Tessera Solar
power from stirling energy systems

October 22, 2010

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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)
Calico Solar October 14th Desert Tortoise Translocation Plan

Dear Mr. Meyer:

Tessera Solar hereby provides the October 14th Desert Tortoise Translocation Plan. 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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FINAL PLAN
CORRECTED VERSION
OCTOBER 14, 2010

DESERT TORTOISE TRANSLOCATION PLAN CALICO SOLAR PROJECT

Prepared for

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URS Project No. 27658189.70006

September 26, 2010

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°F	Fahrenheit
ACEC	Area of Critical Environmental Concern
BA	Biological Assessment
BLM	Bureau of Land Management
BNSF	Burlington Northern Santa Fe Railroad
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 663.5-megawatt (MW) solar power generating facility and its ancillary systems. The Project footprint encompasses 4,613 acres. The facility would be constructed in two phases: Phase 1 will be 275 MW and cover approximately 1,876 acres; Phase 2 would be 388.5 MW and would cover approximately 2,737 acres. The Project 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. As a result of delays in closure of the Department of Energy financing, construction of Phase 1 will be further broken down into Phases 1a and 1b. The first occurrence of ground disturbance will consist of a 250-acre area described as Phase 1a (Figure 2), which will occur in fall 2010. Phase 1a will include construction of the main access road, the waterline, the Main Services Area, the substation area, the installation of 60 SunCatcher pedestals, a temporary at-grade crossing of the BNSF railroad tracks, and construction of the permanent bridge spanning the Burlington Northern Santa Fe (BNSF) railroad tracks. Prior to completion of the at-grade railroad crossing, the existing BNSF crossing and right-of-way (ROW) will be used to access Phase 1a. Project and tortoise exclusionary fencing for Phase 1a is shown in Figure 2. Construction areas for the main access road, waterline, temporary at-grade crossing and permanent bridge will be fenced with temporary desert tortoise exclusionary fencing. The existing BNSF ROW from the BNSF crossing to the Main Services Area will also be fenced with temporary desert tortoise exclusionary fencing until the new at-grade crossing is complete (Figure 2). The Main Services Area, substation area and the 60 SunCatcher pedestals will be fenced with temporary chain-link security fencing and temporary desert tortoise exclusionary fencing, as these areas will eventually be surrounded by the remaining phases of the Project, which will be surrounded by permanent security and tortoise exclusionary fencing (Figures 2 and 9). Grading for Phase 1b will occur in summer of 2011 and will consist of the remaining area of Phase 1. Phase 2 will begin in the summer or fall of 2013. Translocation efforts will only be conducted in the spring season for each phase of the Project to maximize the potential for success of this translocation effort.

Based on input from the U.S. Fish and Wildlife Service's Desert Tortoise Recovery Office (DTRO) and the agencies, the northern boundary of the original Project site was modified to provide an approximate 6,865 foot desert tortoise linkage between the Project and the base of the Cady Mountains. To accommodate this, modifications were made to the overall original Project footprint, resulting in a decrease in Project acreage to 4,613 acres (a 3,616-acre reduction from the original 8,230 acre footprint). Only 369 acres of high-quality, 5:1 mitigation ratio land would remain within the Project boundary. This scenario will help the Applicant to meet the requirements of the power purchase agreement (PPA), avoid environmentally sensitive areas, greatly reduce the loss of desert tortoise habitat, reduce direct impacts to individual tortoises, reduce the number of desert tortoise that would need to be translocated, 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 4,613-acre area in which the Project will 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 supplemental biological assessment (Appendix B), the Phase 1a supplement to the supplemental biological assessment (Appendix C), and in this document as the Project site and any necessary components, a 1,000-foot buffer to account for impacts to desert tortoise (DETO) home ranges, proposed DETO recipient sites, proposed translocation control sites, and all contiguous DETO habitat within 6.2 miles of translocation sites which receive desert tortoises from greater than 500 meters away - based on the maximum straight-line dispersal distance of male desert tortoises excluding one male whom moved 14.3 miles.

Other areas within the Action Area include portions of the site that are not a part (NAP) of the Proposed Project. 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 that is being considered as a desert tortoise translocation recipient area for DETO that will be moved less than 500 meters from their capture location (Figures 3 through 7). Additional lands outside the Project boundary that are included in the Action Area and considered for this plan include linkage translocation areas 500m directly north of the project boundary (576 acres) [excluding NAP], and areas into which DETO will be translocated greater than 500 meters from their capture location (the Ord-Rodman DWMA) and in the control sites for monitoring cohorts of the translocatees (pending population density and disease testing constraints, see below for details), 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 intended to minimize impacts of the proposed Project by reducing injury and mortality of this federally- and state-listed species. A fundamental aspect of this translocation plan is that it is a 'living' document that will change as new information is gained during the translocation process (and translocations associated with other projects), and will incorporate adaptive management that will provide opportunities for improvement throughout the life of the program. Furthermore, the Calico Solar Project will be developed in phases and the desert tortoise translocations will occur over several spring seasons, with fencing and grading of the Project beginning in 2010 and continuing until 2015; lessons learned during early phases will be applied to later phases. An additional benefit of the phased program is that the first phases of development and translocated DETO begin with minimal impact areas and small numbers of tortoises that will be moved during the first phase of construction, which will occur in 2010 and 2011 Thus, there will be minimal initial translocations (small numbers of animals) and ample time between each translocation effort (1 year

between each spring translocation) to observe the effects of translocation on DETO and adapt the process based on these observations. In addition, the Plan has been developed by using lessons learned from previous translocation efforts, and contains built-in triggers that that will require stopping the translocation efforts if impacts that are beyond anticipated levels (such as translocated DETO mortality rates that are statistically higher than control DETO mortality rates, high predation rates, and higher rates of disease than anticipated) are observed. In addition to these built-in triggers, the Terms and Conditions in the USFWS Biological Opinion will provide limits on take of DETO, and CEC Conditions of Certification also provide maximum numbers of DETO that can be translocated. If the Project exceeds the level of take anticipated by the regulatory agencies the BLM must re-initiate consultation with the USFWS for Calico Solar.

The Project site will be fenced to preclude DETO access, and the resident population of the Project site will be translocated to suitable habitat off site (recipient site) prior to construction of the facility. These recipient sites will 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 USFWS Protocol 10 m transect survey data (URS 2010) and the USFWS DETO population estimation formula. A total of 10 DETO were found within the proposed Project site in 2010. Of these, 6 adults and 4 juveniles were detected (Figures 2 and 6). As described above, Phase 1 of the Project will be developed in smaller sub-phases, starting with Phase 1a in Fall 2010. Within the new 250-acre Phase 1a boundary of the Project, one juvenile DETO was detected; two juvenile DETO were detected in the Phase 1b boundary. Seven DETO were detected within the Phase 2 portion of the Project site, 1 was a juvenile and 6 were adults. No surveys were conducted within the NAP areas in spring of 2010. Based on the USFWS formula, approximately 11 adult/sub-adult DETO (95 percent confidence interval range of 4 to 29 individuals) may occupy the 4,613-acre Calico Project site. It is expected that an additional 31.1-51.1% of the total population of individuals detected during 5m clearance surveys will be juveniles (Turner et al. 1987). However, this may not adequately represent the actual demography on the Calico Solar Project site. Therefore, to be conservative, the higher end of the range was used to estimate the maximum potential effect of the proposed Project on juvenile DETO. The 4,613-acre Project site may support 11 juvenile desert tortoises. Juveniles are difficult to detect and it is assumed that many or most will be missed during the clearance surveys; therefore, the estimated 11 juveniles may need to be translocated, but may be missed during surveys and not be translocated as a result of the Project.

The methodology for DETO surveys and population estimation, as described in the URS Corporation (URS) *Calico Solar Biological Assessment (Appendix A), Revised Calico Solar Biological Assessment and Supplement to the Biological Assessment (Appendix B), and Desert Tortoise Survey Results Letter Report, 2010 (Appendix E*), 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, resident (found in the recipient sites) DETO and control site (areas greater than 10km from translocation sites) DETO will occur for at least five years after the translocated desert tortoises are placed on recipient sites. The number of resident and control DETO monitored will be commensurate to the number of translocated animals, to evaluate the effectiveness of translocation as a minimization measure by assessing the impacts of the

translocation on the resident and translocated desert tortoises, and to identify whether there is a need to implement adaptive management measures in a timely manner.

1.1.4 Existing Desert Tortoise Data and Population Estimation Methodology

Between March 29 and April 15, 2010, the 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.

The proposed Project site is 4,613 acres. The number of DETO detected on the proposed Project is shown in Table 1. Estimates of DETO that may require translocation were derived based on the number of observed DETO on the Project site, using the 2010 USFWS DETO estimation formula. These numbers can vary based on assumptions that are used, and CEC and CDFG have shown different estimates. The estimates in this translocation plan remain consistent with the estimations determined by the USFWS and BLM based on the best available data and to allow consistency between the Plan and the Biological Opinion.

Table 1
2010 Desert Tortoise Observations and Estimates

Tortoise Observations	Acreage			Observed Adult/Subadult		Observed Juveniles
Scenario 5.5	4,614			6		4
Linkage/Receptor Area to North of Project	3,616			79		10
Tortoise Estimate	FWS Formula Adult/Subadult Estimates			Juvenile Estimates		Total DETO Estimates
	Estimated Adult/Subadult	Estimated Adult/Subadult Density (/sq km)	95% Confidence Interval-# of Adults/Subadults	Turner Estimates:31.1-51.1% of *Observed* Adults.Subadults	Turner Estimates:31-51% of Estimated Adults and Juveniles	FWS Adult/Subadult Estimate plus Turner Estimate of Juveniles
Scenario 5.5	11	0.6	4-29	5-11	2-22	6-59
Linkage/Receptor Area to North of Project	174	11.9	92-327	40-93	41-340	133-667

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

This Plan has been developed by incorporating lessons learned from past DETO translocation efforts and by incorporating information and guidance from the 2010 draft guidelines developed by USFWS and DTRO for DETO translocation (*The 2010 Desert Tortoise Field Guide* and the *Translocation of Desert Tortoises [Mojave Population] from Project Sites: Plan Development Guidance*). This guidance is available from the USFWS (Appendices E and F). This plan follows the guidelines (dated August 2010), to the extent practicable, and incorporates additional details gained from coordination with USFWS, BLM, DTRO, and CDFG 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. Desktop and GIS analysis was conducted by URS based on selection criteria to identify potential recipient sites and control sites based on how well the criteria overlapped. The selection criteria included USGS desert tortoise habitat suitability mapping (Nussear *et al.* 2009), percent slope based on Digital Elevation Model analysis, land use and ownership data, soils, and proximity to grazing, development, proximity to highways and roads, and rail lines to determine the best recipient sites. In addition to literature review and use of existing databases of previous and proposed land uses, BLM was consulted to determine the locations of proposed projects that may occur within proposed recipient areas. The GIS layer that identifies the location of the BLM Renewables ROW, which was identified in March 2010 as BLM's preferred area available for development of renewable energy projects was also used as criteria for selecting the potential translocation areas. Protection of translocated DETO and long-term habitat management are crucial aspects to promote DETO survival and are recommended and preferred by USFWS and CDFG for an area to be used as a translocation site.

Important to the selection of appropriate translocation sites is that survivorship will be maximized if DETO are translocated into habitat of similar or better quality to their original home range Another important aspect of selecting the translocation site is to estimate the sex ratio of the resident DETO population to the greatest extent possible and move an appropriate balance of male and female DETO into the translocation sites to minimize stress on the translocatees and resident populations. Efforts will also be made to move DETO that are found together in burrows into the same recipient sites to the greatest extent possible. The proposed recipient areas were also chosen so that they would be contiguous, with ample additional suitable habitat beyond each recipient area that is not adjacent to major freeways, human disturbances or extensive cattle or predator activity into which translocated and/or resident DETO can move.

The USGS DETO 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 0.7. 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.

2.1.2 Recipient and Control Site Habitat Evaluation

The habitat at the translocation recipient and control sites has been evaluated and compared to the habitat from which the translocated DETO originate, such that DETO will 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.) will be evaluated before translocating DETO. In addition, suitable areas for translocation will 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 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, or both; and 3) the incidence of disease in the sampled resident population is greater than 5%. If a diseased individual is detected within the resident population, a 6-km buffer into which no translocation could occur will be placed around all diseased individuals. The occurrence of health-compromised DETO is estimated to be approximately three to five percent of the population (AMEC 2008). All DETO will undergo health assessments and DETO likely to be translocated a distance greater than 500m will also have blood tests performed by authorized, experienced and DTCC-certified biologists, and if a DETO is found to be unhealthy, it will be removed from the area and sent to an appropriate care facility. Additionally, the resident population will be surveyed for disease to ensure that the recipient sites do not exceed a 5% prevalence of disease. To the extent feasible, the resident population will be sampled at sufficient numbers of individuals to ensure with 95% confidence that disease levels fall below the 5% threshold. In the event the entire recipient area is ruled out, or there is a lack of sufficient habitat to support any additional translocations, additional recipient sites would need to be identified.

In an effort to provide a more complete representation of the analysis that was conducted, the existing biological data, including vegetation type, percent slope, habitat suitability, land use and ownership data, and observed DETO and DETO burrow locations (URS 2010), is provided on Figures 4 through 8. During preparation of the plan, and in response to guidance from the regulatory agencies to minimize additional potential impacts to DETO, buffers of varying distances were placed around existing disturbance areas such as roads and grazing allotments. The areas where these buffers overlapped with the proposed recipient sites were excluded from the acreage of potential translocation sites (Figures 3 through 7). The existing disturbance areas that required buffers are paved roads (on which a 0.5 mile buffer was placed), unpaved, lower-use utility roads (a 1,000 foot buffer was placed around this disturbance), and unfenced grazing allotments (a 1,000 foot buffer was placed around unfenced grazing allotments, although further examination of the vegetation quality and grazing levels at the recipient sites may show that cattle and grazing do not substantially affect the recipient sites and this buffer may be reduced). These proposed recipient areas might be further refined during the approximate 5-year phased translocation effort planned for the Project, based on the collection of additional site characterization data, DETO disease testing results, and through continued coordination with the resource agencies.

One control animal will 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. Control sites from which control animals may be selected should be equivalent in habitat type and quality, DETO population size and structure, and disease status as the recipient sites. Control sites should not have been previously used as a recipient site for other projects and should be a minimum of 10 km from the Project site if the recipient site is unfenced or no substantial barrier exists to prevent the interaction of control, resident and translocated desert tortoises. Surveys of the proposed control sites were conducted during the 2010 spring surveys; data from these surveys are presented below. Additional control sites may need to be selected and would be surveyed in spring 2011 or fall 2012 DETO active seasons, so adequate control sites and DETO individuals will be available for all translocation activities.

2.1.3 Recipient Site Characterization

Protocol surveys of portions of the potential recipient sites were conducted to determine DETO density, qualitatively assess habitat suitability and quality and compare the habitat quality to the Project site, and to generally assess the health of the resident population of these recipient sites. Because desert tortoises cannot be handled without proper permits, the health of each desert tortoise was assessed through observation at a distance when the animal was above ground and visual observations were possible. The USFWS Protocol Survey of the translocation recipient sites included 100 percent coverage, 10-m belt transects to assess the habitat value and DETO density so that translocated DETO would not compromise the existing populations. Data collected for all DETO detected and habitat quality was the same for all sites and is described below. The quality assessments included assessing the macro-habitat features (soils, vegetation community, density, geomorphology [i.e., hills, alluvial fan, bajada, wash, etc.]) and micro-habitat features (i.e., slope, aspect, forage species, etc.) within each area. Surveys of the remaining potential recipient sites will be conducted in 2011, and in areas that may be proposed if necessary as the Project proceeds.

The resulting proposed recipient sites that have been surveyed meet the habitat and DETO density requirements for translocation described above, and are located within protected BLM lands as close as possible to the Project site. However, the sites have not been found to meet the disease requirements for translocation; this will be determined prior to accepting the receptor sites as appropriate, as described below. The recipient sites are identified as the Pisgah ACEC translocation recipient site, which includes lands adjacent to the eastern edge of the Project site, and the Ord-Rodman DWMA translocation recipient site, which is located south of the Project site and I-40, within 5 kilometers of the Project site. Surveys were completed in the Pisgah ACEC translocation site, and a portion of the Ord-Rodman DWMA translocation site was surveyed during the 2010 spring DETO active season (April 16 - May 25). In addition to these areas, the Linkage Area north of the Project site has been identified as a potential receptor site for animals being moved <500 meters.

Surveys of the remaining areas of the Ord-Rodman DWMA translocation recipient sites will be completed in Spring 2011. Appropriateness of recipient sites and the number of DETO that can be moved into the area will be based on the observed and estimated density of resident tortoise, observed habitat quality, and proportion of animals exhibiting signs of disease. Based on the preliminary data, it is

estimated that two individuals may be moved into the Pisgah ACEC (less than 500 meter translocation), all animals in the northern part of the Project site will be moved <500 meters into the Linkage Area in the north, and the rest of the individuals will be moved to the Ord-Rodman DWMA contingent upon density restrictions (i.e., will not exceed 130% of current population levels) and disease restrictions (the entire population must have a 5% or less prevalence of disease and the 6 km buffers around diseased animals must be applied).

The density restrictions do not apply to the <500 meter translocations into the Linkage Area, , since it is assumed that these animals will be moved into portions of their existing home ranges which will have less impacts on the animals that being moved outside their home range. This was

2.1.4 DETO Habitat Quality Assessment

For the purposes of this Project and to assist in comparing and evaluating areas, the habitat on the Project site was qualitatively assessed during the protocol DETO surveys in 2010. Habitat quality values and how they are determined can be subjective and are done in different ways by different researchers; and are not governed by universally accepted protocols. The habitat within the Calico Project site, recipient sites, and control sites was divided into high, medium, and low quality DETO habitat so that the habitat on the Project site could be directly compared with habitat within the proposed recipient sites and control sites. The qualitative assessment was based on factors such as the observed density of resident tortoise and/or desert tortoise sign including burrows, carcasses, and scat (an indicator of habitat quality), observed vegetation cover and forage quality, proportion of animals exhibiting visual signs of disease, level of disturbance (grazing, agriculture or roads), presence of native and non-native vegetation (weeds), soil/substrate composition, and topography. The gradations of habitat quality were delineated using observations and assessment of these factors and an aerial photograph of the Calico Solar Project site, the potential translocation sites and the control sites, and are described below, shown in Table 2, and illustrated in Figure 10. Data summary tables, maps showing the recipient site, control site, and Project site survey cells and observed DETO locations, are provided in Appendix J. A CD which contains all survey data sheets is also included with this plan.

2.1.4.1 High Quality Habitat on the Calico Project Site

The main factors in determining whether habitat demonstrated high quality was based on the presence of DETO and DETO sign, as well as vegetation and presence and quality of forage. When compared to the other criteria used to determine high quality habitat described above, many factors were found to correlate well. In addition to containing a high number of DETO and DETO sign, high quality habitat also contained suitable vegetation communities, 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 to medium sized washes, with gravelly to rocky soils; substrate that is favorable for burrowing by DETO. High quality habitat on the Project site was identified in a small area in the northern portion of the site (369acres), in the northeast corner of Phase 1 and the northern edge of Phase 2 (Figure 10).

2.1.4.2 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 suitable vegetation communities and soil substrate suitable for DETO burrowing (gravel and sand), but the presence of larger rocks began to transition to greater concentrations of fine sand. In these areas, the topography also begins changing from gently sloping washes to flatter alluvial fans. This area is the transition between areas containing a majority of small-medium 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 substrates available for desert tortoise burrowing and lack of DETO activity. Medium quality habitat (2,103 acres) occurs on the Project site as a band along the northern portion of the larger section of Phase 1, as shown on Figure 10.

2.1.4.3 Low Quality Habitat on the Project Site

Low quality habitat on-site was mainly defined by the lack of suitable soil substrate and little evidence of tortoise presence. These areas were closer to the railroad and freeway and contained a higher level of disturbance with more areas dominated by invasive plant species. Low quality habitat on-site was relatively flat, with the substrate being very fine sand. Washes that were present in the northern portion of the site are not present in this area, with little wash and burrowing habitat available to DETO. Low quality habitat was found over the lower portion of the larger section of Phase 1 (2,141 acres), and in the portions of the site in Phase 2 between the railroad and freeway.

2.1.5 Habitat Quality of Proposed Recipient and Control Sites

As discussed above, the habitats at the proposed recipient and control sites were surveyed using the same methods as those on the Project site and compared to the habitat at the Project site with respect to DETO habitat suitability and use. In general, the habitat for all the proposed translocation recipient areas and control sites consisted of Mojave creosote scrub with soils, forage, and disturbance levels comparable to that found on the Project site; although some of the control areas showed a higher level of disturbance than the Project site. Some areas in the control sites that are disturbed appear to have been grazed at one point; but no longer show evidence of current intense grazing (Figure 10). These sites also appear to be returning to a natural state and could easily support more DETO than they currently do if the habitat quality was improved.

Based on the areas where DETO were found onsite and in the recipient and control sites, it appears that DETO favored topographically diverse habitat consisting of small braided washes alternating with small inter-wash areas of upland habitat. DETO found in the surveyed areas seem to be nearest to the foothills.

2.1.5.1 Habitat Quality within the Pisgah ACEC Recipient Site

Based on the surveys of the Pisgah ACEC translocation area in 2010, the habitat is contiguous to the site 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). The majority of this area is

fairly flat, with some braided washes in the north, fading into a large, flat alluvial fan. Soil in the north consists of cobbles with small rocks, turning to sandy loam soils with less cobbles throughout the alluvial fan. Although sandier than the foothills, the dominant vegetation of the Pisgah ACEC remains Mojave creosote bush scrub. Forage was plentiful in this area due to the sandy loam substrate of the soils. Some non-native species were observed in this area, consisting of small isolated patches of Sahara mustard. Several large patches of native fiddleneck were observed from the middle to southern portion of this area, suggesting past grazing use. The northern portion of this area consists of 347 acres of high quality habitat (as defined above), that transitions into 159 acres of medium quality DT habitat, while 98 acres of the southern portion is low quality (Figure 10). A total of 10 adult and 2 subadult DETO and 70 burrows (Categories 1-3) were observed in this area during protocol surveys (Figures 6 through 8). An existing transmission line corridor currently separates the ACEC from the Project site.

2.1.5.2 Habitat Quality within the Ord-Rodman DWMA Recipient Site

DWMA -1: This area is located south of I-40 and south of Route 66 (Figures 3 and 7) in the northeastern portion of the Ord-Rodman DWMA. 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 other sign of human disturbance. The washes are large enough to support smoke tree and desert willow stands, and the soils are 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. Approximately 70 burrows were found in this area (Category 1-3). Caliche caves were abundant in the banks of the numerous washes, but little DETO sign was noted in or around the majority of them. Many carcasses were observed here that appeared to have died at the same time and at around the same age, suggesting a die-off roughly two to four years ago. The carcasses were all intact with no signs of predation, and 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, studies conducted within this and other populations in the region have suggested that disease may have been a cause for this die off; therefore, disease testing (ELISA blood sample analysis) will be conducted to verify that this population is healthy before tortoises are relocated here. If disease prevalence in the DWMA population is found to be greater than 5% (determined at the 95% confidence interval), the entire Ord-Rodman DWMA recipient site will be abandoned as an option and a new site will be proposed. The same protocol level surveys and disease testing would occur in any newly proposed recipient sites, including any new direction that may be provided by the agencies. If DETO are found to be diseased in the DWMA translocation area, but the prevalence is less than 5% of the population, a 6-km buffer will be placed around the tortoise and no DETO will be translocated into this buffer area. Based on the presence of diverse habitat and topographical diversity, and the visual health assessments that were conducted in 2010, all of the 2,216 acres of habitat within DWMA – 1 is high quality.

DWMA – 2: This area is located further south of I-40 along a transmission line road on the eastern edge of the DWMA (Figures 3 through 7) 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 alluvial 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 less DETO presence was observed here. Much of the area was removed by the disturbance buffer described above. This area would qualify as medium quality habitat (18 acres; Figure 10).

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 were found in good numbers; however, a similar pattern of carcasses as found in DWMA 1 was also noted here. The habitat is comprised of creosote bursage, yucca, desert senna, canactus, desert chickory, cryptantha and other species. While there is less ground cover than on the Calico Solar site, there are abundant forbs present. The topography is varied with many deep washes interspersed with small washlets, with a variable 3-5% slope. Over 100 burrows were found in this area. 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 and if disease prevalence in the DWMA population is found to be greater than 5% (determined at the 95% confidence interval), the entire Ord-Rodman DWMA recipient site will be thrown out and a new site will be proposed. If DETO are found to be diseased in this DWMA translocation area, but the prevalence is less than 5% of the population, a 6-km buffer will be placed around the tortoise and no DETO will be translocated into this buffer area. The same protocol level surveys and disease testing would occur in any newly proposed recipient sites, with any new direction that may be provided by the agencies. This portion of DWMA-2 is high quality habitat and comprises 936 acres (Figure 10).

DETO Linkage Area: The northern DETO linkage area 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. Approximately 1,000 feet north into the DETO linkage area was surveyed as part of DETO surveys and burrowing owl surveys in 2010. This area is comprised of creosote bush scrub and desert wash scrub with small to large washes and gravelly to rocky substrate suitable for burrowing that supported a high number of DETO and DETO sign. The DETO linkage habitat showed little to no evidence of disturbance, contained little to no weed infestations, and had a uniform and dense cover of annual wildflowers that are valuable as forage for desert tortoise and was identified as high quality habitat (3,616 acres). The linkage area also supported a high density of DETO, with 70 observed DETO and a density of 8.4 DETO per square km. The USFWS, DTRO, BLM, and CDFG have approved the use of the DETO linkage for the translocation of desert tortoise less than 500 meters from along the northern edge of the Project boundary to this area. The desert tortoise that are within 500 meters of the Project boundary likely use this area as part of their home range and it is considered beneficial for these individuals to remain within their home range. Less than 500 meter relocation of DETO is preferred by all of the agencies over subjecting the animals to the stresses of greater than 500 meter translocation to the Ord-Rodman DWMA.

2.1.5.3 Habitat Quality within the Proposed Control Sites

The control sites to the northwest of the site (Figures 4 through 7 and 10) 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 thus minimizing available resources. The control area consisted of 759 acres of high quality habitat, 1,869 acres of medium quality habitat, and 4,301 acres of low quality habitat. During the 2010 spring surveys, 88 adult and subadult DETO and 2 juvenile DETO were detected in the control sites. The areas in the proposed control sites that are identified as low quality habitat contain denuded vegetation are not of similar or better quality to the Project or recipient sites; therefore, control animals will not be selected from these proposed control sites. Additional control sites will be selected, surveyed, and assessed for consistency with the Project site in spring or fall 2011 once the translocation process is underway. As stated above, the translocation effort is expected to take several years; and the initial fall 2010 and spring 2011 translocations are not expected to involve large numbers of DETO; therefore, there is ample time to select additional control sites prior to the 2012 spring translocation effort, if necessary.

Table 2
Habitat Quality in Calico Solar Project DETO Translocation and Control Areas

Habitat Quality in Calico Solar Project DETO Translocation and Control Areas				
	High	Medium	Low	Total
Project Site	369	2103	2141	4613
DWMA -1 (> 500m)	2216	0	0	2216
DWMA -2 (> 500m)	936	18	0	954
Pisgah ACEC (< 500m)	347	159	98	604
DETO Linkage Area (< 500m)	3,616	0	0	3,616
Control Area	759	1869	4301	6929

2.1.6 Recommended Allowable Desert Tortoise Density

Based on the recent translocation guidance (USFWS 2010b), the density of the recipient site after translocation should not exceed 130 percent of the known density within the recovery unit. Line distance sampling of desert tortoise in the Western Mojave Recovery unit showed the density to be 4.7 DETO per square km and 5.29 DETP per square km in the original project footprint. The agencies, FWS, BLM, CEC and DFG, agreed to use a baseline density of 5.0 DETO (average of the sites above) per square km for the Pisgah ACEC. The 5.0 DETO per square Km is also thought, by the agencies, to be representative of the general area. Therefore, the final density within the Pisgah ACEC recipient site cannot exceed 6.0 DETO per square km (15.5 per square mile). Line distance sampling has been conducted within the Ord-Rodman DWMA; therefore, the density specific to this DWMA will be used as the baseline density for translocation into this area (8.2 DETO per sq km). Assuming the proposed Ord-Rodman DWMA translocation recipient areas have good quality habitat and are at the known limit for this DWMA, the maximum number of DETO will be translocated into the DWMA as appropriate based on the observed and estimated DETO population, density, habitat quality, and a less than 5% prevalence of disease, using the parameters described earlier in this document (Section 2.1.1). Therefore, because the DETO density will be allowed to reach 30 percent over the known density of 8.2 DETO per square km (which would equate to 10.7 DETO/sq km), the number of DETO allowed into the DWMA may be greater than 2 DETO per square km. The total number of DETO placed into the DWMA will be determined in

consultation with the regulatory agencies during the translocation effort and based on the prevalence of disease within the DWMA.

Density-dependent effects on resident populations are likely to be minor because this translocation effort will result in a dispersed release of individuals; the translocation areas are not a confined space, so released individuals would be able to disperse into other areas. Density levels at which adverse effects were observed in previous studies are significantly greater than the post-translocation densities are likely to be observed or allowed during this translocation effort. For example, the Fort Irwin translocation effort moved animals into recipient sites at densities of 20-30 animals per square mile; this translocation program will not allow more than 6 animals per square mile to be translocated into a recipient site.

2.1.7 Personnel Roles and Responsibilities

A lead biologist experienced in DETO ecology and conservation will orchestrate this program and be the main point of contact for the agencies, Applicant, and participating biologists. Participating biologists will hold the appropriate certifications/approvals from USFWS and CDFG for handling and disease testing DETO. USFWS, BLM, CEC, and CDFG will review and 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, will be designated. Each team will have a specific role, including conducting clearance surveys and health assessments, and attaching transmitters, performing DETO translocation, evaluating and establishing resident animal habitat and attaching transmitters, and evaluating 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, will work directly with the approved biologists and act as assistants in performing the various tasks associated with the program. This work will 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 will abide by the latest handling guidelines as set forth by the USFWS and DTRO (USFWS 2009a, USFWS 2010a, 2010b).

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. Individuals evaluating the health of tortoises must demonstrate proficiency in conducting health assessments and be approved by the USFWS. Updated DETO health assessment training is available, and handlers that will conduct health assessments must be certified by DTCC prior to implementation of this translocation program. Biologist qualifications will be provided to the agencies for review and approval at least 30 days prior to program implementation.

Table 3
Preliminary List of Agency-Approved Desert Tortoise Biologists

Name	Handle	Transmitter Attachment	Health Assessment (certified by DTCC)	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 will follow the specifications provided in the 2010 *Desert Tortoise Field Manual* (USFWS 2010a and USFWS 2010b; Appendices D and E), and will include installing I-beam barriers (cattle guards) across access roads where they meet permanent or temporary exclusionary fencing to act as tortoise guards. Recommended exclusionary fence specifications are provided in Appendix I. The Project site will be permanently fenced in several phases and temporarily fenced as needed during construction (Figure 2 and Figure 8).

At a minimum, the Phase 1a area will be fenced in fall 2010 (October and early November), Phase 1b will be fenced in Spring 2011, and Phase 2 will be fenced in phases in 2012 and 2013 as appropriate to allow for clearance surveys, health assessments, disease testing, and translocation to occur prior to initiation of construction associated with Phase 2, which is currently planned for Fall of 2013. Supplement #5 to the Biological Assessment (Appendix D) provides a description of the exclusionary fencing proposal for Phase 1a. Table 4 illustrates the estimated timing of fencing and clearance surveys based on the current permitting schedule and proposed phases of the Project. Construction areas for the main access road, waterline, temporary at-grade crossing and permanent bridge will be fenced with temporary DETO exclusionary fencing in October 2010. The existing BNSF ROW from the BNSF crossing to the Main Services Area will also be fenced with temporary DETO exclusionary fencing until the new at-grade crossing is complete (Figure 9). The Main Services Area, substation area and the 60 SunCatcher

pedestals will be fenced with temporary chain-link security fencing and temporary desert tortoise exclusionary fencing.

Phase 2 fencing will occur in a segmented fashion. The 'chimney' portion of Phase 2 and the westernmost 'island' of Phase 2 will be fenced and cleared during spring 2012. Figure 9 illustrates the general proposed timing of the fencing for the Project. DETO from the Phase 2 areas will be translocated to the Ord-Rodman DWMA translocation sites. The DETO within 500m of the northern project boundary could be moved north.

Prior to exclusionary fence construction, survey crews will stake the alignment on foot, or with the aid of a vehicle driven only on paved or unpaved roads (not on natural terrain). The vehicle will be restricted to a maximum speed of 25 miles per hour (mph) on all roads. Twenty-four hours prior to construction of the fence, qualified biologists will survey the staked fence alignment for DETO. The surveys will be 100 percent coverage clearance surveys with transects 5 m apart, and will include a 30-m-wide swath of area centered on the fence alignment. An authorized biologist will be present with each crew to monitor for DETO during fence installation.

In addition to the Project site, two DETO were detected in an area that was recently identified as an environmentally sensitive area (ESA) on the west side of NAP Area 2 and has been excluded from the Project footprint. Also, an unknown (but predicted to be small) number of DETO reside in the NAP Area 2. To avoid and minimize loss of DETO in these areas, the Applicant proposes to conduct clearance surveys in both of these areas and relocate all DETO found in the ESA and NAP Area 2. These DETO will be relocated greater than 500 m from their capture location, which will require blood testing prior to moving them to the Ord-Rodman DWMA translocation site. The Applicant proposes to install temporary fencing around the Project line (on the west side of NAP Area 2) that surrounds the environmentally sensitive area while waiting for blood test results (Figure 9). The fencing around this area will be removed once the DETO are relocated to the Ord-Rodman DWMA translocation areas in Spring 2011 or Spring 2012.

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. If the fence may have permitted tortoise entry while damaged, the DETO monitors will inspect the area for tortoise. If fencing is not repaired within 48 hours, the BLM, USFWS, and CDFG Wildlife Biologists will be notified immediately to determine if additional remedial action is required, such as the need for conducting additional clearance surveys within the Project footprint.

2.3 DESERT TORTOISE CLEARANCE SURVEYS

DETO clearance surveys will occur on the Project site after the USFWS Biological Opinion (BO) and BLM Record Of Decision (ROD) are issued and the translocation plan is approved by all of the

permitting agencies (CEC, BLM, USFWS, and CDFG). The following sections describe the planned methodology for clearing the site and translocating desert tortoise during each phase of the Project.

2.3.1 Clearance Survey Schedule

As indicated above, DETO clearance surveys will occur on the Project site after the USFWS BO and BLM ROD are issued and the Translocation Plan is approved by all of the permitting agencies (CEC, BLM, FWS, and CDFG). These clearance surveys will follow the guidelines provided in the *Desert Tortoise Field Manual* (USFWS 2010a; *Appendix F*) and follow the temperature guidelines provided in the most recent translocation guidance document (Translocation of Desert Tortoises (Mojave population) from Project Sites: Plan Development Guidance; USFWS 2010b, *Appendix G*). A clearance survey will also take place along the exclusionary fence alignment, as mentioned above. These clearance surveys will take place according to the schedule indicated in Table 4. Additionally, to minimize stress on DETO, clearance surveys and translocation efforts will be limited to the spring season prior to construction of each phase of the Project, with the exception of Phase 1a

2.3.2 Clearance Survey and DETO Translocation Methodology

The clearance surveys will occur during the spring season prior to construction of each phase (with the exception of Phase 1a which would take place in fall 2010) after the DETO exclusionary fence is constructed within each phase or in each area where construction will occur, and will consist of at least two consecutive surveys of the site using 5-meter-wide belt transects. Clearance surveys require two consecutive sweeps with zero tortoises detected; two sweeps of the area is usually the minimum, and three sweeps to clear an area is very common: the second survey will be performed perpendicular to the first. If any tortoises are detected in the second sweep, a third sweep will be conducted. This process will continue until two consecutive sweeps are conducted in which no 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, and during spring translocation efforts to the maximum extent possible, DETO would be coaxed or excavated from burrows, then those burrows and unoccupied burrows will be collapsed. If quarantine holding areas are on site, collapsing of the burrows within the holding area will not occur until the DETO are translocated. DETO burrows will be excavated according to the most recent *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.

All DETO detected during the clearance surveys will undergo a health assessment. Blood samples will be taken from the DETOs that are planned to be moved more than 500 meters. Data collected for each captured DETO will include:

- midline carapace length (MCL);
- sex (if MCL is greater than 180 mm);
- weight;
- health;

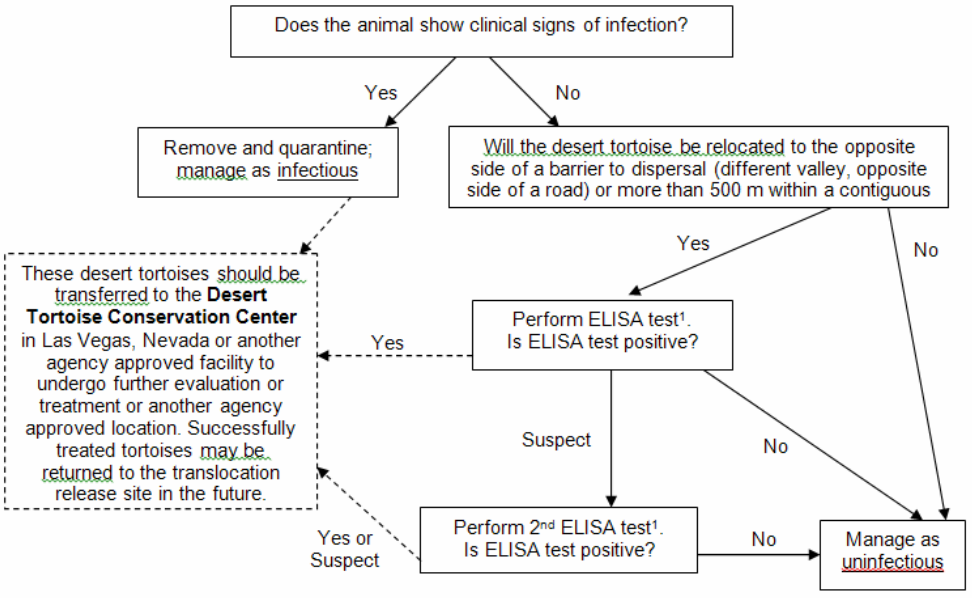
- capture location recorded with a global positioning survey (GPS) unit accurate to within 3 to 5 m (including a note if DETO is in a burrow); and
- All desert tortoises determined to be appropriate for translocation (showing no sign of disease or poor health) will be marked with a unique identifier provided by the Desert Tortoise Recovery Office and released in a safe location underneath a shrub. Each DETO will also be photo-documented and fitted with a radio transmitter for monitoring.

Collection of blood samples will follow approved protocols (University of Florida, Department of Pathobiology, undated), and be conducted by DTCC-certified DETO handlers. Samples will be sent to the University of Florida Mycoplasma Research Lab or another approved laboratory for analysis. Blood samples will be drawn between May 15 and October 31, in order to obtain results during the period when the immune system is most active (USFWS 2010b).

Once results of the disease tests are received (approximately 1- 3 weeks after submittal) and the disposition plan for each tortoise is reviewed and approved by the USFWS and DTRO, the DETO will be recaptured (by tracking their transmitters via radio telemetry) and translocated into the receptor area by a second team of biologists. URTD-infected and/or otherwise diseased DETO found on the Project site would remain in double-fenced quarantine holding pens in the Project area or within the recipient areas (which will be constructed prior to clearance and translocation efforts) until they can be removed from the field and placed in an appropriate facility approved by the DTRO. DETO moved less than 500 meters will be translocated immediately after undergoing a visual health assessment and having radio transmitters placed on them, given that they are found to be free of signs or symptoms of disease.

Disposition plans will articulate the proposed fate of each desert tortoise (*i.e.*, translocated to recipient site or removed from population due to suspected disease) expected to be translocated and include the complete health assessment for each individual. Desert tortoises will not be moved prior to USFWS and DTRO concurrence with the health assessments and disposition plans. Desert tortoises deemed uninfectious according to the pre-translocation decision tree (*i.e.*, lack of clinical signs and show no antibodies to pathogens), shown below, and that are of suitable body condition may be translocated (USFWS 2010b). Further detail is available in the USFWS Guidelines for Desert Tortoise Translocation (2010), Appendix G.

Pre-translocation Decision Tree



[1]ELISA tests, as developed by the University of Florida, must be conducted for both *Mycoplasma agassizii* and *Mycoplasma testudineum*.

Translocated, resident, and control DETO will 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). Radio transmitters might be temporarily attached with duct tape if temperature or time constraints would not allow for proper transmitter attachment. These transmitters will be removed and affixed properly within 48 hours. DETO fitted with radio transmitters will be monitored according to the monitoring schedule described below, and transmitters will be removed once monitoring is completed (approximately 5 years after translocation). If an animal is too small to be able to receive a transmitter, it will 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. 2009, USFWS 2009) to a site with similar physical characteristics in the Ord-Rodman DWMA. 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 will be excavated according to established guidelines, as described in the *Desert Tortoise Field Manual*, and will be collapsed after DETO are safely removed. Unoccupied burrows within the Project site will also be collapsed during the clearance surveys, when the animals are being moved. If quarantine holding pens are on site, burrows will not be collapsed early and will only occur when the animals are translocated.

To meet recently developed disease criteria developed by USFWS, BLM, CDFG, and the DTRO (personal communication, BLM 2010), a sample of the resident population of the Ord-Rodman DWMA translocation site will be blood tested prior to moving tortoises into that translocation area. The purpose is to ensure, with a 95% confidence level, that the resident population of the Ord-Rodman DWMA recipient site has a 5% or less occurrence of disease. It is anticipated that the disease testing in the DWMA recipient site will occur in Spring 2011 prior to implementation of Phase 1b clearance of the Project.

Based on the population estimates of the Ord-Rodman DWMA, it is estimated that it will be necessary to disease-test approximately 100-115 tortoise to meet the 95% confidence levels. To minimize harassment of the tortoises on the DWMA recipient site, if the 5% threshold is passed in the Ord-Rodman DWMA before all animals have been tested, disease testing will stop and a new translocation area will be proposed. This approach would be followed for all other proposed recipient sites.

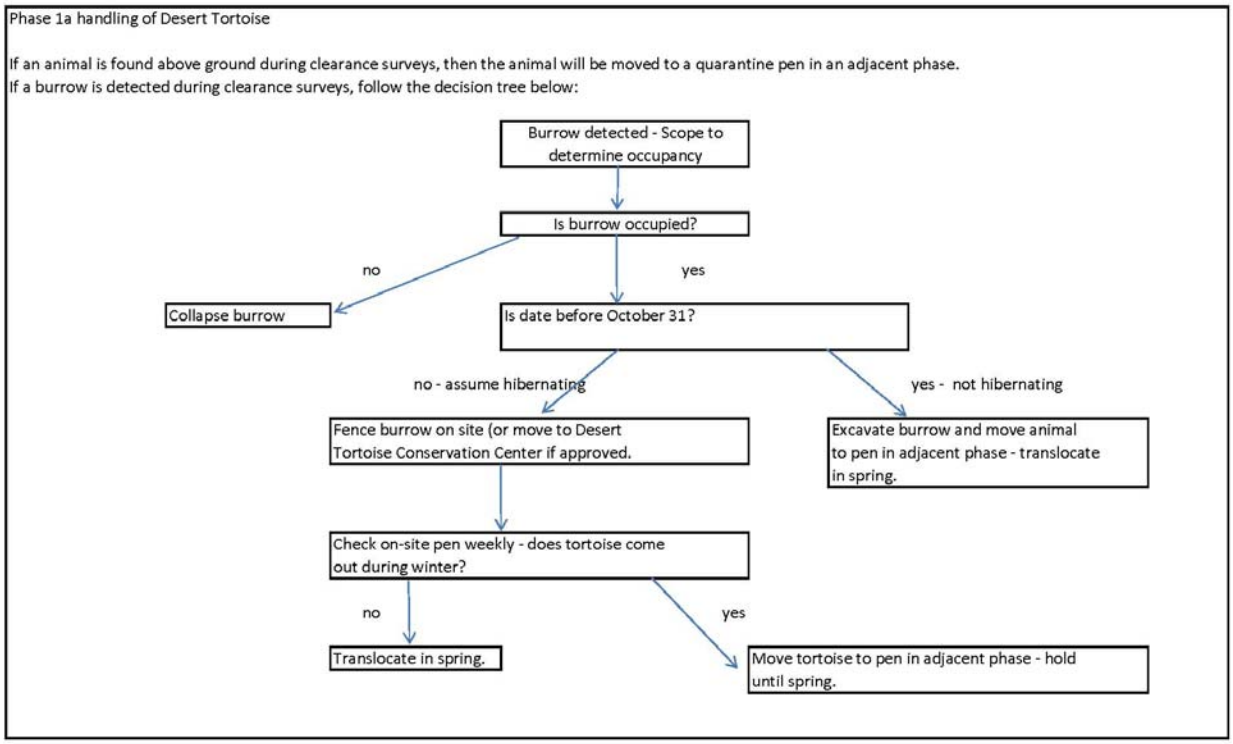
2.3.2.1 Clearance Surveys of Phase 1a

One juvenile desert tortoise was observed within the boundary of Phase 1a area during the 2010 surveys. Prior to construction of Phase 1a, 100% clearance surveys will be conducted within the area that is enclosed by exclusionary fencing to remove all tortoises from the impact area or exclusion fencing will be built around the burrow. Tortoises found in the Phase 1a footprint will be placed in quarantine pens in the adjacent area on the Calico Project site, depending on the date that the clearance survey is conducted. The flow chart below will be followed to determine the process. If occupied burrows are detected after October 31, the tortoises will be left in their burrows and a fenced quarantine pen will be constructed around each burrow; the pen will encompass the entire burrow, including the front apron and allow room for DETO to exit the burrow; approximately 3 square feet of open area extending from the outer edge of the burrow apron. The tortoises will be monitored and cared for during the winter based on the Animal Husbandry Plan prepared for this Project. If the tortoise comes out during the winter, it will be moved into the adjacent quarantine pen outside the Phase 1a boundary and held until spring; if it does not come out of the burrow it will be held until spring, when it will be disease-tested and translocated.

2.3.2.2 Clearance Surveys of Phase 1b

Two juvenile desert tortoises were detected in the Phase 1b footprint. Prior to construction of Phase 1b, temporary and permanent tortoise exclusionary fence and security fence will be placed around the Phase 1b boundary, and 100% clearance surveys will be conducted to remove all tortoise found in Phase 1b, including those in quarantine holding pens.. It is assumed that two tortoise will be moved to the Pisgah ACEC translocation site (both <500 meters), all tortoise within 500 meters of the Linkage Area will be moved to the Linkage Area, and all other DETO that are detected in Phase 1b during clearance surveys will be moved into the Ord-Rodman DWMA translocation sites. During the clearance surveys, each DETO will be fitted with a transmitter and given a unique identifier when blood samples are collected. These desert tortoises will move freely within the Project fence boundary until disease test results are received (i.e., *in situ* quarantine), which is expected to be 1-3 weeks, depending on when the blood samples are provided to the University of Florida. Juvenile DETO, which are too small to receive transmitters will be held in a quarantine pen within the adjacent Phase 2 area, the same as adult tortoises, until disease results are available.

Phase 1a Desert Tortoise Translocation Decision Tree



Consistent with USFWS and CDFG guidance for this Project, DETO found in Phase 1b will be quarantined within the desert tortoise exclusion fence constructed for Phase 1b or Phase 2 while waiting for blood test results. Desert tortoises with negative disease test results, but within 500 meters of a desert tortoise with positive diseases test results (either on day of blood collection or translocation) will be retested for infections prior to translocation. These animals will be monitored within DETO exclusionary fencing on the Project site while waiting for disease test results. Once results have been received, they will be resubmitted to DTRO and USFWS in a revised disposition plan before the translocation team can move those DETO into the recipient site.

As DETO are translocated into a recipient site, two additional tortoises per translocated tortoise (in addition to up to approximately 100 tortoises in the DWMA) will be handled: one in the recipient site

(resident tortoise) and one in the control site (control tortoise). This will include conducting health assessments to gather the same data as that collected for each translocated DETO, including collecting blood for disease tests and placing transmitters on each tortoise as described in greater detail in Section 2.4.2 below.

2.3.2.3 Clearance Surveys for Phase 2

Prior to construction of Phase 2, permanent tortoise exclusionary fence and security fence will be placed around the remaining area of the Project boundary, and 100% clearance surveys will be conducted (using the same methodology as in Phase 1a and 1b) within the newly fenced areas to remove all tortoise found in Phase 2. Prior to clearance surveys, quarantine pens will be placed within the portions of the Phase 2 area that will not be developed at the time of the clearance effort. Individuals found in Phase 2 will need to be moved greater than 500 m and will require blood testing. DETO will be quarantined within the desert tortoise exclusion fence constructed for Phase 2. During clearance surveys, each DETO will be fitted with a transmitter and given a unique identifier when blood samples are collected. These desert tortoises will move freely within the Project fence boundary until disease test results are received (i.e., *in situ* quarantine). Juvenile DETO, which are too small to receive transmitters, will be held in a quarantine pen within Phase 2 until disease test results are available. Desert tortoises with negative disease test results, but within 500 meters of a desert tortoise with positive diseases test results (either on day of blood collection or translocation) will be retested for infections prior to translocation. These animals will be monitored within DETO exclusionary fencing on the Project site while waiting for disease test results. Once results have been received, they will be resubmitted to DTRO and USFWS in a revised disposition plan before the translocation team can move DETO into the recipient site.

Prior to implementation of the translocation effort for Phase 2, disease testing will be used to verify the health of the population in the DWMA translocation area. To move tortoise into the DWMA, disease prevalence in the DWMA population must be lower than 5% (determined at the 95% confidence interval). If the prevalence is greater than 5%, the entire Ord-Rodman DWMA recipient site will be thrown out and a new site will be proposed. If DETO are found to be diseased in the Ord-Rodman DWMA, but the prevalence of disease is found in less than 5% of the population, a 6-km buffer will be placed around the tortoise and no DETO will be translocated into this buffer area. Table 4 illustrates the Project and proposed clearance and translocation schedule.

Table 4
Desert Tortoise Clearance Survey and Translocation Schedule

Date	Activity	Survey/Clearance Activity
March 29-May 24, 2010 (Completed)	Project Site and Recipient/control Site assessments	Project site protocol survey (10-m transects) and limited visual health assessment conducted for DETO on Project site. No tortoises were handled because no BO or other permits were in place.

Table 4
Desert Tortoise Clearance Survey and Translocation Schedule
(Continued)

Date	Activity	Survey/Clearance Activity
October, 2010	Translocation plan approved recipient sites and control sites designated. Biologist Qualifications Submitted to BLM, CDFG, and USFWS for approval	None
October, 2010	BLM Files Record of Decision	None
October, 2010	USFWS Issues Biological Opinion	None
October 27-28, 2010	CEC Files Certification, 30-day appeal period starts	Exclusionary Fence construction initiated for Phase 1a
October 28 - November 15, 2010	1) Exclusionary Fencing and Clearance Surveys for Phase 1a Footprint	Clearance surveys (5-m transects, perpendicular passes) initiated in Phase 1a. DETO will either be placed in quarantine pens on Phase 1b or Phase 2 footprints for translocation in Spring 2011, or if in burrows after October 31, an double-fenced quarantine pen will be built around each burrow within Phase 1a and the tortoise will be monitored and removed based on the flow chart above. All tortoises will be monitored during the winter according to Animal Husbandry Plan. All animals will be fitted with radio transmitters and blood tested in the spring 2011.
May 2011	Disease testing of tortoises from Phase 1a; DWMA Disease Testing	Tortoises in quarantine pens on Phase 1b will be disease tested. Disease testing of approximately 100 tortoises in the DWMA recipient site population; if reach 5% prevalence of disease in population, disease testing will stop and DWMA site will be abandoned as a recipient site. New >500 m recipient site will be determined if DWMA has >5% prevalence of disease.
May 2011	Construction of Phase 1b Tortoise Exclusionary Fence and Clearance Surveys of Phase 1b	Clearance surveys (5-m transects, perpendicular passes) initiated in Phase 1b. DETO that are detected in the fence alignment will undergo health assessments, including ELISA blood testing, and will be fitted with radio transmitters. Once results of blood tests are received and disposition plans are approved for each tortoise by DTRO/USFWS, DETO will be

Table 4
Desert Tortoise Clearance Survey and Translocation Schedule
(Continued)

Date	Activity	Survey/Clearance Activity
		moved to the appropriate receptor area. Two DETO will be moved into the Pisgah ACEC translocation site if found within 500 m from the edge of the translocation site. All other individuals will be moved into the Ord-Rodman DWMA if blood test results allow. Surveys and health assessments commence in the translocation and control sites for this phase. Monitoring of all recently transmittered DETO commences.
Spring 2012	100% Clearance Surveys for Phase 2, and ESA and NAP Areas	Clearance surveys (5-m transects, perpendicular passes) initiated in Phase 2 and ESA and NAP areas. DETO that are detected in the fence alignment will undergo health assessments, including ELISA blood testing, will be fitted with radio transmitters, and held in quarantine pen within the Project boundary while awaiting blood test results. Once results of blood tests are received and disposition plans are approved by DTRO/USFWS, DETO will be moved to the appropriate receptor area. All animals found within 500 meters of the Linkage Area will be moved into the DETO Linkage Area. If room is still available in the Pisgah ACEC, up to 2 tortoises will be moved <500 meters to that area. All other individuals will be moved into the Ord-Rodman DWMA if blood test results allow. Surveys and health assessments commence in the translocation and control sites for this phase. Monitoring of all recently transmittered DETO commences and continues for those already being monitored.
Spring 2013	Clearance Surveys for Final Phase 2 Development	Clearance surveys (5-m transects, perpendicular passes) initiated in remaining Phase 2 areas. All tortoise detected will undergo health assessments, including ELISA blood testing, and are fitted with radio transmitters. DETO awaiting blood sample analysis will be placed quarantined pens within other portions of Phase 2 or the receptor site. Once results of blood tests are received and disposition plans are approved by DTRO/USFWS, DETO will be moved to Ord-Rodman DWMA translocation area. Surveys and health assessments commence in the translocation and control sites for this phase.

Table 4
Desert Tortoise Clearance Survey and Translocation Schedule
(Continued)

Date	Activity	Survey/Clearance Activity
		Monitoring of all recently transmittered DETO commences and continues for those already being monitored.

Acronyms:

BLM – Bureau of Land Management
CEC – California Energy Commission
DETO – desert tortoise
DTRO – Desert Tortoise Recovery Office
ROD – Record of Decision
USFWS – US Fish and Wildlife Service

2.4 TRANSLOCATION PROCEDURES

The following sections describe the approach that is planned for translocating DETO found on the Project site to the Pisgah ACEC, Linkage Area, and Ord-Rodman DWMA receptor sites.

DETO handling will follow established guidelines (USFWS 2010a and 2010b) and will focus on the well-being of the animals. New clean latex gloves will be used when handling tortoises and new gloves will be donned each time a different animal is handled. Biologists will 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 from access roads. Captive DETO will be shaded at all times to avoid overheating, and will be monitored periodically for signs of overheating or stress. No DETO handling will occur if the temperature in the shade two inches aboveground exceeds 95 degrees Fahrenheit (ºF) (35 degrees Celsius). In the unanticipated event that temperatures exceed 95ºF with a DETO in captivity, DETO will 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 will be transported in a covered plastic tub that has been sterilized with a 10 percent bleach solution. If transported by vehicle, DETO will be secured and cushioned by pillows and straps to prevent injury, and vehicle speed will be limited to 25 mph on all roads.

All DETO will undergo a rehydration regimen if they void their bladder during handling. In addition, all DETO to be translocated will be hydrated according to existing protocols within 12 hours before release. The rehydration regimen will take place at the location where the DETO is to be released, whether it occurs during the initial clearance surveys or during translocation. Rehydration will consist of placing the DETO in a sterilized tub of water for a minimum of 30 minutes. The water level in the tub will not

exceed the height of the DETO's lower jaw. The water temperature will not be extremely hot or cold, relative to ambient conditions.

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). Shell disease seems to be more common in the eastern Mojave and Colorado Deserts and may be a concern for the translocated and resident/control populations. It is not clear how contagious shell disease is; however, DETO with mild to moderate shell disease may be reasonably translocated. The approach for this effort will be to avoid translocating DETO that show scute shedding or peeling scales, or other signs of severe disease, and if there are any doubts regarding the health of the DETO, the authorized biologists will defer to the DTRO and USFWS for guidance.

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 identify those individuals that have been exposed to the pathogen and therefore potentially infected and contagious, and to avoid infecting resident populations as well as healthy DETO that will be moved, blood samples will be collected and subsequent analysis will be conducted for all translocated DETO that are moved more than 500 meters, DETO that are resident within the recipient sites that are receiving translocated animals from more than 500 meters , and DETO that are selected as control animals. Each DETO, described above, will be captured, blood tested, and will undergo health assessments. Each health assessment will include examination for clinical signs of health and disease; photographs or images of carapace, plastron, nares, and eyes, including additional images of any abnormalities, recent trauma, or old trauma, or signs of shell disease; and examination for signs of URTD. All DETO, regardless of distance moved, will receive a visual health assessment.

Signs of infection from URTD are as follows:

- nasal or moderate-to-severe ocular discharge,
- eroded nares , and
- partially or completely occluded nares.

Signs of dried nasal and ocular discharge must be obvious and should not be confused with dried dirt or mud on the beak and nares from recent rain events.

Blood samples will be collected from the brachial vein of each tortoise sufficient for 2 ELISA tests for *Mycoplasma agassizii* and *M. testudinium.* Current guidance from DTRO only requires ELISA analysis because it is the only reliable test that can be used to determine if the Mycoplasma antibodies are present, indicating that the tortoise has URTD.

Each resident and control DETO will also be radio transmittered so that they can be monitored while awaiting blood test results and once translocation is completed, they will be monitored concurrently with the translocated DETO for the entire 5-year monitoring period included in this plan. All attempts will be made to ensure that the resident and control DETOs will be released where they were picked up within one hour after capture.

DTRO will approve releases of DETO on a case-by-case basis based on disease test results and the disposition plan for each DETO or group of DETO. For example, if blood test analyses reveal that several DETO from one area are diseased or seropositive, the DTRO may not allow translocation of any of the DETO because this prevalence of disease may indicate a disease hotspot. By limiting release of diseased DETO, even with buffers in place, the potential for spread of URTD or other diseases can be minimized.

If blood test analyses reveal that a *resident* DETO is diseased or seropositive, it will remain in the receptor site where it was captured, and a 6-km buffer around its capture location (and potentially its recapture location if it has moved) will be mapped around the sick resident animal (DTRO 2010). No translocation will be allowed within the 6-km buffer of any diseased animal. If other DETO are found to be diseased, buffers will be placed around all animals that may be found to be sick, and the area into which DETO can be translocated will be revised based on the proposed translocation area that falls within the disease buffer area(s).

Holding/Quarantine 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 found to be diseased and/or seropositive would be placed in a designated double-fenced quarantined holding pen onsite located in the Phase 1b, 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 double fenced 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, and approved by USFWS and DTRO, the tortoise will be released by removing the pens or relocating the tortoise 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, and the pens will be double fenced to keep tortoise within the pen from contaminating any tortoises outside their pens. The pens will be designed in consultation with experienced personnel from an AZA-accredited institution and approved by FWS and CDFG. In general, 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 for this Project and approved by a veterinarian, 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 will be developed by qualified personnel from an AZA-accredited institution and approved by USFWS and CDFG. For holding pens on the Project site, additional disease testing will be required for all DETO found to be within 500 m of a seropositive or diseased DETO prior to translocation.

2.5 TRANSLOCATION SCHEDULE

Translocation of desert tortoise should occur in spring (April 1 through May 31). This timeframe reflects the DETO activity cycle, avoids extreme thermal conditions, and is dependent on actual regional conditions, including adequate rainfall, temperature, and available forage. Translocating DETO during the spring season is preferred by many experts because it minimizes stress on DETO by allowing tem enough time to find a burrow for the winter and by minimizing the potential for territorialism between males within a new home range. Therefore, all translocation efforts for the Calico Solar Project will occur in the spring prior to each phase of development with the exception of Phase 1a in which a very small number (approximately 5) will be moved <500 meters into quarantine pens. The translocation schedule and each activity is outlined in Table 4, above.

2.6 MONITORING AND REPORTING

Monitoring of translocated, resident and control DETO will occur for five years after translocation is completed in a phased manner consistent with the phases of the Project. Monitoring of translocated, resident, and control DETO will provide useful information about the success of the effort, provide information needed to inform adaptive management, and provide guidance for future translocation projects. The Applicant will provide for monitoring to be conducted by qualified biologists using both radio telemetry and incidental observation. Radio transmitters will be maintained (battery replacement, etc.) on a regular basis. If transmitters are thought to be malfunctioning, biologists would search for all

DETO with malfunctioning transmitters, and searches will include a survey of known burrows or other shelter sites within the known home range of the individual. These efforts will be documented in the monitoring reports submitted to the agencies. All transmitters will be removed at the completion of the monitoring effort when approved by the USFWS. Any vehicle use associated with monitoring efforts will be limited to routes designated "open" by BLM (unofficial routes will not be used and no cross country travel will be used). All other travel will be on foot.

Based on site surveys and USFWS estimation methods, we assume that approximately 29 subadult/adult DETO (the high end of the USFWS estimate) will be translocated for the Calico Solar Project. In addition to the 29 DETO from the Calico Project site, we estimate that 2 resident Pisgah ACEC subadult/adult DETO, up to 29 resident DWMA DETO, approximately 5 resident Linkage Area DETO, and approximately 29 control population subadult/adult will be disease tested, transmittered, and monitored.

Based on USFWS estimates, the Project site may contain approximately 11 juvenile desert tortoises and could produce up to 56 eggs per year.

All translocated, resident, and control DETO will be monitored for five years after translocation, according to the schedule provided below, and will be in a phased manner consistent with the phased movement of DETO.

- First location will be obtained within 24 hours of the translocation of a given DETO.
- For at least the first week, tortoises will be monitored daily.
- During the next two weeks, locations will be secured every three to four days.
- During March through November, locations will be secured every week.
- During November to February, locations will 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 will 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 will also ensure recipient site management issues (human disturbance, excessive predation, *etc.*) are identified and addressed in a timely manner. Monitoring observations will 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, will be submitted to the regulatory agencies.

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

- Assessments of condition (*i.e.*, measurements of body mass and carapace, health assessment including ELISA blood testing, 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, vegetation transects at representative sampling locations within the recipient site will be performed and repeated annually to capture potential changes in habitat characteristics. At a minimum, monitoring of the annual species components will be accomplished to identify changes in forage diversity and availability.

Monthly reports will 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 will include the following information: (1) unique 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 over the past month. The monitoring reports will include recommendations on how to improve monitoring techniques and recipient site management to enhance translocation success.

Upon conclusion of the 5-year monitoring period, health assessments will be performed on all remaining monitored desert tortoises and transmitters will remain attached until the USFWS and State wildlife agencies have determined whether or not further action is warranted at the site.

2.6.1 Translocation Success Criteria

The various measurements used to determine the success of the proposed translocation effort are provided below. Assumptions of take and proposed remedial actions or adaptive management measures are identified where appropriate below.

Survivorship will 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 will be used to compare translocated DETO with local control populations in similar habitats.

- If mortality rates for DETO are statistically significant differences detected among any of the three populations (translocatees, residents, or controls), remedial action will be coordinated with the agencies.

Growth rates will 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 will be considered potentially affected by the translocation. Such individuals will be reported to the agencies in the monthly/annual reports and appropriate remedial actions will be developed.

Movement of translocated, control, and recipient site DETO will 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).

Overall health of translocated, control and recipient site DETO will be noted during monitoring events. Qualified biologists performing examinations for health characteristics will 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 will be free of *Mycoplasma agassizii* antibodies prior to release into the recipient sites.

- Any injured or diseased DETO will be removed from the Project site and placed in an agency-approved facility.

Nutrition of DETO will 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 will 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). Also, any mortality will be assessed for cause of death – particular note will be made of individuals being predated. If mortality from predation is high, remedial actions will be developed in coordination with e permitting agencies.

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

SECTION 3 ADAPTIVE MANAGEMENT

Strategies for dealing with the various contingencies that may occur during implementation of the proposed Project have been built into the plan based on lessons learned from previous translocation and the best and most current information available. In the event that unforeseen circumstances arise, the lead biologist will notify the pertinent agencies and other contacts according to the list provided in Table 5.

Principles of adaptive management will be enacted as the translocation program is implemented, and the methodology proposed in this plan might be modified (with agency approval) to improve the success of the program. Adaptive management promotes flexible decision making that can be adjusted based on issues that arise during the translocation and as effects of translocation activities become better understood. Six principles are important aspects of adaptive management and have been incorporated into this translocation plan: Problem Assessment, Design, Implementation, Monitoring, Evaluation, and Adjustment (BLM 2005). This plan has established clear, biologically appropriate and statistical goals and triggers to identify the need to re-evaluate this program, and proposed strategies for adapting the program to minimize mortality of DETO. Through the adaptive management process, management decisions will be made (in coordination with the regulatory agencies) in response to post-translocation assessments of control and resident populations as compared to the translocated individuals.

Mortality from coyote predation and increases in URTD and shell disease among the DETO populations are the primary concerns for this translocation effort. While not expected to represent a significant source of mortality, other threats to DETO include exposure, fire, crushing by cattle, and flooding. Data will be collected and carefully analyzed for all populations of monitored DETO (translocatees, resident, and control animals) throughout the translocation effort and during the 5-year monitoring period.

Following release of translocated animals, it is anticipated that some DETO will die due to predation, exposure, fire, disease, crushing by cattle, or flooding. Most of this mortality is likely to occur in the first year after release, during the period that translocated animals are making long-distance movements and attempting to establish new home ranges.

The estimates and upper limits of the allowed mortality will be set by the Biological Opinion for this Project. If a statistical difference (also defined by the Biological Opinion) is observed between the translocated and control populations, adaptive management strategies will be implemented to minimize effects of predation, disease, or other stresses that may be presented to the DETO populations. Adaptive management strategies that would be implemented may include (but are not limited to):

- discontinuing the translocation program;
- making adjustments to the numbers of DETO being translocated into a given receptor site;
- selection of additional translocation sites;
- restoring habitat within translocation areas;
- increasing the frequency of disease testing;
- adjustments to the buffers placed around disturbance (roads, cattle) or hazards (diseased animals);
- construction of fencing to preclude movement of DETO into roads or to prevent human disturbance of the DETO habitat within the translocation sites; and

- control of the predator populations if it is determined to be a significant cause of DETO losses.

Additional strategies would be developed based on information obtained during monitoring activities over the life of the program.

Table 5
Contacts for the Calico Solar Desert Tortoise Translocation Plan

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Table 5
Contacts for the Calico Solar Desert Tortoise Translocation Plan
(Continued)

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APPENDICES A - J ATTACHED ELECTRONICALLY

SEE ENCLOSED CD FOR THE FOLLOWIGN DOCUMENTS

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See enclosed CD for this documentation.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
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APPLICATION FOR CERTIFICATION

***For the CALICO SOLAR** (Formerly SES Solar One)*

Docket No. 08-AFC-13

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(Revised 8/9/10)

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DECLARATION OF SERVICE

I, Darin Neufeld, declare that on October 22, 2010, I served and filed copies of the attached October 14th 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;

____ by personal delivery;

__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."

AND

FOR FILING WITH THE ENERGY COMMISSION:

__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.

Darin Neufeld

*indicates change