonably certain to occur in the future within the defined action area of the Calico Solar

Project (Figure 3). Non-federal activities that occur on federal land, specifically the maintenance of power transmission lines, are subject to federal ESA requirements and, therefore, would not contribute to cumulative effects. The Calico Solar Project is not expected to result in significant cumulative effects on desert tortoise.

SECTION 5 DETERMINATION OF EFFECT

The implementation of the Calico Solar Project may affect and is likely to adversely effect the desert tortoise. Effects would occur in the form of behavioral harassment, potential injury or mortality, and loss and degradation of occupied habitat. Implementation of the Translocation Plan and exclusion fencing is intended to minimize direct mortality of tortoise. Based on the amount of suitable habitat that would be directly impacted and population estimates based on desert tortoise 10m transect surveys conducted in the Project site, approximately 93 adult/subadult desert tortoise (95 percent confidence range of 47 to 185 individuals), 29-48 juveniles, and 6,215 acres of tortoise habitat may be directly affected by the proposed project. All tortoises captured during preconstruction clearance surveys and construction monitoring will be translocated offsite to minimize direct mortality of individuals. Approximately 24 adult/subadult tortoise and 14-23 juveniles that may have partial home ranges reduced by the Project within the 1,495-acre, 1000-foot buffer area would also be affected through loss of foraging and sheltering habitat and associated edge effects. About 24 adult/subadult tortoise and 8-13 juveniles may occur in the 960-acre NAP Area 1 and would be indirectly affected similar to tortoise in the 1000-foot buffer area. In order to implement the Translocation Plan, a similar number of tortoise would be directly affected by the proposed project (366 to 699 individuals) and may be handled for the purpose of monitoring recipient site populations and control area individuals for comparison with translocated individuals. We assume approximately 31.1-51.1% of the population may be juveniles.

Table 7

Summary of Potential Effects

Project Component	Estimated Adult/Subadult Tortoise	Estimated Juvenile Tortoise	Total
Project Site (Individuals to be translocated; 6,215 acres)	93 (max:185)	29-48	122 (max: 233)
1000-foot Buffer Area (1,495 acres) indirectly affected	45 (based on an assumed density of 16 per sq mi)	14-23	59-68
NAP Area 1 (960 acres) indirectly affected	24 (based on an assumed density of 16 per sq mi)	8-13	32-38
Recipient Site Resident Individuals	93 (max: 185)	29-48	122 (max: 233)
Control Area Individuals	93 (max: 185)	29-48	122 (max: 233)
Total Directly Affected	279-555	87-144	366-699
Total Directly and Indirectly Affected	348 (max: 624)	109 (max:180)	457 (max:804)

The reduced footprint alternative would reduce the amount of habitat directly affected by about 1,495 acres. This excluded area had 25 adult/subadult tortoise detected during the 2010 10m transect surveys and may support 45 adult individuals based on the number of tortoise found in the immediate vicinity of the Phase 1 area north of the railroad (16 adult/subadult tortoise per sq mile). Juvenile tortoise occupation is assumed to be 31.1-51.1% of the adult population estimate: 14-23 juvenile tortoise for a total estimate of 59-68 individuals occupying the 1,495 acre buffer area that would be indirectly affected by the Project. Approximately 32-38 tortoise that are estimated to occur within NAP Area 1 would also be indirectly affected..

The translocation of tortoises from the Project Site to the Ord-Rodman Desert Wildlife Management Area may adversely affect DCH through the introduction of additional animals into occupied DCH, through the potential introduction of diseased animals into DCH, and through increasing the population density in the critical habitat unit. Also, activities such as driving vehicles through critical habitat could impact vegetation, and thus degrade the Primary Constituent Elements of DCH. These potential adverse affects will be minimized through the implementation of the Desert Tortoise Translocation Plan. The Translocation Plan includes a disease testing program which will preclude, to the best of our ability, the translocation of disease-positive animals into DCH. Also, the Translocation Plan provides for maximum density limits which are designed to prevent the density from exceeding carrying capacity of the DCH. Most activities associated with the translocation would be conducted on existing roads, which do not support the primary constituent elements. A small amount of DCH adjacent to roads may be temporarily disturbed; we expect the size of this disturbance to be minimal and its effects on the function of critical habitat to not be measurable. All vehicular access will occur on authorized open routes of travel, where the primary constituent elements of DCH are absent. Only foot traffic will occur away from designated open routes of travel; we anticipate that the effects of foot traffic on the primary constituent elements of DCH would not be measurable. Therefore, we conclude that the implementation of the Plan will not adversely affect DCH.

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Southern California Edison Project Description for Calico Solar
275 MW Early Interconnection Facilities
Submitted by SCE on December 16, 2009

Background

The following project description is provided in relation to the early interconnection request made by Tessera Solar (TSNA) to Southern California Edison (SCE). As discussed below, TSNA requested SCE to review how much latent system capacity is available for use on SCE's existing system prior to completion of the system facilities proposed for interconnection of the 850MW for the Calico Solar Project.

Calico Solar Generation Interconnection Study Overview:

Tessera Solar applied to the California Independent System Operator (CAISO) for the interconnection of their 850MW Solar One Project to the CAISO Grid at the existing SCE Pisgah Substation 220kV Bus under the terms of SCE's Transmission Owner (TO) Tariff.

SCE prepared a System Impact Study (SIS) dated March 7, 2006, to analyze the impact of the 850MW Project to the SCE Transmission System.

In addition, SCE prepared a Technical Study (TAS I) to evaluate transient stability associated with the interconnection of the 850MW Calico Solar Project.

Subsequent to these two studies, a number of queued ahead generation projects withdrew from the CAISO Interconnection Queue resulting in a need to perform a reassessment of the impacts originally identified in the SIS and the TAS I.

SCE prepared a new Technical Assessment II (TAS II) dated June 13, 2008, to analyze the impact of the 850MW Project to the SCE Transmission System reflecting the withdrawal of previously-queued projects.

The Interconnection Facilities Study dated November 6, 2008, addressed the scope of work and the cost estimate for the construction of all the Interconnection Facilities and System Upgrades required for the interconnection of the 850MW Project.

During the preparation of the several reports discussed above, TSNA requested SCE to investigate the possibility of interconnection a portion of its 850MW generation to the existing Pisgah Substation and the related 220kV system before the completion of the 500kV upgrades.

In compliance with this request, SCE prepared an LGIP Optional Interconnection Study Report ("Optional Study") to analyze the maximum amount of generation that could be interconnected to the existing Pisgah 220kV Bus and related 220kV Transmission Lines and transmitted the results to CAISO in January 2008.

On January 9, 2008, the CAISO issued the Optional Study Report indicating that that Calico Solar Project could be allowed to interconnect up to 275MW generation to the existing Pisgah 220kV Bus and related 220kV Transmission System contingent on the installation of a new Special Protection Scheme to drop the Calico Solar Project's generation under certain contingencies.

The intent of the early interconnection of up to 275MW is that it would be a temporary interconnection until the 500kV upgrades identified in the Interconnection Facilities Study are in service, and the full requested generation output of 850MW could be connected to the upgraded transmission system. When completed, the 500 kV upgrades will allow the export of approximately 1,400 MW of additional generating capacity between the Lugo and Pisgah Substations. This will accommodate not only all of the power produced by Calico Solar but other proposed generating facilities.

A second Optional Study Agreement ("Interconnection Optional Study"), dated October 12, 2009, detailed the scope of work and cost estimate for the early interconnection of 275MW of the Calico Solar generation to the existing Pisgah Substation 220kV Bus and related 220kV Transmission Lines.

Please note, final engineering has not been performed for the 275MW early interconnection, and is pending the execution of a Large Generator Interconnection Agreement ("LGIA") for the proposed Calico Solar Project. Negotiations for the LGIA are nearing completion.

Therefore, SCE anticipates the 275 MW early interconnection project descriptions, which is based at this time on conceptual engineering, to be as follows:

Pisgah Substation Expansion

Engineering Plan, Description and Location: SCE is planning to do the following work at Pisgah Substation:

- Expand SCE's existing Pisgah 220kV Substation (northwest area of the substation to create a new area of approximately 270 feet by 100 feet) within SCE's existing 220kV right-of-way (ROW)
- Install a new double-breaker 220kV line position to terminate the new Calico Solar 220kV Gen Tie Line
- Install motorized disconnect switches on each of the existing SCE Lugo No.1 and No.2 220 kV line positions at the substation
- Install special protection scheme (SPS) relays inside the existing mechanical electrical equipment rooms (MEER)
- Install new remote terminal unit (RTU) inside the existing MEER
- Install miscellaneous Telecommunications equipment inside the existing MEER.

Construction Activities: The expansion of Pisgah Substation would require extending the graded substation pad to the west. It is estimated that the grading activities would disturb an area

approximately 300 feet by 125 feet (0.9 acre) to provide the proposed 270-foot by 100-foot internal expansion. Because the surface elevation of the new expansion area would be higher than the surface elevation of the surrounding desert floor, it is anticipated that approximately 10,000 cubic yards of new soil would be required to achieve the desired level.

After the area has been graded, new chain-link fencing would be installed and the portion of the old fencing would be removed.

Following the completion of the site improvements, below grade construction would begin with the expansion of the substation ground grid into the new area, followed by the excavation for conduits and for equipment and structure foundations. Above grade construction would include the erection of steel structures, the installation of the new 220 kV circuit breaker and ancillary electrical equipment, the installation of overhead connecting cables and of new control and monitoring devices within the control building.

Once the installation of the substation equipment has been completed, a four-inch thick layer of crushed rock would be placed on the surface of the expansion area. There would be no asphalt concrete paving as part of this project element.

Upon completion of these activities, extensive testing would be required to insure safe and reliable operation prior to the energization of the new position.

SCE 220kV Gen-Tie Configuration

Engineering Plan, Description and Location*:* SCE will build approximately 1-2 new 220kV structures within the existing 200kV ROW and/or within the expanded Pisgah Substation fence line to support the gen-tie line coming from the Calico Solar Project to facilitate the 220kV service drop from the last Calico Solar Project's gen-tie structure into the Pisgah Substation. At this time, the actual structure types, configurations and locations have not yet been determined or engineered and will be subject to further engineering and coordination with TSNA.

Construction Activities: The establishment of a marshalling yard will not be necessary for the construction of the transmission structures and the stringing of the conductor to complete the gen-tie circuit from Calico Solar into Pisgah Substation. Although, a temporary equipment and material staging area would be established for short-term utilization within the existing SCE ROW near the new transmission structure locations and/or at Pisgah Substation.

Equipment and materials to be stored at the temporary equipment and material staging area may include:

- Construction trailer
- Construction equipment
- Conductor / wire reels
- Transmission structure components
- Overhead ground wire/Optical ground wire cable

- Hardware
- Insulators
- Consumables, such as fuel and joint compound
- Portable sanitation facilities
- Waste materials for salvaging, recycling, and/or disposal

The size of the temporary equipment and material staging area would be dependent upon a detailed site inspection and would take into account, where practical, suggestions by the SCE Crew Foreman or the SCE Contractor selected to do the work; an area of approximately 0.5 to 1.5 acres may be required. Land disturbed at the temporary equipment and material staging area, if any, would be restored to preconstruction conditions following the completion of construction.

This portion of the project involves construction within an existing SCE ROW. It is assumed that existing public roads as well as existing transmission line roads would be used during construction. Transmission line roads are classified into two groups: access roads and spur roads; access roads are through roads that run between tower sites along a ROW and serve as the main transportation route along line ROWs; spur roads are roads that lead from access roads and terminate at one or more structure sites. However, it is also assumed that rehabilitation work may be necessary in some locations for existing transmission line roads to accommodate construction activities. This work may include the re-grading and repair of existing access and spur roads. These roads would be cleared of vegetation, blade-graded to remove potholes, ruts, and other surface irregularities, and re-compacted to provide a smooth and dense riding surface capable of supporting heavy construction equipment. The graded road would have a minimum drivable width of 14 feet (preferably with 2 feet of shoulder on each side).

The construction of this project may require new spur roads to access the new transmission line structure locations. Similar to rehabilitation of existing roads, all new spur road alignments would first be cleared and grubbed of vegetation. Roads would be blade-graded to remove potholes, ruts, and other surface irregularities, and re-compacted to provide a smooth and dense riding surface capable of supporting heavy construction equipment. The graded road would have a minimum drivable width of 14 feet (preferably with 2 feet of shoulder on each side) but may be wider depending on final engineering requirements and field conditions. Access and spur road gradients would be leveled so that any sustained grade does not exceed 12 percent. All curves would have a radius of curvature of not less than 50 feet, measured at the center line of the usable road surface. Spur roads would usually have turnaround areas near the structure locations.

The new structure locations would first be graded and/or cleared of vegetation as required to provide a reasonably level and vegetation-free surface for footing and structure construction. Site preparation for the temporary laydown area required for the assembly of the structure would first be cleared of vegetation and graded as required to provide a reasonably level and vegetation-free surface for footing and structure construction. The area needed for the laydown and the assembly of the structure is approximately 200 feet by 200 feet (0.92 acre). Erection of the structure will require an erection crane to be set up adjacent to and 60 feet from the centerline of the structure. The crane pad would be located within the laydown area used for structure assembly. If the existing terrain is not suitable to support crane activities, a temporary 50 feet by 50 feet (0.06 acre) crane pad will be constructed.

The structure would require drilled, poured-in-place, concrete footings that would form the structure foundation. Actual footing diameters and depths for each of the structure foundations would depend on the soil conditions and topography at the site and would be determined during final engineering.

The foundation process starts with the drilling of the hole for the structure. The hole would be drilled using truck or track-mounted excavators with various diameter augers to match the diameter requirements of the structure. The excavated material will be distributed at the structure site or used in the rehabilitation of existing access roads. Alternatively, the excavated soil may be disposed of at an off-site disposal facility in accordance with all applicable laws.

Following excavation of the foundation footing for each structure, steel reinforced rebar cage(s) would be set, survey positioning of the anchor bolts and/or stub angles would be verified, and concrete would then be placed. The steel reinforced rebar cage(s) would be assembled off site and delivered to the structure location by flatbed truck. A typical transmission structure would require approximately 15 to 80 cubic yards of concrete delivered to the structure location depending upon the type of structure being constructed, soil conditions, and topography at each site. The transmission structure footings will project approximately 1-3 feet above the ground level.

Foundations in soft or loose soil and that extend below the groundwater level may be stabilized with drilling mud slurry. Mud slurry will be placed in the hole after drilling to prevent the sidewalls from sloughing. The concrete for the foundation is then pumped to the bottom of the hole, displacing the mud slurry. The mud slurry brought to the surface is typically collected in a pit adjacent to the foundation, and then pumped out of the pit to be reused or discarded at an off-site disposal facility in accordance with all applicable laws.

Concrete samples would be drawn at time of pour and tested to ensure engineered strengths were achieved. A normally specified SCE concrete mix typically takes approximately 28 days to cure to an engineered strength. This strength is verified by controlled testing of sampled concrete. Once this strength has been achieved, crews would be permitted to begin the erection of the structure.

During construction, existing concrete supply facilities would be used where feasible. If concrete supply facilities do not exist in certain areas, a temporary concrete batch plant would be set up. If necessary, approximately 2 acres of property would be sub-partitioned from a marshalling area for a temporary concrete batch plant. Equipment would include a central mixer unit (drum type); three silos for injecting concrete additives, fly ash, and cement; a water tank; portable pumps; a pneumatic injector; and a loader for handling concrete additives not in the silos. Dust emissions would be controlled by watering the area and by sealing the silos and transferring the fine particulates pneumatically between the silos and the mixers.

The assembly would consist of hauling the structure components from the staging yard to their designated laydown site using semi-trucks with 40-foot trailers. Crews would then assemble portions of each structure on the ground at the structure location, while on the ground, the top section may be pre-configured with the necessary insulators and wire-stringing hardware before being set in place. An 80-ton all-terrain or rough terrain crane would be used to position the base section on top of

previously prepared foundation. When the base section is secured, the remaining portions of the structure would then be placed upon the base section and bolted together.

After construction is completed, the transmission structure site would be graded such that water would run toward the direction of the natural drainage. In addition, drainage would be designed to prevent ponding and erosive water flows that could cause damage to the structure footing. The graded area would be compacted and would be capable of supporting heavy vehicular traffic.

Wire-stringing includes all activities associated with the installation of conductors. This activity includes the installation of primary conductor and OPGW or ground wire, vibration dampeners, weights, spacers, and suspension and dead-end hardware assemblies. Insulators and stringing sheaves (rollers or travelers) are typically attached during the steel erection process.

A standard wire-stringing plan includes a sequenced program of events starting with determination of wire pulls and wire pull equipment set-up positions. Advanced planning by supervision determines circuit outages, pulling times, and safety protocols needed for ensuring that safe and quick installation of wire is accomplished.

Wire-stringing activities would be conducted in accordance with SCE specifications, which is similar to process methods detailed in Institute of Electrical and Electronics Engineers Standard 524-2003, Guide to the Installation of Overhead Transmission Line Conductors.

Wire pulls are the length of any given continuous wire installation process between two selected points along the line. Wire pulls are selected, where possible, based on availability of dead-end structures at the ends of each pull, geometry of the line as affected by points of inflection, terrain, and suitability of stringing and splicing equipment setups. In some cases, it may be preferable to select an equipment setup position between two suspension structures. Anchor rods would then be installed to provide dead-ending capability for wire sagging purposes, and also to provide a convenient splicing area.

To ensure the safety of workers and the public, safety devices such as traveling grounds, guard structures, and radio-equipped public safety roving vehicles and linemen would be in place prior to the initiation of wire-stringing activities.

The following four steps describe the wire installation activities proposed by SCE:

- Step 1: Sock Line, Threading: Typically, a lightweight sock line is passed from structure to structure, which would be threaded through the wire rollers in order to engage a camlock device that would secure the pulling sock in the roller. This threading process would continue between all structures through the rollers of a particular set of spans selected for a conductor pull.

- Step 2: Pulling: The sock line would be used to pull in the conductor pulling cable. The conductor pulling cable would be attached to the conductor using a special swivel joint to prevent damage to the wire and to allow the wire to rotate freely to prevent complications from twisting as the conductor unwinds off the reel. A piece of hardware known as a running

board would be installed to properly feed the conductor into the roller; this device keeps the bundle conductor from wrapping during installation.

- Step 3: Splicing, Sagging, and Dead-ending: After the conductor is pulled in, the conductor would be sagged to proper tension and dead-ended to structures.

- Step 4: Clipping-in, Spacers: After the conductor is dead-ended, the conductors would be secured to all tangent structures; a process called clipping in. Once this is complete, spacers would be attached between the bundled conductors of each phase to keep uniform separation between each conductor.

The dimensions of the area needed for the stringing setups associated with wire installation are variable and depends upon terrain. The preferred minimum area needed for tensioning equipment set-up sites requires approximately an area of 150 feet by 500 feet (1.72 acres); the preferred minimum area needed for pulling equipment set-up sites requires approximately an area of 150 feet by 300 feet (1.03 acres); however, crews can work from within slightly smaller areas when space is limited. Each stringing operation would include one puller positioned at one end and one tensioner and wire reel stand truck positioned at the other end.

For stringing equipment that cannot be positioned at either side of a dead-end transmission structure, field snubs (i.e., anchoring and dead-end hardware) would be temporarily installed to sag conductor wire to the correct tension.

The puller and tensioner set-up locations require level areas to allow for maneuvering of the equipment. When possible, these locations would be located on existing level areas and existing roads to minimize the need for grading and cleanup.

The puller and tensioner set-up locations associated with the transmission structures would be temporary and the land would be restored to its previous condition following completion of conductor stringing activities. The final number and locations of the puller and tensioner sites will be determined during final engineering for the Proposed Project and the construction methods chosen by SCE or its Contractor.

An overhead ground wire (OHGW) for shielding or an optical ground wire (OPGW) for shielding and communication purposes would be installed on the transmission line. Final engineering will determine which configuration is installed. The OHGW/OPGW would be installed in the same manner as the conductor; it is typically installed in conjunction with the conductor, depending upon various factors, including line direction, inclination, and accessibility. Following installation of the OPGW, the strands in each segment are spliced together to form a continuous length from one end of a transmission line to the other. On the last structure at each end of a transmission line, the overhead fiber is spliced to another section of fiber cable that runs in underground conduit from the splice box into the communication room inside the adjacent substation.

Telecommunications Facilities Installation

Two telecommunication paths are required for the Calico Solar early interconnection of 275 MW. The two separate paths are needed due to 220kV line protection and SPS requirements. The two separate telecommunications paths are:

- Constructing a new fiber optic communication line on existing poles between SCE's Pisgah and Gale substations (Pisgah-Gale Fiber Optic Cable).

- Replacing existing Overhead Ground Wires with new Optical Ground Wire on a 65-mile segment of SCE's Eldorado-Lugo 500 kV line between SCE's Lugo and Pisgah substations (OPGW Installation on Eldorado – Lugo 500kV T/L)

Note, with respect to the OPGW installation mentioned above, SCE anticipates installing a repeater station shelter, the likely size of which could be 15 feet x 20 feet, within the Eldorado-Lugo 500kV T/L ROW. This repeater station shelter will likely require a distribution power connection that could involve the installation of several wood distribution poles. The repeater station and distribution poles will involve minimal permanent ground disturbance in addition to temporary ground disturbance during construction. However, because final engineering has not yet been completed, the exact location for facilities has not been determined.

In addition, two separate telecommunications paths will be required from the Calico Solar Substation to SCE's Pisgah Substation. The paths are as follows:

- Calico Solar will install OPGW on its 220 kV Gen-tie line between Calico Solar Substation and SCE's Pisgah Substation

- SCE will install fiber optic cable between Calico Solar Substation and SCE's Pisgah Substation on a combination of existing distribution and new communication poles and/or within new underground conduits

Additional information regarding the major communications paths (Pisgah-Gale Fiber Optic Cable and OPGW Installation on Eldorado – Lugo 500kV T/L), which is based on preliminary engineering, follows below. Please note, however, with respect to the communication paths required between Calico Solar Substation and Pisgah Substation, detailed project information is not available at this time. Further, as previously noted, the OPGW path between Calico Solar and Pisgah will be constructed by TSNA and not SCE.

Pisgah-Gale Fiber Optic Cable

Engineering Plan, Structures and Route: The Pisgah-Gale Fiber Optic Cable will consist of one All-Dielectric Self-Supporting (ADSS) 48 strand single mode fiber optic cable between SCE's Pisgah and Gale substations to provide for telecommunication interconnection between Pisgah Substation and Gale Substation, including protective relay circuits, Supervisory Control and Data Acquisition (SCADA) circuits, data, and telecommunication services.

Approximately 151,141 feet of new fiber optic cable will be installed between the MEER at Pisgah and Gale substations. Portions of the fiber optic cable will be constructed on existing overhead

transmission, distribution and communication wood pole structures. In addition portions of the cable will be constructed within newly constructed underground conduit system(s). On average, all existing overhead structures are approximately between 40 feet and 55 feet tall. Any new structures will likely be the same height, but this will be dependent on wind-loading analysis and further engineering.

The proposed Pisgah-Gale Fiber Optic Cable route is as follows: From the existing Gale Substation, proceed east from the MEER building approximately 200 feet installing underground cable in existing underground cable trench, continue east approximately 150 feet installing underground cable in existing underground conduit to existing riser pole located on SCE ROW, go up riser continue south on SCE ROW approximately 210 feet installing overhead cable on existing overhead distribution poles continue east on National Trails Highway installing approximately 16,588 feet installing overhead cable on existing overhead distribution poles, continue south approximately 90 feet installing overhead cable on existing overhead distribution poles, continue east on National Trails Highway approximately 34,678 feet installing overhead cable on existing distribution poles, continue north approximately 110 feet installing overhead cable on existing distribution poles, continue east on National Trails Highway/Pioneer Road approximately 10,935 feet installing overhead cable on existing distribution poles, continue south on Newberry Road approximately 1,800 feet installing overhead cable on existing overhead distribution poles, continue east on National Trails Highway approximately 83,200 feet installing overhead cable on existing overhead distribution poles, continue north crossing the Interstate Highway 40 and on the SCE ROW approximately 2,580 feet installing overhead cable on existing overhead distribution poles to pole # 429143S, install new riser on pole #429143S and drop down through the riser to underground and continue north east trenching approximately 600 feet installing underground cable in new underground conduit into the MEER in Pisgah Substation.

***Construction Activities*:** As noted earlier, the Pisgah-Gale Fiber Optic Cable will be a newly constructed fiber optic cable line, approximately 151,141 feet in length, on existing overhead SCE distribution wood pole structures between and into SCE's Pisgah and Gale substation MEERs. In addition, as noted earlier, portions of the cable will be constructed on newly constructed underground conduit system(s).

For the attachments (pole framing) to existing and overhead wood pole structures the fiber optic cable will utilize a five foot wood cable arm and Fiberlign high-strength engineered dielectric suspension support block. This suspension support block is oriented vertically and attached to the cable arm. One per overhead structure would be required.

For the installation in the new underground conduit and underground structures entering Pisgah Substation, the fiber optic cable will utilize a high density polyethylene smoothwall innerduct which provides protection and identification for the cable. The fiber optic cable will be installed in and throughout the length of the new underground conduit structure.

The construction of the fiber optic cable will utilize existing franchise (public ROW) locations, and existing access and spur roads. Access roads are through roads that run between and along overhead wood pole structures form the main transport route along the major extent of the fiber optic cable. Spur roads are roads that lead from the access road and dead-end into one or more overhead

structure sites. The existing and new overhead structures that do not have vehicle access will be walked-in to each location by SCE crews.

Fiber optic cable stringing includes all activities associated with the installation of cables onto the overhead wood pole structures. This activity includes the installation of vibration dampeners, and suspension and dead-end hardware assemblies. Stringing sheaves (rollers or travelers) are attached during the framing process. A standard wire stringing plan includes a sequenced program of events starting with determination of cable pulls and cable pulling equipment set-up positions. At this time, exact locations of the pulling locations are not yet engineered.

Typically, fiber optic cable pulls occur every 6,000 feet to 10,000 feet on flat and mountainous terrain. Fiber optic cable splices are required at the end and beginning of each cable pull. "Fiber optic cable pulls" are the length of any given continuous cable installation process between two selected points along the overhead or underground structure line. Fiber optic cable pulls are selected, where possible, based on availability of pulling equipment and designated dead-end structures at the ends of each pull, geometry of the line as affected by points of inflection, terrain, and suitability of fiber optic cable stringing and splicing equipment set ups. The dimensions of the area needed for stringing set ups varies depending upon the terrain, however a typical stringing set up is 40 feet by 60 feet. Where necessary due to suitable space limitations, crews can work from within a substantially smaller area.

The crews will utilize Pisgah and Gale substations as a laydown area for all material for the proposed fiber optic cable which would be delivered by truck. Material would be placed inside the perimeter of the fenced substation in a designated area during construction. The majority of the truck traffic would use major streets and would be scheduled for off-peak traffic hours. All construction debris would be placed in appropriate onsite containers and periodically disposed of in accordance with all applicable local jurisdiction regulations.

The primary marshalling yard for the Pisgah-Gale Fiber Optic Cable project element would be established inside Gale Substation, or, if room is not available, a suitable existing manned SCE facility outside the substation would be located. Materials and equipment to be staged to this yard include but are not limited to: fiber optic cable reels and hardware, heavy equipment, light trucks, and portable sanitation facilities. In addition to the materials and equipment already detailed for new construction, the following may be routed through this yard: empty fiber optic cable and innerduct reels, and other debris associated with the installation of the fiber optic cable process.

OPGW Installation on Eldorado – Lugo 500kV T/L

Engineering Plan, Structures and Route: Approximately 60 miles of the existing SCE Eldorado-Lugo 500kV T/L between Lugo and Pisgah substations will need to have one of the two existing half-inch steel overhead ground wires (OHGW) replaced with OPGW in order to accommodate the early 275 MW interconnection of Calico Solar. The replacement of the OHGW with OPGW on the existing 500kV steel lattice towers (LST) will require some modifications on the existing LSTs. The loading capacity of modified tower structures with the new OPGW needs to conform to the California Public Utilities Commission (CPUC) General Order (GO) 95 loading criteria.

Currently, SCE anticipates approximately 70 single-circuit LSTs would need to be modified, and that various types of tower modifications will be needed for the various different types of LSTs. However, as noted earlier, SCE has not yet commenced detailed engineering on the OPGW installation. Below are assumptions SCE is providing based on the likely potential modifications and typical practices. Please note, the strengthening of the LSTs for the new OPGW could require any combinations of modifications, and that each modification will consist of different steel member bundles or configurations.

The modifications of the existing 500kV LSTs may include the static peaks, tower body reinforcement, body extension, installation of horizontal diaphragms, and tower leg reinforcement. Detailed drawings and procedures for each of the tower modifications are to be developed for fabrication and installation. The modifications to be performed on each tower are identified by bundles. Each bundle will contain those components necessary to complete the required modifications, such as new steel angles to form back to back angles to the existing leg diagonals, redundant braces to the longitudinal and transverse faces, oblique braces between leg diagonals, and a new horizontal diaphragm. New redundant members will also be designed and installed at the ground peaks to support the OPGW clip-in hardware. The loading capacity of the upgraded tower structures will be able to support the loads for the new OPGW installation and meets the requirements of CPUC GO 95.

Tower modifications and installation of a new OPGW line requires access to each existing tower site for construction crews, materials, and equipment. Based on an initial review, it appears that all of the existing tower sites have existing access and spur roads these roads would be used for construction. As such, SCE does not anticipate requiring new roads to perform the work. Where needed, the existing access roads would be improved as required. After project construction, these roads would continue to be used by maintenance crews and repair vehicles for access to each tower for inspection and maintenance activities. At the end of project construction, these roads would be left in a condition equal to or better than the condition that existed prior to the start of construction. Loose rock and slide material would be removed from existing roads and used to construct dikes, fill washouts, or flatten fill slopes; all washouts, ruts, and irregularities would be filled or obliterated.

Construction Activities: All construction work for the 500kV LST modifications to accommodate the new OPGW will be performed within the existing transmission line ROW.

It is assumed that existing public roads as well as existing transmission line roads would be used during construction. Transmission line roads are classified into two groups: access roads and spur roads; access roads are through roads that run between tower sites along a ROW and serve as the main transportation route along line ROWs; spur roads are roads that lead from access roads and terminate at one or more structure sites. However, it is also assumed that rehabilitation work may be necessary in some locations for existing transmission line roads to accommodate construction activities. This work may include:

Re-grading and repair of existing access and spur roads. These roads would be cleared of vegetation, blade-graded to remove potholes, ruts, and other surface irregularities, and re-compacted to provide a smooth and dense riding surface capable of supporting heavy construction equipment. The graded

road would have a minimum drivable width of 14 feet (preferably with 2 feet of shoulder on each side).

Drainage structures such as wet crossings, water bars, overside drains and pipe culverts would be installed to allow for construction traffic usage, as well as prevent road damage due to uncontrolled water flow.

Slides, washouts, and other slope failures would be repaired and stabilized by installing retaining walls or other means necessary to prevent future failures. The type of structure to be used would be based on specific site conditions.

The tower modifications begin with hauling and stacking bundles of steel at tower locations per engineering drawing requirements. This activity requires use of several tractors with 40-foot trailers and a rough terrain forklift. After steel is delivered and stacked, crews would proceed with the structure modification to leg extensions, body panels, boxed sections, bridges, and peaks, as necessary. The various steel components used to reinforce the towers would be lifted into place with a minimum 80-ton all-terrain or rough terrain crane and the tower modification work would be performed by a combined erection and torquing crew.

The OPGW is typically installed in continuous segments of 19,000 feet or less depending upon various factors including line direction, inclination, and accessibility. Following installation of the OPGW, the strands in each segment are spliced together to form a continuous length from one end of a transmission line to the other.

To ensure the safety of workers and the public, safety devices such as traveling grounds, guard structures, and radio-equipped public safety roving vehicles and linemen would be in place prior to the initiation of OPGW stringing activities.

The following three steps describe the OPGW installation activities proposed by SCE:

- Step 1: Pulling: To minimize ground disturbance and insure controlled conditions during the OPGW installation activities, the existing static ground wire would be used to pull in the new OPGW. The existing static ground wire would be attached to the OPGW using a special swivel joint to prevent damage to the OPGW and to allow it to rotate freely to prevent complications from twisting as it unwinds off the reel. The existing static ground wire is wound onto “breakaway” reels as it is removed. The existing static ground would be transported to a marshalling yard where it would be prepared for recycling.

- Step 2: Sagging, and Dead-ending: After the OPGW is pulled in; it would be sagged to proper tension and dead-ended to structures.

- Step 3: Clipping-in: After the OPGW is dead-ended, it would be secured to all tangent structures; a process called clipping in.

The dimensions of the area needed for the OPGW stringing setups associated with installation are variable and depends upon the terrain, however a typical stringing set up is 75 feet by 100 feet, however, and crews can work from within slightly smaller areas when space is limited.

Each OPGW segment stringing operation would include one puller positioned at one end and one tensioner and wire reel stand truck positioned at the other end. The puller and tensioner set-up locations require level areas to allow for maneuvering of the equipment. When possible, these locations would be located on existing level areas and existing roads to minimize the need for grading and cleanup.

The puller and tensioner set-up locations would be temporary and the land would be restored to its previous condition following completion of pulling activities. The final number and locations of the puller and tensioner sites will be determined during final engineering.

At the towers where the segments terminate, the OPGW cables are routed down a tower leg where the segments are spliced together. For splicing OPGW cables, special splicing lab vehicles would be used to travel to the various splicing locations. The area required for each splicing crew would be 30 feet by 40 feet. The crew would bring the OPGW cable ends into the special splicing lab vehicles and splice together the two ends. The splices are then transferred to and housed in a splice box (a 3'x3'x1' metal enclosure) that is mounted to one of the tower legs some distance above the ground. On the last tower at each end of a transmission line, the overhead fiber is spliced to another section of fiber cable that runs in underground conduit from the splice box into the communication room inside the adjacent substation.

The modifications of the existing 500kV LSTs, removal of existing OHGW, and installation of the OPGW will require the establishment of approximately 3 to 5 temporary marshalling yards located at strategic points along the route.

Each yard would be used as a reporting location for workers and may have offices for supervisory and clerical personnel; the yards will also be used for the storage and staging of materials, the parking of private vehicles, and the parking of construction vehicles and equipment. Each yard would be approximately 2.5 to 5.0 acres in size, depending on land availability and intended use. Preparation of the marshalling yards may include the application of road base, depending on existing ground conditions at the yard site, and the installation of perimeter fencing.

Crews would load materials onto work trucks and drive to the line position being worked on that specific day. At the end of the day, they would return to the yard in their work vehicles and depart in their private vehicles. Materials stored at the marshalling yards would include:

- Construction trailers
- Construction equipment
- Steel
- Wire reels
- Wood poles
- OPGW cable
- Hardware

- Signage
- Consumables, such as fuel and joint compound
- Storm Water Pollution Prevention Plan (SWPPP) materials; such as straw wattles, gravel, and silt fences
- Portable sanitation facilities
- Waste materials for salvaging, recycling, and/or disposal

In addition to the primary marshalling yards, approximately 4 to 8 temporary secondary material staging yards would be established for short-term utilization near construction sites. Where possible, the secondary staging yards would be sited in areas of previous disturbance along and/or adjacent to the transmission line ROW. Typically, an area approximately 1 to 3 acres would be required. Preparation of the secondary staging yards may include installation of perimeter fencing and the application of road base, depending on existing ground conditions at the yard site. Land disturbed at the temporary material staging areas, if any, would be restored to preconstruction conditions or to the landowner's requirements following the completion of construction.

The location, size, and total number of the temporary marshalling yards and temporary secondary material staging yards are not know at this time. The selection of the location and size of these yards will be dependent upon a detailed ROW inspection and will take into account, where practical, suggestions by SCE Crew Foreman or the SCE Contractor selected to do the work, and the availability of appropriately zoned property.

Environmental Analysis - Summary of description, impact, and mitigation

SCE assumes the CEC and BLM will provide direction with respect to performing an environmental analysis for the project elements described in the previous sections based on assumed impacts associated with the construction of the Calico Solar 275 MW early interconnection.

Photograph #1

March 11, 2008.

View from the hillside of the northeast corner of assessment area looking into the distance toward Interstate-40 and the Burlington Northern Santa Fe Railroad (BNSF). Note the uniformity of Mojave creosote bush scrub habitat on the lower elevations of the site.

Photograph #2

March 26, 2008.

View of the overall assessment area from Interstate-40 looking in a northerly direction. Note the interspersion of desert pavement and volcanic rock among Mojave creosote bush scrub.

Photograph #3

March 24, 2007.

Desert pavement is scattered throughout the project site. Desert pavement is the arrangement of stones left behind as infrequent rain showers slowly wash away the supporting soil, leaving behind a layer of rocks.

Photograph #4

March 28, 2008.

View of mountains to the north from the area that was designated by the Bureau of Land Management as an Area of Critical Environmental Concern (ACEC). Portions of ACEC were surveyed along with the project assessment area.

Photograph #5

March 25, 2008.

Representative photo of desert dandelion (*Malacothrix glabrata*) found blooming in large swaths throughout Mojave creosote bush scrub found on-site.

Photograph #6

March 21, 2008.

The BNSF railroad runs through the site in an east-west direction parallel to Interstate-40. Interstate-40 runs along the southern boundary of the project site.

Photograph #7

March 27, 2008.

View of the southeast corner of assessment area looking northwest. Note the prevalence and uniform distribution of creosote bush throughout the habitat; creosote bush is a dominant species in Mojave creosote bush scrub habitat.

Photograph #8

June 3, 2008.

Westward view from the foothills in the northwest corner of the assessment area. The topography of the project site is dominated by broad, flat valleys, but also includes portions of very steep terrain as pictured here.

Photograph #9

June 3, 2008.

Sandy, almost dune-like Mojave creosote bush scrub habitat. This type of habitat was found in isolated patches of the Assessment and ACEC areas and supports Mojave fringe-toed lizard.

Photograph #10

April 3, 2008.

Partial glimpse of a desert tortoise (*Gopherus agassizii*) inside its typical half-moon shaped burrow. The light source seen in picture is provided by mirrors used by biologists to shine light inside burrows to determine presence of desert tortoise.

Photograph #11

April 3, 2008.

Desert tortoise found walking through an area of desert pavement. Note the abundance of native herbaceous plants surrounding the tortoise. Herbaceous plants are the tortoise's primary source of food.

Photograph #12

April 15, 2008.

Sand dunes in the ACEC forming along the southern face of a hill surrounded by Mojave creosote bush scrub. Windblown sand dunes with low-growing vegetation are the primary habitat type preferred by the Mojave fringe-toed lizard (*Uma scoparia*).

Photograph #13

March 31, 2008.

Desert tortoise found just as it was exiting its burrow. Presence of dirt on the shell could be indicative of fresh excavation activity.

Photograph #14

May 10, 2008.

Two desert tortoises found together. Note the long gular horn visible on the tortoise to the left; the pronounced length of the horn indicates that the tortoise is male. Also note the variation in shell color.

Photograph #15

March 20, 2008.

Desert tortoise plastron. The disarticulating scutes and carapace, and bleached (white) appearance of the shell are indicative of prolonged exposure to the elements.

Calico Site - Entire Site

Table 4. USFWS Desert Tortoise Pre-Project Survey Guidance

What is the estiamted number of tortoises in the project area?

N =	**93**
Lower 95% Confidence limit for N =	**47**
Upper 95% Confidence limit for N =	**185**
Total project area (acres) =	**6215**
Pa (from Table 2) =	**0.80**
Number of 10-km long transects walked (K) =	**258**
Number of tortoises found during surveys (n) =	**48**
Estimated total number of tortoises found during surveys (N) =	**93**
Estimated density per sqr km (D) =	**3.69**

Number of tortoises (n_i)	Number of transects on which (n_i) tortoises were seen
0	221
1	31
2	3
3	1
4	2
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

var(n) =	75.36
var(D) =	1.78
var(Pa) (from Table 2) =	0.05
Pd (from Table 3) =	0.63
var(Pd) (from Table 3) =	0.008
C for N	1.99

Calico Solar - Phase One Areas

Table 4. USFWS Desert Tortoise Pre-Project Survey Guidance
What is the estiamted number of tortoises in the project area?

N =	**27**
Lower 95% Confidence limit for N =	**10**
Upper 95% Confidence limit for N =	**75**
Total project area (acres) =	**2327**
Pa (from Table 2) =	**0.8**
Number of 10-km long transects walked (K) =	96
Number of tortoises found during surveys (n) =	**14**
Estimated total number of tortoises found during surv	**27.2**
Estimated density per sqr km (D) =	**2.9**

Number of tortoises (n_i)	Number of transects on which (n_i) tortoises were seen
0	85
1	9
2	2
3	3
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

var(n) =	40
var(D) =	3
var(Pa) (from Table 2) =	0
Pd (from Table 3) =	1
var(Pd) (from Table 3) =	0
C for N	3

Calico Solar - Phase Two Areas

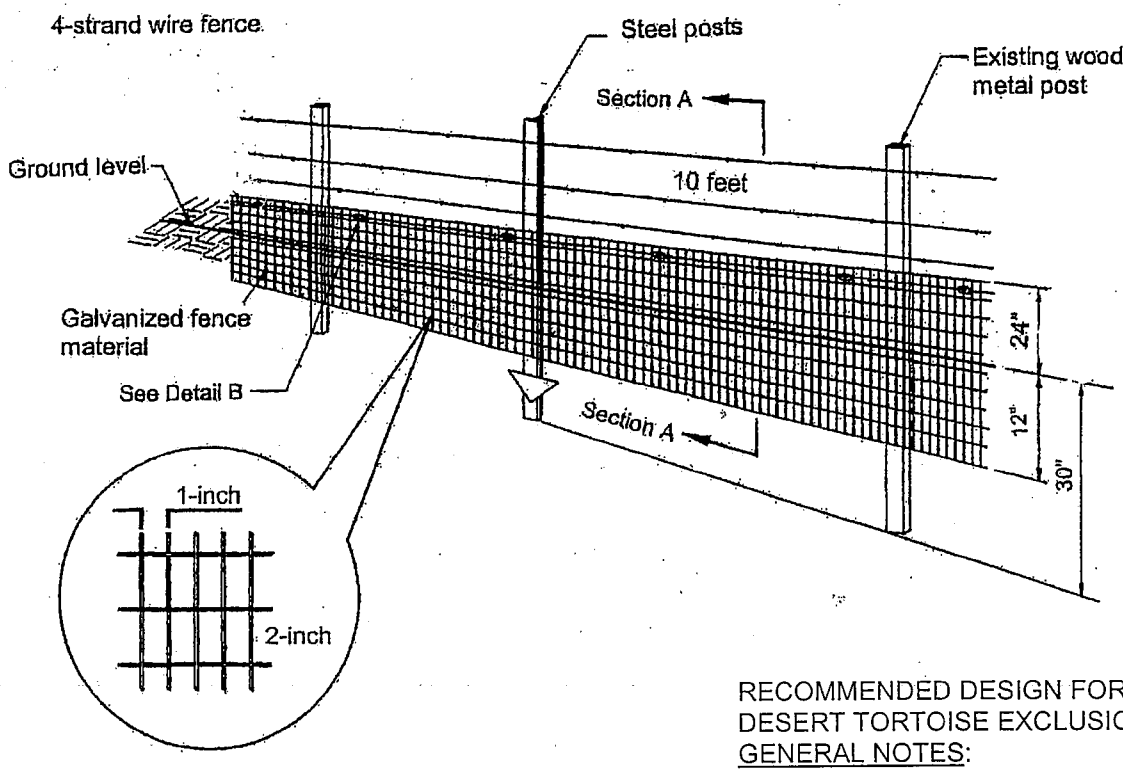
Table 4. USFWS Desert Tortoise Pre-Project Survey Guidance
What is the estiamted number of tortoises in the project area?

N =	**71**
Lower 95% Confidence limit for N =	**35**
Upper 95% Confidence limit for N =	**144**
Total project area (acres) =	**3886**
Pa (from Table 2) =	**0.8**
Number of 10-km long transects walked (K) =	162
Number of tortoises found during surveys (n)	**37**
Estimated total number of tortoises found du	**71.3**
Estimated density per sqr km (D) =	**4.5**

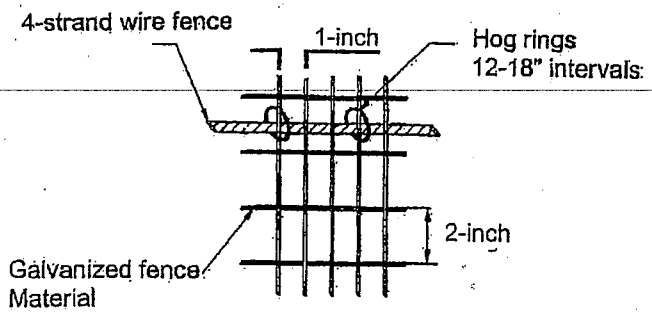
Number of tortoises (n_i)	Number of transects on which (n_i) tortoises were seen
0	136
1	22
2	2
3	0
4	2
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

var(n) =	55
var(D) =	3
var(Pa) (from Table 2) =	0
Pd (from Table 3) =	1
var(Pd) (from Table 3) =	0
C for N	2

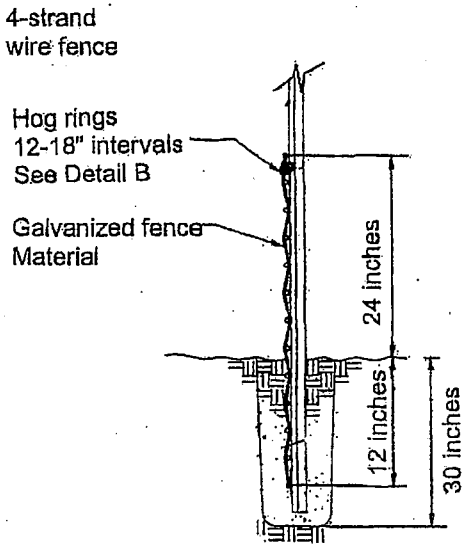
DESERT TORTOISE EXCLUSION FENCE (2005)



DETAIL A



DETAIL B



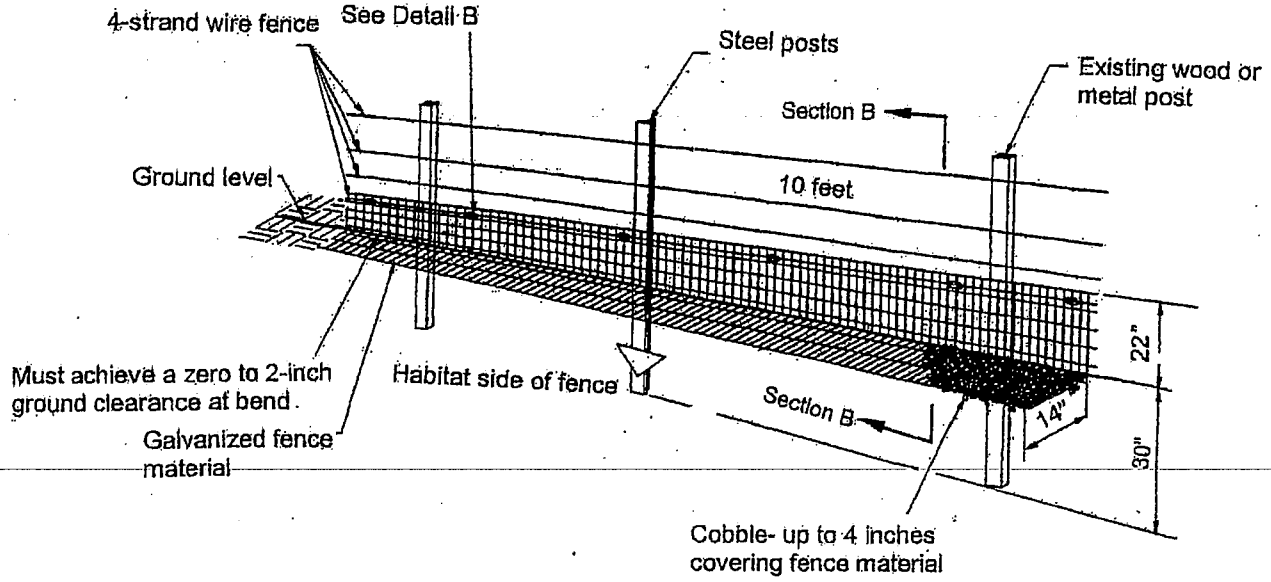
SECTION A

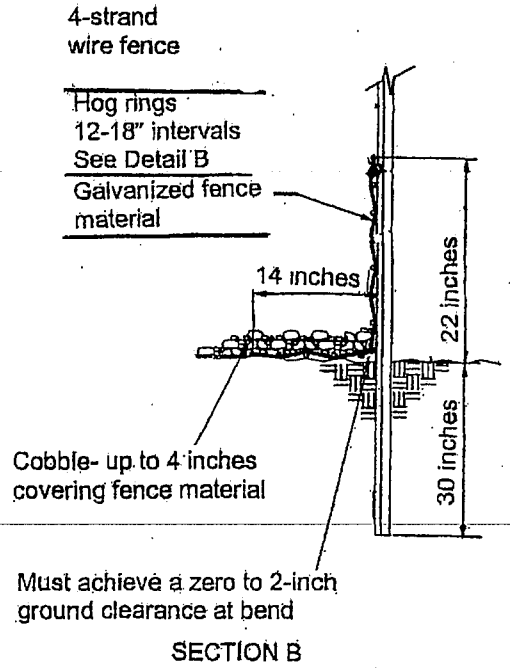
RECOMMENDED DESIGN FOR
DESERT TORTOISE EXCLUSION FENCE
GENERAL NOTES:

1. Ensure that fence posts and materials conform to the standards approved by the U.S. Fish and Wildlife Service.
2. Ensure that the height above ground level is no less than 18 inches and no higher than 24 inches.
3. Ensure that the depth of fence material below ground level is about 12 inches but no less than 6 inches. (See SECTION A above)
4. Install additional steel posts when span between existing fence posts exceed 10 feet.
5. Attach fence material to existing fence or wire using hog rings at 12-inch intervals.
6. Fasten fence material to posts with 3 tie wires with a wire near the top, bottom, and center of the fence material.
7. Backfill trenches with excavated material and compact the material.
8. Attach fence material to all gates. Ensure that clearance at base of gate achieves zero ground clearance.
9. Substitute smooth wire for barbed wire if additional support wires are necessary.
10. The number and placement of support wires may be modified to allow sheep and deer to pass safely.
11. Erosion at the edge of the fence material where the fence crosses washes may occur and requires appropriate and timely monitoring and repair.
12. Tie the fence into existing culverts and cattleguards when determined necessary to allow desert tortoise passage underneath roadways.

FOR BEDROCK OR CALICHE SUBSTRATE

1. Use this fence design (see below) only for that portion of the fence where fence material cannot be placed 6 inches below existing ground level due to presence of bedrock, large rocks or caliche substrate.
2. Ensure that the fence height above ground level is no less than 22 inches.
3. Ensure that there is a zero to 2-inch ground clearance at the bend.
4. Ensure that the bent portion of the fence is lying on the ground and pointed in the direction of desert tortoise habitat.
5. Cover the portion of the fence that is flush with the ground with cobble (rocks placed on top of the fence material to a vertical thickness up to 4 inches).
6. When substrate no longer is composed of bedrock or caliche, install fence using design shown above.





SECTION B

1133

Summary of Changes to the Desert Tortoise Biological Assessment 08-AFC-13

This Supplement to the Desert Tortoise Biological Assessment for the Calico Solar Project is provided to identify the revisions that have been made to the Biological Assessment based on discussions with USFWS, BLM, and CDFG, which have been continuing since the BA was originally submitted to the USFWS on April 1, 2010. This supplement is a summary of updates and resulting changes to the Project Description that the USFWS has been using to develop the Biological Opinion.

Page ES-1, Executive Summary

Revisions:
Line 6: The Project site acreage has been changed from 8,230 acres to 6,215 acres. This change has been made for all instances where the total acreage of the Project is identified.

Lines 10 and 11: The acreage and boundaries of Phase 1 and Phase 2 have changed. New acreage for Phase 1 is approximately 2,327 acres; Phase 2 is approximately 3,887 acres. This change has been made for all instances where the acreage of the phases has been identified.

Line 22: Revised sentence: 'All contiguous Desert Tortoise habitat within 6.2 miles of long-distance translocation sites - based on the average distance Desert Tortoise may range following a translocation.' ('*and control sites'* was removed). This revision was made in all instances where this text occurs.

Line 24: Changed table to identify effects on critical habitat:

Species	Listing Status	Critical Habitat within the Action Area	Effects Determination
Desert Tortoise (*Gopherus agassizii*)	Threatened	Yes	May affect, likely to adversely affect tortoise. May affect, not likely to adversely modify critical habitat.

Line 30: Update/Clarification: There are 47 fewer desert tortoise detections within the revised project boundary: A total of **48** live adult/subadult desert tortoise and **9** juveniles were detected during the 100% surveys for a total of 57 detections within the reduced project boundary.

Lines 31-32: **Changed text to:** Designated critical habitat is located within the Ord-Rodman DWMA ACEC south of I-40, which is included within the Action Area.

Page ES-2, Executive Summary

Lines 43-78. The following changes were made to the FWS estimations for tortoise individuals and resulting impact numbers, and text was added:

Summary of Changes to the Desert Tortoise Biological Assessment 08-AFC-13

Approximately 93 adult desert tortoise (95 percent confidence range of 47 to 185 individuals) and 6,215 acres of occupied tortoise habitat may be affected by the proposed project. An estimated 83 adult tortoise may be indirectly affected due to edge effects in habitat directly adjacent to the project site. Additional tortoise would be affected through implementation of the Translocation Plan, based on best available data, potentially 264 (= 2 x (93 + 39) tortoise could be handled, blood sampled and radio transmitters attached so that these individuals can be used as resident or control individuals for comparison to the translocated individuals. Therefore, it is estimated that 347 adult tortoise (264 directly and 83 indirectly) may be affected by this proposed project.

Juvenile desert tortoises are extremely difficult to detect because of their small size and their cryptic nature. Based on 4-year study of their population ecology, Turner et al. (1987) determined that juveniles accounted for 31.1 to 51.1 percent of the overall population. Using this range and a maximum 93 adult desert tortoises on the proposed site, we estimate that the 6,215-acre project area may support from 29 to 48 juveniles.

To estimate the number of eggs that could be present on the project site, we used the average number of clutches per reproductive female in a given year, (i.e., 1.6, see Turner et al. 1984), multiplied by the average number of eggs found in a clutch (i.e., 5.8, see Service 1994). By approximating a 1:1 sex ratio, we assumed that 47 out of the 93 adult desert tortoises onsite are reproductive females and that, together, they could produce approximately 436 eggs in a given year. Fewer eggs are likely to be onsite at any given time because the territories of the female desert tortoises likely extend, at least in part, off of the project site and individuals may establish nests in these areas.

The Project site itself does not contain any designated critical habitat (DCH) for the desert tortoise. However, the implementation of the Translocation Plan will require the movement of tortoises into the Ord-Rodman Desert Wildlife Management Area (DWMA) which encompasses DCH. Increasing tortoise densities within the critical habitat along with the potential to introduce diseased animals into DCH has the potential to adversely affect the constituent elements of the critical habitat unit. In total, the long-distance translocation receiver site is composed of 9,833 acres of critical habitat. Also, activities such as driving vehicles through critical habitat could impact vegetation, and thus degrade the Primary Constituent Elements of the DCH. While the implementation of the Translocation Plan has the potential to adversely affect critical habitat, the BLM has determined that implementation will not adversely modify DCH given that the Translocation Plan has protocols which will prevent the translocation of diseased animals and will limit translocation densities to levels which will not exceed the habitat carrying capacity. Furthermore, we have reached this conclusion because most activities associated with the translocation would be conducted on existing roads, which do not support the primary constituent elements.

Page 1-1, Section 1

Line 86: **Changed text to** DCH occurs within the Action Area.

Page 1-2, Section 1.2

Lines 122-123: Text/acreages changed: The Action Area encompasses nearly 283,000 acres, and includes over 244,000 acres of USGS modeled tortoise habitat.

Page 1-2, Section 1.3

Lines 151-156: Added text: All of these structures would be constructed within the Project site, except for a portion of the transmission line that would extend off site for approximately 2,800 feet, and would include a maximum of a 200-foot wide temporary impact buffer area (12.9 acres). Water will be delivered to the Project site through an underground pipeline from a production well that is located in N.A.P. Area 1. Approximately 990 feet of pipeline will be required within NAP Area 1, with a maximum temporary construction buffer area of 200 feet (4.5 acres). Measures to reduce impacts to desert tortoise would include pre-construction clearance surveys, installing temporary exclusionary fencing prior to construction, and removal of fence after construction. Temporary impacts to up to 12.9 acres of tortoise habitat would be restored to pre-construction conditions upon completion of construction as described in the Restoration Plan for temporary impacts.

Page 1-4, Section 1.3

Lines 183-191: All detention basins will be located within the perimeter fence. These will range from small detention basins along the proposed access roads, to larger detention basins at road intersections to the larger detention basins south of the Cady Mountains within the Project site (Figure 2). No tortoise habitat or individuals would be affected by maintenance activities. Lines 166-173 have been deleted.

Line 197: Added text: Permanent desert tortoise exclusionary fence will surround the road.

Line 198: Added text: Detention basins will be located throughout the Project site, **inside of the Project boundary.**

Page 1-5, Section 1.3

Lines 208-214: Replaced 'additional impacts to tortoise habitat may occur due to the pipeline required to deliver the water from those wells' with: Water will be delivered to the site through an underground pipeline from a production well that is located in N.A.P. Area 1. Approximately 990 feet of pipeline will be required within NAP Area 1, with a maximum construction buffer of 200 feet. Temporary impacts (4.5 acres) to tortoise and tortoise habitat will be minimized through installation of a temporary exclusion fence while the new pipeline is buried. Once the pipeline is buried, the fence will be removed and the temporary impacts of up to 4.5 acres of tortoise habitat would be revegetated as described in the Restoration Plan associated with this Project. A permanent fence around the production well is not expected, but will be placed if found to be necessary.

Lines 216-227: Text removed and revised to identify the original Project boundary and Reduced Alternative 1:

At the request of agency representatives and interested parties and to help lessen potential impacts to biological resources, the Applicant modified the northern Project boundary by moving it south approximately 0.55 miles (2900 feet), allowing an approximate 0.65 mile wildlife corridor between the revised northern project boundary and the toe of slope of the Cady Mountains. The Project boundary modification resulted in a reduction of the Project area from approximately 8,230 acres to approximately 7,130 acres. The modified Project boundary avoided direct impacts to occupied habitats for tortoise and other species of concern (e.g., special status plants, burrowing owls, and bighorn sheep). The modifications to the Project boundary would expand the east-west

movement corridor by about 2,900 feet and allow for tortoise to move past the steeper topography that may hinder regular movement through this area. Additionally, the boundary modifications increased the distance between the Project and the nearest known golden eagle nest site, from approximately 2.5 miles from the previously proposed boundary to three miles from the modified Project boundary (URS 2010a).

Line 229: **The following text was added:**

Reduced Footprint Alternative 2: Based on input from the U.S. Fish and Wildlife Service's Desert Tortoise Recovery Office (DTRO) and the BLM, the northern boundary of the Project site has been further modified to include a 4,000-foot (1,591 acre) desert tortoise linkage between the Project (exclusive of all detention basins) and the base of the Cady Mountains. This is also the preferred alternative and identified throughout this document as Alternative 2. To accommodate this modification, the detention basins were re-configured to extend east to west along the northern Project boundary and the boundary between Phases 1 and 2, which allows the detention basins to be included within the Project fenceline and outside of the 4,000-foot wildlife linkage. The detention basin design also maintains the natural drainage patterns of the site. Additional modifications were made to the overall project, resulting in a decrease in project acreage to 6,215 acres (a 2,015-acre reduction). Several support facilities were adjusted, and the remainder of the Phase two solar field footprint was decreased to avoid the majority of the biological and flood prone areas of the site and minimize the distance needed for desert tortoise translocation. This new footprint will allow the Applicant to meet the requirements of the PPA, avoid environmentally sensitive areas, reduce the loss of desert tortoise, avoid or reduce impacts to special status plants, and pull away from the toe of the Cady Mountains. It should be noted that the spacing between and the number of the SunCatchers is not being changed.

Lines 213-236: These 4 paragraphs were deleted because all of the detention basins will be located inside of the perimeter fence in the revised footprint. No maintenance activities will occur outside of the tortoise exclusion fence. If any repairs to the roads between the exclusion fence and perimeter fence are required, surveys for and clearance of listed species shall occur prior to repairs.

Page 1-6, Section 1.3.4

Line 233: Changed first sentence to: Maintenance shall be restricted to within the tortoise exclusion fence. Deleted discussion regarding stormwater facilities, which are now located within the Project and tortoise exclusion fencing.

Lines 268-272: *weekly intervals* was deleted. **Replaced with**: After all tortoise have been removed from the active construction area, an authorized biologist shall be on-call and available at all times. Should a tortoise be located within the perimeter exclusion fence, the authorized biologist will be contacted to move the tortoise to outside the exclusion fence and to notify BLM within 1 business day.

Page 1-7, Section 1.3.6

Lines 299-308: Text added/revised to: Desert tortoises from Phase One will be held in temporary holding pens in the Pisgah Crater ACEC, which has been identified and approved as the short-distance translocation area (Figure 3). Those desert tortoises found to be healthy will be released into this translocation area. Tortoises found within 500 meters of the boundary of the detention basin area of Phase 1 will be moved into

the desert tortoise linkage area. Approximately 12 tortoise are located within 500 meters of the boundary of the Phase 1 detention basin areas and can be moved without requiring blood testing; however, the number of tortoise that would be placed in the linkage will be limited to avoid raising the tortoise density of the linkage above 10% of its current density (4.5 tortoise per kilometer). Any additional individuals that are detected in the detention basins will be placed in temporary holding pens within the short-distance translocation area (Figure 3), and once they are found to be healthy they will be released.

Inserted into Lines 309-321: Two desert tortoises were detected in an area that was recently identified as an environmentally sensitive area on the west side of NAP Area 2 and this area has been excluded from the Project footprint. To avoid loss of tortoise in this recently excluded area, the Applicant proposes to relocate the tortoise found in this area by following the methods identified in the approved Desert Tortoise Translocation Plan. These tortoises would have to be relocated greater than 500 meters from this location, which would require blood testing prior to moving them to the long-distance translocation site. The Applicant proposes to install temporary desert tortoise exclusionary fencing around this area, following the west side of NAP Area 2 and south side along the Caltrans I-40 Caltrans Right of Way (ROW) that surrounds this environmentally sensitive area while waiting for blood test results (Figure 4). This would help avoid the need to move the tortoises more than one time. The fencing would be placed outside of the Caltrans ROW along I-40. There is a culvert that crosses under I-40 that will not be blocked by the fencing, ensuring that tortoise movement between the Caltrans ROW and the habitat south of I-40 is not impaired. The fencing would be removed once the tortoises are relocated to the long-distance translocation areas in Spring 2010. An unknown (but small) number of tortoises reside in the NAP Area 2, and these tortoises will be blood tested and translocated to the long-distance translocation site if the individuals are found disease free. Since these tortoises are on private lands in NAP 2, these tortoise will be identified and translocated to the extent that land owner approval can be obtained.

Lines 327-331: Inserted text: The temporary exclusionary fencing will be in place for over one year; therefore, in compliance with USFWS guidelines, a 4-strand wire exclusion fence that is made of galvanized material or an ERTEC polymer matrix (USFWS 2005, ERTEC 2010; Appendix E) will be placed during construction and removed after construction has been completed. This type of fencing is usually used for permanent fencing, thus providing the level of protection needed for the extended length of Project construction, which is expected to be approximately 4 years.

Lines 333-345: Revised to/inserted: A permanent security fence will surround the Project site. To continue to allow access to the public lands north of the Project site, the perimeter road surrounding the Project site will be left open to the public. A permanent tortoise exclusionary fence will be constructed on the outside of this perimeter road to minimize the potential for tortoise mortality from traffic (Figure 4). Where there are intersections with other roads, the fence will remain on the outside of the perimeter road (creating a 'T' of fencing on the outside of each road) thereby allowing uninterrupted use of the road. These intersections are shown in detail on Figure 4. The exclusionary fence will be consistent with USFWS design criteria as described above.

In addition to the exclusionary fencing, cattle guards will be placed where the perimeter access road meets the permanent security fencing near the southeast and northeast boundaries of Section 9 in Phase 2, and in two locations where additional breaks are needed in the permanent security fence for access to the NAP 1 Area (Figure 4).

Page 1-8, Section 1.3.5

Lines 328-331 - paragraph deleted. No maintenance activities will occur outside of the tortoise exclusion fence that surrounds the Project. If any repairs to the roads between the perimeter fence and the exclusion fence are required, surveys for listed species shall occur prior to repairs.

Lines 343-355:

Following installation of the desert tortoise exclusion fencing for both the permanent site fencing and temporary fencing exclusion areas, the fencing shall be regularly inspected. If tortoise were moved out of harm's way during fence construction, permanent and temporary fencing shall be inspected at least two times a day for the first 7 days to ensure a recently moved tortoise has not been trapped within the fence. Thereafter, permanent and temporary fencing shall be inspected monthly and within 24 hours following all major rainfall events. A major rainfall event is defined as one for which flow is detectable within the fenced drainage. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within 48 hours of observing damage. Inspections of permanent site fencing shall occur for the life of the Project. All fencing shall be repaired immediately upon discovery and, if the fence may have permitted tortoise entry while damaged, the Designated Biologist shall inspect the area for tortoise. If fencing is not repaired within 48 hours, the BLM Wildlife Biologist shall be notified within 5 business days to determine if additional remedial action is required, such as the need for conducting additional clearance surveys within the Project footprint.

Page 1-9, Section 1.3.5

Line 359-364 – paragraph deleted. All detention basins will be located within the perimeter and tortoise exclusion fences in the revised footprint.

Page 1-12, Section 1.4

Inserted at Lines 468-475:

May 17, 2010:

BLM provided a revised BA to the USFWS.

June 21, 2010:

The USFWS sent the BLM a Sufficiency Letter stating that the revised BA was sufficient to initiate consultation. The Sufficiency Letter requested clarification regarding the Alternative #2 Reduced Footprint Proposed Action.

July 2, 2010:

BLM provided USFWS with an Appendix to the revised BA which addressed the USFWS information needs.

Page 2-1, Section 2

Line 485-486: Revised to: Designated critical habitat for the desert tortoise occurs in the Action Area directly adjacent to the southwestern edge of the Project site south of I-40 within the Ord-Rodman DWMA. A total of 9,833 acres of DCH has been targeted for use as long-distance translocation receptor sites.

Page 2-2, Section 2.1.4

Lines 532-533: **Revisions to tortoise detections**:

A total of 57 individual tortoise were detected, including 48 adults and 9 juveniles (Figures 6 and 7).

Lines 538-545: Revisions to paragraph based on revised Project boundaries:

Phase One areas support 18 individuals; 6 tortoise in the 1,876-acre Phase One area immediately north of the railroad and 12 tortoise within the northern detention basin area (451 acres; Figure 7). The 1,747-acre Phase Two area between the two Phase One areas supports 39 individuals. No tortoises were detected within the 2,139 acre Phase Two area between Interstate 40 and the railroad (Figure 7); however, 2 tortoise were detected in the recently excluded Environmentally Sensitive Area. Two of the tortoise detected showed sign of disease or ill health. A total of 347 burrows categorized as Class 1 through 5 were recorded on the site during the surveys (Figure 8).

Lines 546-550: Revisions to paragraph based on revised Project boundaries:

Using the USFWS formula to estimate tortoise population based on 10 m transect survey data, approximately 93 desert tortoise (95 percent confidence range of 47 to 185 individuals) may occupy the 6,215-acre Calico Project site (See Appendix B). It is expected that an additional 31.1-51.1% of the individuals detected during 5m clearance surveys will be juveniles (Turner et al. 1987); therefore, an estimated 29-48 (= 93 x 0.311 and 93 x 0.511) juveniles may need to be relocated.

Page 2-3, Section 2.1.5

Lines 556-581: Text added/revised to:

DCH for desert tortoise has five Primary Constituent Elements:

1) sufficient space to support viable populations within each of the six recovery units and to provide for movement, dispersal, and gene flow;

2) sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species;

3) suitable substrates for burrowing, nesting, and overwintering; burrows, caliche caves, and other shelter sites;

4) sufficient vegetation for shelter from temperature extremes and predators; and

5) habitat protected from disturbance and human-caused mortality.

The Project site is not located within any DCH for listed species (Figure 3); however, the Project Action Area includes areas of DCH for desert tortoise (i.e., Ord-Rodman DWMA/ACEC) (Figure 3). Project activities are not anticipated to impact desert tortoise DCH, but implementation of the Translocation Plan may adversely affect DCH. Areas of DCH are needed to be used as long-distance recipient sites (up to 9,833 acres), therefore there is a potential for moving diseased individuals into DCH and in increasing population densities of tortoise within DCH.

The translocation of tortoises from the Project Site to the Ord-Rodman Desert Wildlife Management Area may adversely affect DCH through the introduction of additional animals into occupied critical habitat, through the potential introduction of diseased animals into the DCH, and through increasing the population density in DCH. Also, activities such as driving vehicles through critical habitat could impact vegetation, and thus degrade the Primary Constituent Elements of the DCH.

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Page 3-1, Section 3.1

Line 602: The Kinder-Morgan pipeline that bisects the southern portion of the Project site was added to the list of existing developments on the Project site.

Lines 617-632: Text inserted:

The remainder of the Action Area is composed of generally the same habitats, dominated by Mojave Desert creosote bush scrub, with many areas of disturbance, and dirt and paved roads. A habitat assessment was conducted on the translocation recipient sites and the control sites in spring 2010, to ensure that tortoise are relocated to habitat that is of equal or better quality than the habitat from which they are moved.

Portions of the DWMA were surveyed in the spring, and the remaining areas that were identified as long-distance translocation receiver sites will be surveyed in the fall of 2010. The habitat in the southern long-distance translocation area in the DWMA is comprised of Mojave Desert creosote bush scrub, with a diverse assemblage of vegetation and little to no disturbance. Large erosional features with braided washes with areas of large boulders and cobbles dominate the landscape with a gravelly substrate and few areas of pure sand. This area is excellent DT habitat and is also about 30 minutes down the transmission line road south of I-40 so it is relatively isolated. The area on the western side of the DWMA that was surveyed in the spring contains several deep washes, with variable terrain and sandy loam soils with gravel, rocks and cobble. The vegetation is diverse, but is lower in cover than the Project site. DT density was lower here than in the southern DWMA survey area, and several desert tortoise carcasses were observed.

Page 3-2, Table 4

Acreages of vegetation communities in the revised boundary changed in this table and in all occurrences in the text.

Table 4
Vegetation Communities Occurring within the Calico Solar Biological Site and 1,000 Foot Buffer

Community Name	Holland Code	Project Boundary Acreage	1,000 Foot Buffer Acreage
Developed	12000	27.8	239.9
Desert Saltbush Scrub	36110	241.7	278.7
Disturbed Mojave Creosote Bush Scrub	34000	70.64	68.5
Mojave Creosote Bush Scrub	34000	5874.5	2543.7
Total		6,215.0	3130.8

Page 3-5, Section 3.3

Lines 734-738: added text:

The recently proposed and accepted Reduced Footprint Alternative would expand the linkage by about 4,000 feet south, and reduce the project area by 2,015 acres (Figure 11). This expanded undeveloped area between the Project and the Cady Mountains creates a functional tortoise linkage with live-in and move-through habitat instead of only move-through habitat that would have been provided with the original Project footprint.

Lines 750-751: Sentence Revised to: The Action Area includes portions of the Ord-Rodman DWMA because this area will be used as a long-distance receiver site for tortoises found on the Project site.

Lines 753-755: Added text: There is a total of 80,563 acres of DCH within the Action Area, up to 9,833 acres of which will be used as a receptor site during implementation of the Desert Tortoise Translocation Plan (Figure 3).

Page 4-1, Section 4.1

Line 763-764: 'NAP Area A' changed to 'NAP Area 1' here and in all instances where 'NAP Area A' text occurs.

Line 779-780: Text revised to: 48 adult tortoise and 9 juvenile tortoise were detected within the revised boundary of the Project…

Page 4-2, Section 4.1.1

Line 798-823: Text revised to reflect revised boundary values:

With the Reduced Footprint Alternative 2, modifying the Project boundary to exclude 2,015 acres of habitat avoids approximately 39 percent of the adult desert tortoise found on the project site. Of the 104 total tortoise found during 2010 surveys on the original Project footprint, 47 desert tortoise would now be avoided (Table 5). In addition, 164 desert tortoise burrows will also be avoided by the project boundary change. With a total of 511 burrow locations on the original Project site, this Project modification will result in approximately a 47 percent reduction of direct impacts to 347 burrow locations within the new boundary (Table 6). Using the USFWS formula to estimate tortoise population based on 10-meter transect survey data, it is estimated that direct impacts to approximately 93 individual adult tortoise may be avoided due to the Project boundary modifications.

The Project boundary modifications reduce the estimate of desert tortoises requiring translocation for the Project from 176 to 93 adult individuals and from 32-53 to 29-48 juveniles. These excluded desert tortoise may be indirectly affected due to being adjacent to the Project perimeter, though direct impacts to habitat will be reduced by 2,015 acres.

The modifications to the Project boundary would expand the east-west movement corridor by about 4,000 feet and create a functional habitat linkage that is adequate as live-in habitat as well as move-through habitat. Approximately 12 tortoise found in the Phase 1 detention basin area during the clearance surveys could be placed into this new linkage without requiring blood testing as long as they are not moved further than 500 meters from the location which they were found. The number of individuals that will be placed into this new linkage will be limited to avoid raising the tortoise density above 10% of its current density (4.5 tortoise per square kilometer). The carrying capacity of the linkage will also not be exceeded.

Some areas of DCH (inside the Ord-Rodman DWMA) will be used as long-distance recipient sites (up to 9,833 acres), creating a potential of moving diseased individuals into DCH; however, all long distance translocations will only involve individuals that have been tested for disease to minimize this potential adverse effect. Animals showing clinical signs of disease or testing positive in blood tests will not be moved.

Lines 826-832: Text added:

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Most activities associated with the translocation would be conducted on existing roads, which do not support the primary constituent elements of DCH. A small amount of DCH adjacent to roads may be temporarily disturbed; we expect the size of this disturbance to be minimal and its effects on the function of DCH to not be measurable. All vehicular access will occur on authorized open routes of travel, where the primary constituent elements of DCH are absent. Only foot traffic will occur away from designated open routes of travel; we anticipate that the effects of foot traffic on the primary constituent elements of DCH would not be measurable.

Lines 835-836: Approximately 6,215 acres of occupied desert tortoise habitat would be removed from the adjacent habitat as a result of Project fencing.

Lines 738-740 deleted; all detention basins are located inside the exclusion fence that surrounds the perimeter fencing around the Project.

Page 4-3, Section 4.1.2, Table 5 revisions, Table 6 added

Table 5 – Revised
2010 Desert Tortoise Observations on Calico Solar Project Site
Reduced Footprint Alternative 2

Tortoise by Age and Location	Acres Surveyed	Adult on surface	Adult In Burrow	Sub-Adult	Juvenile	Total Detected	Tortoise Detected Per 1000 Acres
Excluded Area along northern boundary	1,746	25	3	1	5	34	19.4
Phase 1 - North of Railroad	1,876	2	0	0	4	6	3.2
Phase 1 - Northern Detention Basins	451	9	1	0	2	12	26.6
Phase 2 - North of Railroad between Phase One	1,747	32	0	4	3	39	22.3
Phase 2- South of Railroad	2,139	0	0	0	0	0	0
Total on Calico Solar Site - Reduced Footprint	6,215	43	5	0	9	57	9.17

Table 6

Distribution of Tortoise Burrows Classes 1 through 5* at Calico Solar Site

Reduced Footprint Alternative 2

	Class 1	Class 2	Class 3	Class 4	Class 5	Total
Phase 1 - North of Railroad	9	17	24	6	6	62
Phase 1 - Northern Detention Basins	16	13	12	1	0	42

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Phase 2 - North of Railroad between Phase One	74	57	75	4	2	212
Phase 2- South of Railroad	0	4	23	4	0	31
Total	91	91	134	15	8	347

*Tortoise Burrow Classification

1. Currently active, with tortoise or recent tortoise sign
2. Good condition, definitely tortoise, no evidence of recent use
3. Deteriorated condition definitely tortoise, no evident of recent use
4. Deteriorated condition and possibly tortoise, no evident of recent use
5. Good condition and possibly tortoise, no evident of recent use

Page 4-4, Section 4.1.3

Lines 876-883: Text revised to reflect current tortoise numbers: The reduced footprint alternative 2 would expand the east-west linkage corridor by about 4,000 feet and allow for tortoise and other wildlife to move past the steeper topography that may hinder regular movement through this area (Figure 12). The expanded linkage is also large enough to support desert tortoise and is designed to function as live-in habitat. A total of 25 adult tortoises and 5 juveniles were detected in this 1,591-acre linkage area during 2010 surveys. About 93 adult/subadult individuals may use the Project site based on the USFWS formula. An additional 29-48 juveniles may be present in this area, based on a 4-year study of tortoise population ecology (Turner et al. 1987) which determined that juveniles account for 31.1 to 51.1 percent of the overall population.

Line 885: A total of 45 adult tortoises may be affected indirectly by the proposed project. Assuming a local density of 16 individuals per sq mi based on the population estimate for areas north of the railroad…

Lines 891-895: **Text revised to**: Project construction will occur up to the boundary on three sides of NAP Area 1, and approximately 990 feet into the south end of the NAP Area 1 Parcel for installation of the underground water pipeline. All impacts as a result of the pipeline will be temporary and the ground will be revegetated according to the Restoration Plan once the pipeline is buried and construction is completed in that area.

Lines 896-902: Tortoise numbers and text revised: About 45 adult individuals may have portions of their home ranges within this buffer area. Juveniles would be an additional 31.1-51.1 percent of this adult estimate (14-23 juveniles). Specifically, the entire buffer area contains 1,495 acres of land, a portion of which is already impacted by existing development, such as the BNSF railroad and I-40 to the south, the Kinder-Morgan gas pipeline that crosses the southern portion of the site and to the east of the site, and the existing transmission line along the eastern boundary.

Page 4-5, Section 4.1.4

Lines 913-916: Text revised: The expanded habitat associated with the reduced footprint alternative would provide a functional linkage and movement corridor and a greater opportunity for tortoise to move into and out of NAP Area 1, and it would provide approximately 1,591 acres of live-in habitat for desert tortoise.

Page 4-5, Section 4.1.5

Lines 918-919: Text revised: The linear extent of the Project footprint, which is also the length of permanent perimeter and tortoise exclusion fencing, is approximately 45 miles (Figure 4).

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Page 4-8, Section 4.1.9

Lines 1015-1019: All Project-related vehicles traveling in the recipient sites and control areas (Action Area) must follow the requirements of the Calico Weed Management Plan to minimize the potential for the introduction of substantial numbers of non-native species in the Action Area. All vehicles are required to go through vehicle wash stations before leaving the Project site, especially when heading to the recipient and control sites.

Page 5-1, Lines 1083-1099, Table 7, and Lines 1104-1128: Text revised and added, and numbers revised to reflect current tortoise estimates.

Revised to: The implementation of the Calico Solar Project may affect and is likely to adversely affect the desert tortoise. Effects would occur in the form of behavioral harassment, potential injury or mortality, and loss and degradation of occupied habitat. Implementation of the Translocation Plan and exclusion fencing is intended to minimize direct mortality of tortoise. Based on the amount of suitable habitat that would be directly impacted and population estimates based on desert tortoise 10m transect surveys conducted in the Project site, approximately 93 adult/subadult desert tortoise (95 percent confidence range of 47 to 185 individuals), 29-48 juveniles, and 6,215 acres of tortoise habitat may be directly affected by the proposed project. All tortoises captured during preconstruction clearance surveys and construction monitoring will be translocated offsite to minimize direct mortality of individuals. Approximately 45 adult/subadult tortoise and 14-23 juveniles that may have partial home ranges reduced by the Project within the 1,495-acre, 1000-foot buffer area would also be indirectly affected through loss of foraging and sheltering habitat and associated edge effects. About 24 adult/subadult tortoise and 8-13 juveniles may occur in the 960-acre NAP Area 1 and would be indirectly affected similar to tortoise in the 1000-foot buffer area. In order to implement the Translocation Plan, a similar number of tortoise would be directly affected by the proposed project (366 to 699 individuals) and may be handled for the purpose of monitoring recipient site populations and control area individuals for comparison with translocated individuals. We assume approximately 31.1-51.1% of the population may be juveniles.

Table 7
Summary of Potential Effects

Project Component	Estimated Adult/Subadult Tortoise	Estimated Juvenile Tortoise	Total
Project Site (Individuals to be translocated; 6,215 acres)	93 (max:185)	29-48	122 (max: 233)
1000-foot Buffer Area (1,495 acres) indirectly affected	45 (based on an assumed density of 16 per sq mi)	14-23	59-68
NAP Area 1 (960 acres) indirectly affected	24 (based on an assumed density of 16 per sq mi)	8-13	32-38

Recipient Site Resident Individuals	93 (max: 185)	29-48	122 (max: 233)
Control Area Individuals	93 (max: 185)	29-48	122 (max: 233)
Total Directly Affected	279-555	87-144	366-699
Total Directly and Indirectly Affected	348 (max: 624)	109 (max:180)	457 (max:804)

The reduced footprint alternative would reduce the amount of habitat directly affected by about 1,746 acres. A portion of this excluded area (a 1,000-foot buffer) may support 45 adult individuals based on the number of tortoise found in the immediate vicinity of the Phase 1 area north of the railroad (16 adult/subadult tortoise per sq mile). Juvenile tortoise occupation is assumed to be 31.1% - 51.1% of the adult population estimate: 14-23 juvenile tortoise for a total estimate of 59-68 individuals occupying the 1,000 acre buffer area that would be indirectly affected by the Project. Approximately 32-38 tortoise that are estimated to occur within NAP Area 1 would also be indirectly affected.

The translocation of tortoises from the Project Site to the Ord-Rodman Desert Wildlife Management Area may adversely affect DCH through the introduction of additional animals into occupied DCH, through the potential introduction of diseased animals into DCH, and through increasing the population density in the critical habitat unit. Also, activities such as driving vehicles through critical habitat could impact vegetation, and thus degrade the Primary Constituent Elements of DCH. These potential adverse affects will be minimized through the implementation of the Desert Tortoise Translocation Plan. The Translocation Plan includes a disease testing program which will preclude, to the best of our ability, the translocation of disease-positive animals into DCH. Also, the Translocation Plan provides for maximum density limits which are designed to prevent the density from exceeding carrying capacity of the DCH. Most activities associated with the translocation would be conducted on existing roads, which do not support the primary constituent elements. A small amount of DCH adjacent to roads may be temporarily disturbed; we expect the size of this disturbance to be minimal and its effects on the function of critical habitat to not be measurable. All vehicular access will occur on authorized open routes of travel, where the primary constituent elements of DCH are absent. Only foot traffic will occur away from designated open routes of travel; we anticipate that the effects of foot traffic on the primary constituent elements of DCH would not be measurable. Therefore, we conclude that the implementation of the Plan will not adversely affect DCH.

Section 6, Pages 6-2 through 6-3

Added to References:

Turner, F.B., K.H. Berry, D.C. Randall, and G.C. White. 1987. Population ecology of the desert tortoise at Goffs, California, 1983-1986. Prepared for the Southern California Edison Company, Rosemead, California.

Turner, F.B., P.A. Medica, and C.L. Lyons. 1984. Reproduction and survival of the desert tortoise (*Scaptochelys agassizii*) in Ivanpah Valley, California. Copeia 1984(4):811-820.

U.S. Fish and Wildlife Service. 1994. Desert tortoise (Mojave population) recovery plan. Portland, Oregon.

THIS DOCUMENT WILL BE PROVIDED IN THE FINAL TRANSLOCATION PLAN

Draft DETO Translocation Guidance –

Each of these steps include many details that are being refined by the DTRO and the ES biologists. The final guidance is still coming and FWS ES is distributing one set of guidelines that will be supported by a white paper from DTRO.

- Conduct pre-project surveys of the action area according to the most recent FWS guidance (http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/) to determine how many tortoises may be affected by the proposed action. Surveys should be conducted during the tortoises' most active season to increase the likelihood of observations. Generally, active periods are April - May and September - October, although climatic conditions may prolong aboveground activity outside of these months.

- Identify potential translocation (recipient) and control site(s). We are encouraging applicants to select more than one recipient site due to potential conflicts with disease status.

- Evaluation of the recipient sites is done by pre-project protocol surveys to determine the habitat quality and density of the desert tortoise on site. In addition, the tortoise should be observed to establish whether they are exhibiting clinical signs of disease (nasal or moderate to severe ocular discharge, signs of previous or dried nasal discharge including eroded nares or partially or completely occluded nares). Appropriateness of recipient site would be based on density of tortoise and proportion of animals exhibiting signs of disease.

- Following the issuance of the Biological Opinion and the record of decision by permitting agencies, work can begin on site under the terms of the Biological Opinion.

  1) Fence the project area with desert tortoise exclusion fence. This activity can be conducted at any time of year.

  For fall/winter fencing an authorized biologist would proceed in front of the fencing crews. Tortoise found within the ROW of the fence would be handled as follows.

  - Clinical signs of disease observed- animal retained and placed at a facility approved by the DTRO
  - Tortoise identified as being translocated > 500 m for project – placed back inside the project area in an appropriate burrow (either artificial or empty burrow).
  - Tortoise identified as being translocated < 500 m for project – placed in the identified recipient area for < 500 m translocation in an appropriate burrow (either artificial or empty burrow).

  For tortoises that remain in the field, transmitters are affixed and monitoring begins.
  - Monitor 1x/day for first week
  - 1x/week for 3 weeks
  - 1x/2 weeks until clearance surveys begin.

  This tortoise then joins the "regular" monitoring with the rest of its cohort of translocated tortoise.

2) Disease testing – Disease testing may take place at any time between May 15 through October 31, but preferably during the active season

Disease Testing Project Site:

- Tortoise which are being moved < 500 m are checked for clinical signs. If no signs observed the tortoise is translocated and transmittered
- Tortoise which are being moved > 500 m are disease tested and transmittered, and contained within the project fence until disease results are complete and they are moved.

Construction of quarantine pens is optional but highly recommended; if animals are quarantined in pens, they must have access to burrows, forage, and water and cannot be held longer than one year. All quarantine facilities and animal husbandry plans should be developed by a qualified veterinarian and approved by the DTRO. If animals are to be housed on the project site (in situ), additional disease testing would be required for all individuals found to be within 500m of a seropositive or sick animal prior to translocation.

Disease Testing – Recipient site:
Tortoises at the recipient site must also be tested for disease. Disease testing time periods are as above. Depending on the size of the site (which should be commensurate with the size of the project site), a sampling scheme for testing could be implemented.

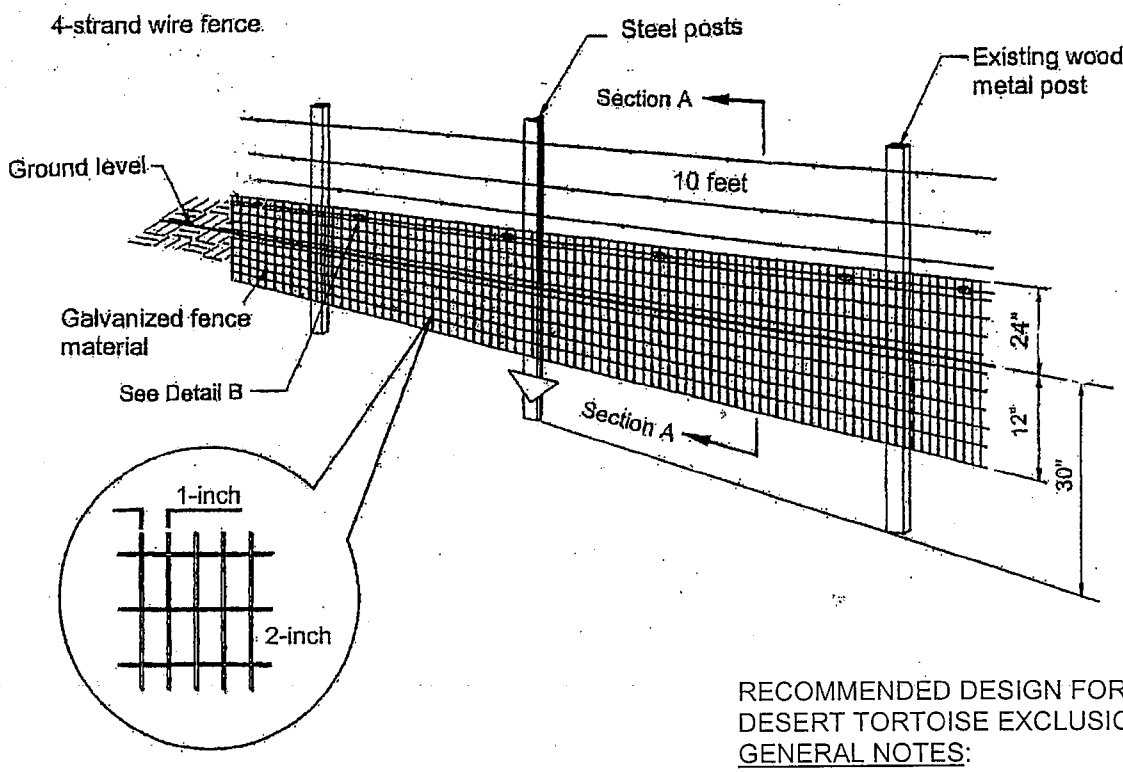
3) Clearance surveys of project area. Generally, we require two passes perpendicular to one another with zero observations during the active season. Spring translocations are preferred due to availability of forage. Protocols are in the Field Manual Guidelines on the aforementioned web-site.

- Tortoises to be moved <500 m and showing no clinical signs should be transmittered and placed outside the project fence.
- After the disease testing results have been obtained for the tortoise being translocated > 500 m as well as the results from the recipient site, these tortoise can be moved (during spring and fall active seasons mentioned above) A 2.5 km buffer must be established around any sick or seropositive animal in the recipient site.

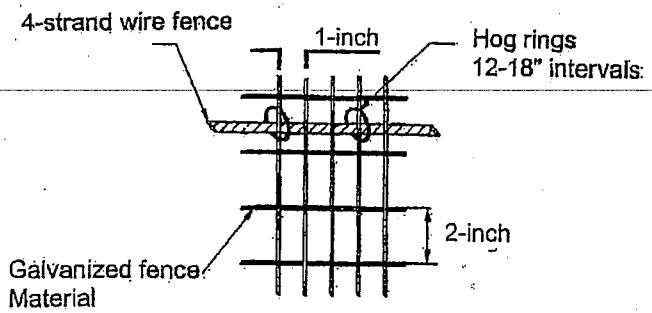
4) Post-translocation monitoring. Minimum of 5 years. --
This would include both those animals that are moved <500 m and >500 m. For each translocated animal, a resident and a control would also be transmittered and monitored. A control animal is considered one that is > 10 km away from the resident and control animals. Each animal must be located on each visit.

- First location must be obtained within 24 hours of the move
- During the first week tortoise would be monitored daily and locations should be obtained daily
- During the second week locations should be obtained every 3-4 days
- March to Nov – locations every week
- Nov. to Feb. – every other week

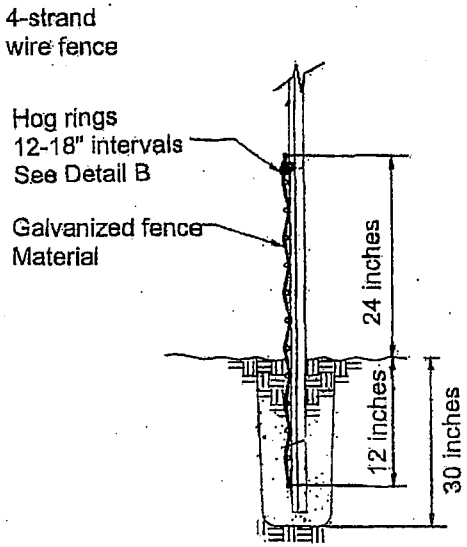
DESERT TORTOISE EXCLUSION FENCE (2005)



DETAIL A



DETAIL B



SECTION A

RECOMMENDED DESIGN FOR
DESERT TORTOISE EXCLUSION FENCE
GENERAL NOTES:

1. Ensure that fence posts and materials conform to the standards approved by the U.S. Fish and Wildlife Service.
2. Ensure that the height above ground level is no less than 18 inches and no higher than 24 inches.
3. Ensure that the depth of fence material below ground level is about 12 inches but no less than 6 inches. (See SECTION A above)
4. Install additional steel posts when span between existing fence posts exceed 10 feet.
5. Attach fence material to existing fence or wire using hog rings at 12-inch intervals.
6. Fasten fence material to posts with 3 tie wires with a wire near the top, bottom, and center of the fence material.
7. Backfill trenches with excavated material and compact the material.
8. Attach fence material to all gates. Ensure that clearance at base of gate achieves zero ground clearance.
9. Substitute smooth wire for barbed wire if additional support wires are necessary.
10. The number and placement of support wires may be modified to allow sheep and deer to pass safely.
11. Erosion at the edge of the fence material where the fence crosses washes may occur and requires appropriate and timely monitoring and repair.
12. Tie the fence into existing culverts and cattleguards when determined necessary to allow desert tortoise passage underneath roadways.

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APPLICATION FOR CERTIFICATION
For the CALICO SOLAR (Formerly SES Solar One)

Docket No. 08-AFC-13

PROOF OF SERVICE
(Revised 6/14/10)

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DECLARATION OF SERVICE

I, Darin Neufeld, declare that on August 4, 2010, I served and filed copies of the attached Applicant's Submittal of the Draft Desert Tortoise Translocation Plan. 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: [www.energy.ca.gov/sitingcases/solarone].

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

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

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

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_X_ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses NOT marked "email preferred."

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_X_ 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. 08-AFC-13
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Original Signed By
Darin Neufeld