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CH2MHILL

DOCKET
07-AFC-5
DATE May 27 2009
RECD. May 27 2009

May 27, 2009
File No.: 04.02.16.02
Project No. 357891

Mr. John Kessler, Project Manager
California Energy Commission
Systems Assessment and Facilities Siting Division
1516 9th Street, MS 15
Sacramento, CA 95814-5504

RE: Supplemental Data Response, Set 2D
Ivanpah Solar Electric Generating System (07-AFC-5)

Dear Mr. Kessler:

On behalf of Solar Partners I, LLC, Solar Partners II, LLC, Solar Partners IV, LLC, and Solar Partners VIII, LLC, please find attached one original and four hard copies and five CD copies of the Supplemental Data Response, Set 2D, which provides the Incidental Take Permit Application.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.
Program Manager

Enclosure
c: POS List
Project File

Ivanpah Solar Electric Generating System (ISEGS)

(07-AFC-5)

Supplemental Data Response, Set 2D

(Response to Data Request: Biological Resources)

Submitted to the

California Energy Commission

Submitted by

Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC

May 27, 2009

With Assistance from

CH2MHILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

Contents

Section Page

Introduction

Attached is a supplemental response by Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC (Applicant) to the California Energy Commission (CEC) Staff's data request for the Ivanpah Solar Electric Generating System (Ivanpah SEGS) Project (07-AFC-5). This data request was the result of the PSA workshop discussion held at Primm, Nevada on January 9, 2009. As before, within each discipline area, the responses are presented in alphabetical order and are numbered for tracking and reference convenience. New graphics or tables are numbered in reference to the Supplemental Data Request number. For example, if a table were used in response to Data Request BR-5, it would be numbered Table BR5-1. The first figure used in response to Data Request BR-5 would be Figure BR5-1, and so on.

The Applicant looks forward to working cooperatively with the CEC and Bureau of Land Management (BLM) staff and the other resource agencies as the Ivanpah SEGS Project proceeds through the licensing process. We trust that these responses address the Staff's questions and we remain available to have any additional dialogue the Staff may require.

Biological Resources (BR-5 and 6)

BR-6 On January 15, 2009, following the PSA workshop held in Primm, Tom Hurshman (BLM's Project Manager) provided the Applicant with a list of documents that BLM needed in order to prepare its Environmental Impact Statement. In that list it stated that an Incidental Take Permit application needed to be submitted to the Energy Commission and CDFG, and that the Desert Tortoise Translocation/Relocation Plan should be incorporated into this permit application.

Response: An Incidental Take Permit Application has been prepared by the Applicant and is provided as Attachment BR6-1A. The Tortoise Translocation/Relocation Plan was filed on March 19, 2009 as Attachment BR5-1A. Comments on the Plan were received on April 28, 2009. Those comments have been address and the Plan revised. The revised Draft Tortoise Translocation/Relocation Plan is provided as Attachment BR5-1B. A response to comments is also included as Attachment BR5-2A.

ATTACHMENT BR6-1A

Incidental Take Permit Application

BrightSource™

May 22, 2009

Curt Taucher
c/o Katrina Banda
Regional Manager
California Department of Fish and Game Region 6
4665 Lampson Avenue, Suite J
Los Alamitos, CA 90720

Subject: Application for an Incidental Take Permit for the Ivanpah Solar Energy Project (Ivanpah SEGS): Eastern San Bernardino County, California

Dear Mr. Taucher,

BrightSource Energy is seeking incidental take authorization for the Ivanpah Solar Electric Generating System (Ivanpah SEGS) in San Bernardino County, California. Ivanpah SEGS will be located near the Nevada border, to the west of Ivanpah Dry Lake.

The attached application for incidental take under Section 2081(b) of the California Endangered Species Act (CESA) follows the April 25, 2008 CDFG guidelines and describes the management actions that will be implemented to mitigate the impacts to desert tortoise (*Gopherus agassizii*), a federally and state threatened species.

Should you have any questions regarding this application, please contact me or John Carrier, Project Manager, at 916-286-0224, or via email at: jcarrier@ch2m.com.

Sincerely,

Steve De Young
Director
Environmental, Health and Safety

Enclosure
Application

1999 Harrison Street, Suite 2150 • Oakland, CA 94612 • Telephone: 510-550-8161 • Fax: 510-550-8165
Email: info@brightsourceenergy.com • Website: www.brightsourceenergy.com

California Endangered Species Act, Application for an Incidental Take Permit Under Section 2081 of the Fish and Game Code for Incidental Take of State-Listed Species

This permit application was prepared to support BrightSource Energy's application for an Incidental Take Permit pursuant to Section 2081(b) of the California Endangered Species Act (CESA). This permit application describes management actions that will be implemented to mitigate the impacts of any take of state-listed species associated with the implementation of the Ivanpah Solar Electric Generating System (Ivanpah SEGS).

Applicant:

BrightSource Energy, Inc.
1999 Harrison Street, Suite 2150
Oakland, CA 94612
Telephone: (510) 550-8161

Principal Officer: **John Woolard**
Registered Agent for the Service of Process: **John Woolard**
Point of Contact: **Steve De Young**

Species for Which Coverage Is Requested

BrightSource Energy is seeking authorization under Section 2081(b) of the CESA for incidental take of desert tortoise (*Gopherus agassizii*), a federally and state threatened species, pursuant to Section 2112 and 2114 of the California Fish and Game Code.

Project Description and Location

Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners VIII, LLC, the owners of the three separate solar plant sites, and Solar Partners IV, LLC, the owner of shared facilities required by the three solar plant sites, are the proponent for the project. These four companies are Delaware limited liability companies. BrightSource Energy Inc. (BrightSource), a Delaware corporation, is a technology and development company, and the parent company of the Solar Partners entities. The Applicant, BrightSource Energy, proposes to develop a solar energy project called the Ivanpah SEGS. It will be located in southern California's Mojave Desert, near the Nevada border, to the west of Ivanpah Dry Lake.

The project will be located in San Bernardino County, California, on federal land managed by the Bureau of Land Management (BLM), see Figure 1. As described in the Draft Biological Assessment (CH2M HILL, 2009b) the project will be constructed in three phases: two 100 megawatt (MW) phases (known as Ivanpah 1 and Ivanpah 2) and a 200-MW phase (Ivanpah 3). The 100-MW Ivanpah 1 solar plant site would require approximately 914 acres (1.4 square miles), the 100-MW Ivanpah 2 solar plant site would require approximately 921 acres (1.4 square miles), and the 200-MW Ivanpah 3 site would require approximately 1,836 acres (2.9 square miles), see Figure 2. In addition, an Administration Building/ warehouse and a substation would be located in the area between Ivanpah 1 and Ivanpah 2. These structures would require approximately 25 acres, along with other permanent facilities like transmission towers, linear facilities, and access roads.

The total area required for construction and operation of all three solar plant sites including the shared infrastructure, roads and re-routed trails is approximately 4,072 acres.

In addition to the project site, the action area includes the installation of a fiber optic line. This fiber optic route consists of two segments. The first segment is proposed from Ivanpah substation to Mountain Pass substation using existing poles. The second segment is proposed from Mountain Pass substation to an interface point to be designated by a local telecommunication carrier. In both segments the fiber cable would be installed on the existing distribution line poles. Therefore, the action area includes the project site plus the route for the fiber optic line.

Potential Project Impacts

Significant direct and indirect impacts could occur to the federally and State listed desert tortoise as a result of the Ivanpah SEGS if the recommended minimization measures detailed in the next section are not implemented.

The proposed project site does not lie within critical habitat for the desert tortoise; however, the Ivanpah critical habitat unit is located west, south, and southeast of the site and tortoises were observed onsite during surveys. The construction of the Ivanpah SEGS would initially impact approximately 4,072 acres of desert tortoise habitat within the project area through the clearing and grubbing of vegetation for the installation of project facilities and structures. Upon completion of construction about 360 acres will be revegetated, for a permanent impact to about 3,712 acres. Without the implementation of appropriate mitigation measures, these actions could result in direct mortality, injury, or harassment of individuals as a result of encounters with vehicles or heavy equipment, whether on the project site or from these vehicles straying from existing roads or designated areas into adjacent habitat. Other direct impacts could include individuals being crushed or entombed in their burrows, possible collection or vandalism by project-related personnel, disruption of tortoise behavior during construction or operation of facilities, disturbance by noise, injury, or mortality from encounters with workers' or visitors' pets. Also, tortoises may take shelter under parked vehicles and be killed, injured, or harassed when the vehicle is moved.

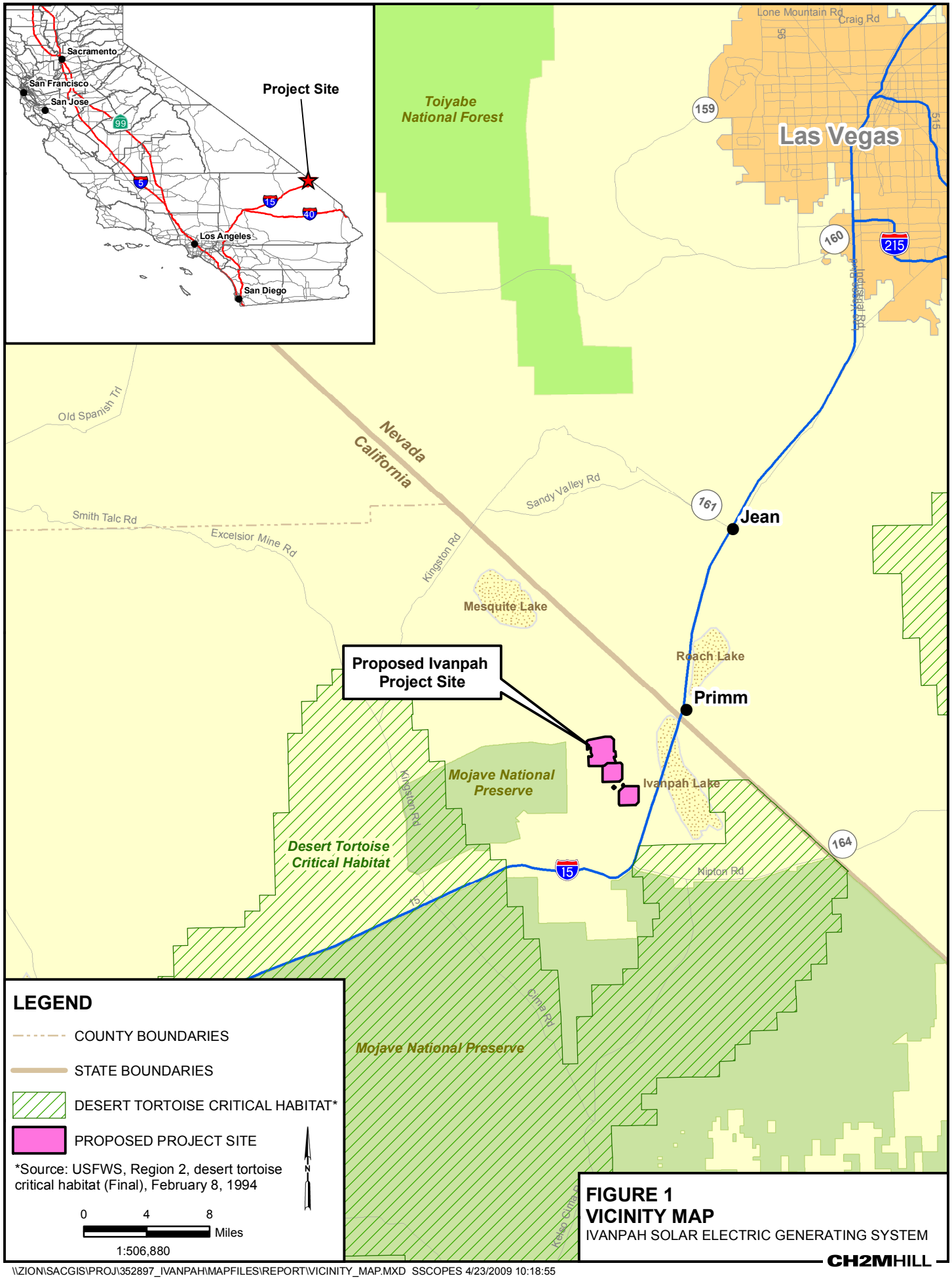

FIGURE 1
VICINITY MAP
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

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TAP STATION

IVANPAH 3

METERING SET

IVANPAH 2

METERING SET

REROUTED COLOSSEUM ROAD

Colosseum Road

ADMINISTRATION AND STORAGE

Colosseum Road

Colosseum Road

SUBSTATION

PROPOSED
MONITORING WELL

WELLS

IVANPAH 1

LEGEND

- WELLS
- DIRT ROAD
- PAVED ROAD
- UTILITIES CORRIDOR
- NATURAL GAS LINE
- GEN-TIE LINE
- KERN RIVER GAS LINE
- 4WD TOURING/TRAILS
- SECTION LINES
- PROJECT SITE

N

0 3,000 Feet

FIGURE 2
SITE PLAN AND LINEAR FACILITIES
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

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Additionally, the permanent loss of desert tortoise habitat that would occur from the removal and crushing of shrubs and herbaceous vegetation would indirectly impact the species through the loss of burrowing, breeding, and foraging habitat. Other potential indirect impacts to desert tortoise resulting from construction and installation, operation, modifications or improvements, and maintenance of project facilities may include compaction of soils and project facilities potentially acting as a barrier impeding the natural movements of desert tortoise throughout their habitat. Also, increased levels of surface-disturbing activities and potentially wash water-induced vegetation may increase the abundance of alien plants and wildfire frequency (Brooks et al., 2003).

Increased vehicle travel will occur from the construction and improvement of access roads, which could potentially disturb or kill individual tortoises. During the month-long time period in which the Ivanpah SEGS workforce is at its largest, an estimate of the average daily traffic would include 39 transport buses (78 trips) and 192 personal vehicles (384 trips). Likewise during this time period, the average total of construction truck traffic would be approximately 145 trucks per day (290 trips). However, for all other periods during construction (and to a much greater extent during operations and maintenance activities) daily average vehicle activity would be far less. In addition to vehicle strikes, additional potential impacts may include habitat fragmentation, increases in predator (especially common raven and coyote) populations using vehicle road kills to supplement their diet, changes in plant community composition and structure from fires, loss of foraging and burrowing habitat from the road, restriction of movements and gene flow of tortoises, changes in plant composition due to alien plant introductions along road corridors, mortality of tortoises from various illegal activities such as collecting for pets or food and shooting of tortoises (Berry, 1986). The potential for direct impacts is greatest along paved roads where vehicle frequency and speed is greatest; though tortoises on dirt roads may also be affected, depending on vehicle frequency and speed. Census data indicate that desert tortoise numbers decline as vehicle use increases (Bury et al., 1977) and that tortoise sign increases with increased distance from roads (Nicholson, 1978). Additional impacts that may occur from casual use of the access roads in the project area include unauthorized trail creation.

Human activities in the Ivanpah SEGS project area may provide food in the form of trash and litter, or water, for tortoise predators such as common raven, kit fox, and coyote (Berry, 1985; BLM, 1990). Natural predation in undisturbed, healthy ecosystems is generally not an issue of concern. However, predation rates may be altered when natural habitats are disturbed or modified. Common raven populations in some areas of the Mojave Desert have increased 1,500 percent from 1968 to 1988 in response to expanding human use of the desert (Boarman, 2002). Since ravens were scarce in this area prior to 1940, the current level of raven predation on juvenile desert tortoises is considered to be an unnatural occurrence (BLM, 1990). In addition to ravens, feral dogs have emerged as significant predators of the tortoise. Dogs may range several miles into the desert and have been found digging up and killing desert tortoises (USFWS, 1994; Evans, 2001). Dogs brought to the project site with visitors may harass, injure, or kill desert tortoises, particularly if allowed off-leash to roam freely in occupied desert tortoise habitat. The worker environmental awareness training and restriction on pets being brought to the site required of all personnel will reduce the potential for these impacts.

If tortoise-proof fencing is installed, over time breaches may occur, thus allowing tortoises to pass through the barrier and be impacted by project-related activities. Temporary fencing left in place following removal of threats to tortoises in the area may also contribute to habitat fragmentation. Materials and equipment left behind following construction activities may entrap or entangle tortoises, attract desert tortoise predators such as common ravens and coyotes, or provide shelter for tortoises, which when removed may result in displacement or injury of the tortoise.

Construction of the gas pipeline corridor and electrical transmission line interconnections would result in a total temporary impact to desert tortoise habitat. The impacts of habitat restoration after the 50-year life of the facility and weed-control during operations and maintenance in these and other project areas may be significant without proper planning and implementation. These activities may involve the use of heavy equipment, all-terrain vehicles (ATVs), or hand-tools and include re-contouring, ripping of soil, ground watering, broadcast seeding, use of water trucks for dust abatement, and planting of live vegetation. Use of vehicles and heavy equipment may increase the risk of injury or mortality of individual tortoises, result in short-term displacement and/or noise during the project, create short-term loss of vegetation, and result in temporary ground disturbance due to fencing or the installation of barricades. Many potential effects of habitat restoration are the same as, or similar to, other surface-disturbing activities identified above. Activities associated with weed treatments that may affect the desert tortoise include application of herbicides, clearing or cutting vegetation by hand or with machinery, and use of ATVs on disturbed areas for site access. Effects to the desert tortoise include unintentional removal or destruction of plants used by tortoises for forage or shelter, soil compaction, alteration of local microclimate through vegetation removal, and harassment, injury, or mortality of tortoises as a result of vehicle or machinery operation.

Beneficial effects of the habitat restoration activities may include long-term improvement of species diversity (including food sources), long-term reduction in erosion, long-term increased habitat quality, increased tortoise abundance and distribution through habitat enhancement, decreased potential for future alien plant invasions, and decreased wildfire potential.

Potential impacts from the activities of capturing, handling, and relocating desert tortoises might be significant. Blythe et al. (2003) found that Sonoran desert tortoises moved out of an area of potential impact a distance of less than 0.5 mile had returned to their home ranges within a few days. Unless movement barriers are in place, tortoises that move a distance of less than 0.5 mile out of a potential impact area are likely to return to potentially harmful conditions. Tortoises may die or become injured by capture and relocation if these methods are performed improperly, particularly during extreme temperatures, or if they void their bladders. Averill-Murray (2001) determined that tortoises that voided their bladders during handling had significantly lower overall survival rates (0.81 to 0.88) than those that did not void (0.96). If multiple desert tortoises are handled by biologists without the use of appropriate protective measures, such as fresh latex gloves, pathogens may be spread among the tortoises.

The desert tortoise was listed by the federal and State agencies in response to habitat loss and degradation caused by numerous human activities including urbanization, agricultural development, military training, recreational use, mining, and livestock grazing. The loss of

individual desert tortoises to increased predation by common ravens, collection by humans for pets or consumption, collisions with vehicles on paved and unpaved roads, and mortality resulting from diseases also contributed to the listing of this species by the USFWS. Several of these impacts have the potential for occurring in the Ivanpah SEGS project area.

The aforementioned potential impacts may have a significant impact upon the desert tortoise. However, with the implementation of various measures including exclusionary fencing, worker environmental awareness training, pre-construction and clearance surveys, avoidance, and mitigation, as well as those measures required by the CEC, CDFG, BLM, and USFWS, these impacts would be successfully mitigated and considered less-than-significant.

Incidental Take Determination and Jeopardy Analysis

Approximately 4,072 acres of occupied desert tortoise habitat would be affected by construction with about 3,712 acres being permanently lost and a minimum of 25 desert tortoises needing to be moved to a location yet to be determined. The relocation/translocation areas will be described in the Desert Tortoise Translocation/ Relocation Plan for the Ivanpah Solar Electric Generating System (CH2M HILL, 2009a), with implementation of the conservation measures, this level of take is not likely to result in jeopardy to the species.

Minimization Measures and Compliance

The following minimization measures are presented in the *Preliminary Staff Assessment, Ivanpah Solar Electric Generating System, Application for Certification* (CEC, 2008). They are what is presently recommended by CEC Staff and may change during the CEC licensing process. The final conditions of certification will be implemented during preconstruction, construction, operation, and demolition activities.

BIO-1 DESIGNATED BIOLOGIST SELECTION

The project owner shall assign a Designated Biologist to the project. The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information, to the Energy Commission Compliance Project Manager (CPM) for approval in consultation with CDFG and USFWS.

The Designated Biologist must meet the following minimum qualifications:

- Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field; and
- Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; and
- At least one year of field experience with biological resources found in or near the project area.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM, in consultation with CDFG and USFWS, that the proposed Designated Biologist or

alternate has the appropriate training and background to effectively implement the conditions of certification.

Verification: The project owner shall submit the specified information at least 90 days prior to the start of any project-related site disturbance activities. No site or related facility activities shall commence until an approved Designated Biologist is available to be on site.

If a Designated Biologist needs to be replaced, the specified information of the proposed replacement must be submitted to the CPM at least ten working days prior to the termination or release of the preceding Designated Biologist. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM for consideration.

BIO-2 DESIGNATED BIOLOGIST DUTIES

The project owner shall ensure that the Designated Biologist performs the following during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, and closure activities. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the contact for the project owner and CPM. The Designated Biologist Duties shall include the following:

a. Advise the project owner's Construction and Operation Managers on the implementation of the biological resources conditions of certification;

b. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) to be submitted by the project owner;

c. Be available to supervise, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special-status species or their habitat;

d. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;

e. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way;

f. Notify the project owner and the CPM of any non-compliance with any biological resources condition of certification;

g. Respond directly to inquiries of the CPM regarding biological resource issues;

h. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Report and the Annual Compliance Report;

i. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and all permits; and

j. Maintain the ability to be in regular, direct communication with representatives of CDFG, USFWS, and BLM.

Verification: The Designated Biologist shall submit in the Monthly Compliance Report to the CPM copies of all written reports and summaries that document biological resources activities. If actions may affect biological resources during operation a Designated Biologist shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless their duties cease, as approved by the CPM.

BIO-3 BIOLOGICAL MONITOR QUALIFICATIONS

The project owner's CPM-approved Designated Biologist shall submit the resume, at least three references, and contact information of the proposed Biological Monitors to the CPM for approval in consultation with CDFG, USFWS, and BLM. The resume shall demonstrate, to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks.

Biological Monitors involved in any aspect of desert tortoise surveys or handling must have a minimum of 60 days field experience with this species. Biological Monitors must: (1) be familiar with the USFWS-approved handling protocol (Desert Tortoise Council 1994, revised 1999, or more current guidance approved by the USFWS Desert Tortoise Recovery Office); (2) demonstrate thorough, current knowledge of desert tortoise biology (behavior, natural history, ecology, physiology) and, (3) have sufficient field experience and training to safely and successfully conduct the following activities:

- handle and temporarily hold desert tortoises
- excavate burrows to locate desert tortoise or eggs
- relocate/translocate desert tortoises
- reconstruct desert tortoise burrows
- unearth and relocate desert tortoise eggs
- locate, identify, and record desert tortoise sign

Biological Monitor(s) training by the Designated Biologist shall include familiarity with the conditions of certification, BRMIMP, WEAP, and all permits.

Verification: The project owner shall submit the specified information to the CPM for approval at least 30 days prior to the start of any project-related site disturbance activities. The Designated Biologist shall submit a written statement to the CPM confirming that individual Biological Monitor(s) have been trained including the date when training was completed. If additional biological monitors are needed during construction the specified information shall be submitted to the CPM for approval at least ten days prior to their first day of monitoring activities.

Biological Monitors involved in any aspect of desert tortoise surveys or handling shall complete a USFWS Qualifications Form and submit it to the USFWS and CPM within 60 days prior to ground breaking for review and final approval.

BIO-4 BIOLOGICAL MONITOR DUTIES

The Designated Biologist shall ensure that the Biological Monitors perform the following during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, and closure activities. The Designated Biologist may be assisted by the approved Biological Monitor(s), but remains the contact for the project owner and CPM.

Biological Monitors shall be or any aspect of desert tortoise surveys or handling would provide oversight to ensure proper implementation of protective measures, record and report desert tortoise and sign observations in accordance with approved protocol, report incidents of noncompliance, and move desert tortoises from harm's way and place these animals in "safe areas" pre-selected by the Designated Biologist or maintain the desert tortoises in their immediate possession until the Designated Biologist assumes care of the animal. A Biological Monitor(s) must be present during any activities with the potential to result in the take of desert tortoise.

Verification: The Designated Biologist shall submit in the Monthly Compliance Report to the CPM copies of all written reports and summaries that document biological resources activities. If actions may affect biological resources during operation a Designated Biologist shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless their duties cease, as approved by the CPM.

BIO-5 DESIGNATED BIOLOGIST AND BIOLOGICAL MONITOR AUTHORITY

The project owner's construction/operation manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources conditions of certification.

If required by the Designated Biologist and Biological Monitor(s) the project owner's construction/operation manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist.

The Designated Biologist shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;
2. Inform the project owner and the construction/operation manager when to resume activities; and
3. Notify the CPM if there is a halt of any activities and advise the CPM of any corrective actions that have been taken or will be instituted as a result of the work stoppage.

If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.

Verification: The project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM immediately (and no later than the morning following the incident, or Monday morning in the case of a weekend) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem.

Whenever corrective action is taken by the project owner, a determination of success or failure will be made by the CPM within five working days after receipt of notice that corrective action is completed, or the project owner will be notified by the CPM that coordination with other agencies will require additional time before a determination can be made.

BIO-6 WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

The project owner shall develop and implement an Ivanpah SEGS-specific Worker Environmental Awareness Program (WEAP) and shall secure approval for the WEAP from BLM, USFWS, CDFG, and the CPM. The WEAP shall be administered to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The WEAP shall be implemented during site mobilization, ground disturbance, grading, construction, operation, and closure. The WEAP shall:

a. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media is made available to all participants;

b. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, and explain the reasons for protecting these resources;

c. Place special emphasis on desert tortoise, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures.

d. Include a discussion of fire prevention measures to be implemented by workers during project activities.

e. Present the meaning of various temporary and permanent habitat protection measures;

f. Identify whom to contact if there are further comments and questions about the material discussed in the program; and

g. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines.

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist.

Verification: At least 60 days prior to the start of any project-related site disturbance activities, the project owner shall provide to the CPM a copy of the draft WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated

Biologist and a resume of the person(s) administering the program. The project owner shall provide in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. At least ten days prior to site and related facilities mobilization, the project owner shall submit two copies of the CPM approved final WEAP.

Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least six months after the start of commercial operation.

During project operation, signed statements for operational personnel shall be kept on file for six months following the termination of an individual's employment.

BIO-7 BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN

The project owner shall develop a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and submit two copies of the proposed BRMIMP to the CPM (for review and approval) and shall implement the measures identified in the approved BRMIMP. The BRMIMP shall incorporate avoidance and minimization measures described in final versions of the Desert Tortoise Translocation Plan, the Raven Management Plan, the Revegetation and Reclamation Plan, the Burrowing Owl Mitigation and Monitoring Plan, Closure Plan, and the Weed Management Plan.

The BRMIMP shall be prepared in consultation with the Designated Biologist and shall and shall include the following:

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
2. All biological resources conditions of certification identified as necessary to avoid or mitigate impacts;
3. All biological resource mitigation, monitoring and compliance measures required in federal agency terms and conditions, such as those provided in the USFWS Biological Opinion and the US Army Corps of Engineers 404 permit, if this permit is required;
4. All biological resources mitigation, monitoring and compliance measures required in other state agency terms and conditions, such as those provided in the permits or agreements with CDFG and RWQCB;
5. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;
6. All required mitigation measures for each sensitive biological resource;
7. A detailed description of measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
8. All locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;
9. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities; include one set prior to any site or related facilities mobilization

disturbance and one set subsequent to completion of project construction. Provide planned timing of aerial photography and a description of why times were chosen. Provide a final accounting of the before/after acreages and a determination of whether additional habitat compensation is necessary in the Construction Termination Report;

10. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
11. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
12. All performance standards and remedial measures to be implemented if performance standards are not met;
13. A discussion of biological resources-related facility closure measures including a description of funding mechanism(s);
14. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval; and
15. Copies of all biological resources-related permits obtained.

Verification: The project owner shall submit the BRMIMP to the CPM at least 60 days prior to start of any project-related site disturbance activities. The BRMIMP shall contain all of the required measures included in all biological Conditions of Certification. No ground disturbance may occur prior to the CPM's approval of the final BRMIMP.

The CPM, in consultation with other appropriate agencies, will determine the BRMIMP's acceptability within 45 days of receipt. If there are any permits that have not yet been received when the BRMIMP is first submitted, these permits shall be submitted to the CPM within five days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit condition within at least ten days of their receipt by the project owner. Ten days prior to site and related facilities mobilization the revised BRMIMP shall be resubmitted to the CPM.

The project owner shall notify the CPM no less than five working days before implementing any modifications to the approved BRMIMP to obtain CPM approval.

Any changes to the approved BRMIMP must also be approved by the CPM in consultation with appropriate agencies to ensure no conflicts exist.

Implementation of BRMIMP measures (construction activities that were monitored, species observed) will be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases, and which mitigation and monitoring items are still outstanding.

BIO-8 DESERT TORTOISE CLEARANCE SURVEYS AND FENCING

The project owner shall undertake appropriate measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to desert tortoise. Methods for clearance surveys, fence installation, tortoise handling, artificial burrow construction, egg handling and other procedures would be consistent with those described in the Guidelines for Handling Desert Tortoise during Construction Projects (Desert Tortoise Council 1994) or more current guidance provided by USFWS. These measures would include the following:

1. Within 24 hours prior to the initiation of construction of tortoise-exclusion fence, Biological Monitors would survey for desert tortoises and their burrows using techniques approved by the USFWS and CDFG. These surveys shall provide 100-percent coverage of all areas to be disturbed and an additional transect along both sides of the fence line. This fence line transect will cover an area approximately 90 feet wide centered on the fence alignment. Transects would be no greater than 30 feet apart. The fence alignment would be flagged prior to the biological survey. Two complete passes of complete coverage shall be conducted. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, would be examined to determine occupancy of each burrow by desert tortoises and handled in accordance with USFWS approved protocol.
2. Prior to the initiation of construction activities for each solar plant, the project owner shall enclose the boundary of the affected solar plant with permanent chain-link fencing for security purposes and permanent desert tortoise exclusionary fencing would be attached to the bottom of the chain link fencing.
    a. The exclusion fencing would be installed prior to the onset of clearing and grubbing. The fence installation would be supervised by the Designated Biologist and monitored by the Biological Monitors.
    b. The permanent tortoise exclusionary fencing shall consist of galvanized hard wire cloth l-cm mesh sunk 15 cm into the ground (USFWS 2008). The fencing would be buried approximately 6 inches below ground or bent at a right angle towards the outside of the solar plants and covered with dirt, rocks or gravel to discourage the tortoise from digging under the fence
    c. Security gates would provide minimal ground clearance to deter ingress by tortoises. The gates may be electronically activated to open and close immediately after the vehicle(s) have entered or exited. This would prevent the gates from being kept open for long periods of time, which may lead to a tortoise entering. Cattle grating would be installed at the gated entries to discourage tortoises from gaining entry
    d. The utility rights-of-way would be temporarily fenced on each side of the right-of-way. The temporary exclusionary fencing would consist of galvanized hard wire cloth or silt fencing.
    e. Any damage to the permanent fencing would be repaired immediately. Following installation, the permanent fencing would be inspected yearly and after major rainfall events.

3. Following construction of the security and attached tortoise exclusion fence, the fenced area would be cleared of tortoises by Biological Monitors under the supervision of the Designated Biologist. Two complete passes with complete coverage shall be conducted as described above. If a desert tortoise is located on the second survey, a third survey would be conducted. Transects would be no wider than 30 feet. Each separate survey would be walked in a different direction to allow opposing angles of observation. Once the area surveyed is deemed free of desert tortoises the areas may be open to a vegetation salvage program, if BLM desires.

4. All potential desert tortoise burrows within the fenced area would be searched for presence. In some cases, a fiber optic scope may be needed to determine presence or absence within a deep burrow. Burrows inhabited by tortoises would be excavated by Biological Monitors using hand tools under the supervision of the Designated Biologist. To prevent reentry by a tortoise or other wildlife, all burrows would be collapsed once absence has been determined. Tortoises excavated from burrows would be relocated to unoccupied natural or artificial burrows immediately following excavation in an area approved by the Designated Biologist.

5. All potential desert tortoise burrows located would be excavated by hand by a Biological Monitor, tortoises removed, and collapsed or blocked to prevent occupation by desert tortoises. If excavated during May through July, the Biological Monitor would search for desert tortoise nests/eggs, which are typically located near the entrance to burrows. All desert tortoise handling and removal, and burrow excavations, including nests, would be conducted by a Biological Monitor in accordance with the Service approved protocol (Desert Tortoise Council 1994, revised 1999). If the Desert Tortoise Council releases a revised protocol for handling of desert tortoises before initiation of project activities, the revised protocol would be implemented for the project.

6. Following the tortoise clearance and translocation and vegetation salvage, heavy equipment would be allowed to enter the project site to perform earth work such as clearing, grubbing, leveling, and trenching. A Biological Monitor would monitor initial clearing and grading activities to find and move tortoises missed during the initial tortoise clearance survey. Should a tortoise be discovered, it would be relocated to an area approved by the Designated Biologist. Any pre-activity tortoise surveys for other construction areas would be performed within 72 hours of ground disturbing activities.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures will be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying how measures have been completed.

BIO-9 DESERT TORTOISE TRANSLOCATION PLAN

The project owner shall develop and implement a Desert Tortoise Translocation Plan (Plan) that is consistent with current USFWS approved guidelines, and meets the approval of USFWS, CDFG, BLM, and the Energy Commission staff. The Plan shall designate a translocation site as close as possible to the ISEGS, and which provides suitable conditions for long-term survival of the relocated desert tortoise. The Plan shall also incorporate the

most recent Best Management Practices (BMPs), which are now under development by the USFWS Desert Tortoise Recovery Office.

Verification: At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM and BLM with the final version of a Translocation Plan that has been reviewed and approved by USFWS, BLM, and CDFG. The CPM will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved translocation must be made only after consultation the Energy Commission CPM, BLM, USFWS, and CDFG. The project owner shall notify the CPM no fewer than 5 working days before implementing any CPM-approved modifications to the Translocation Plan.

Within 30 days after initiation of translocation activities, the Designated Biologist shall provide to the CPM for review and approval, a written report identifying which items of the Translocation Plan have been completed, and a summary of all modifications to measures made during implementation of the Plan.

BIO-10 DESERT TORTOISE COMPLIANCE VERIFICATION

The project owner shall provide Energy Commission and BLM representatives with reasonable access to the project site and mitigation lands under the control of the project owner and shall otherwise fully cooperate with the Energy Commission's and BLM's efforts to verify the project owner's compliance with, or the effectiveness of, mitigation measures set forth in the conditions of certification. The project owner shall hold the Designated Biologist, the Energy Commission, and BLM harmless for any costs the project owner incurs in complying with the management measures, including stop work orders issued by the CPM, BLM, or the Designated Biologist. The Designated Biologist shall do all of the following:

1. Notify the CPM and BLM at least 14 calendar days before initiating ground-disturbing activities;
2. Immediately notify the CPM and BLM in writing if the project owner is not in compliance with any conditions of certification, including but not limited to any actual or anticipated failure to implement mitigation measures within the time periods specified in the conditions of certification;
3. Remain onsite daily while grubbing and grading are taking place to avoid or minimize take of listed species, to check for compliance with all impact avoidance and minimization measures, and to check all exclusion zones to ensure that signs, stakes, and fencing are intact and that human activities are restricted in these protective zones.
4. Maintain and check desert tortoise exclusion fences on a daily basis to ensure the integrity of the fence is maintained. The Designated Biologist shall be present onsite to monitor construction and determine fence placement during fence installation.
5. Conduct compliance inspections at a minimum of once per month after clearing, grubbing, and grading are completed and submit a monthly compliance report to the CPM and BLM's Needles office;

6. No later than January 31 of every year the ISEGS facility remains in operation, provide the CPM and BLM an annual Listed Species Status Report, which shall include, at a minimum: 1) a general description of the status of the project site and construction activities, including actual or projected completion dates, if known; 2) a copy of the table in the BRMIMP with notes showing the current implementation status of each mitigation measure; and 3) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and compensating for project impacts;

7. Ensure that all observations of listed species and their sign during project activities are reported to the Designated Biologist for inclusion in the next monthly compliance report submitted to the CPM and BLM;

8. No later than 45 days after the first firing of fuel in the project's equipment, provide the CPM and BLM a Final Listed Species Mitigation Report that shall include, at a minimum: 1) a copy of the table in the BRMIMP with notes showing when each of the mitigation measures was implemented; 2) all available information about project-related incidental take of listed species; 3) information about other project impacts on the listed species; 4) construction dates; 5) an assessment of the effectiveness of conditions of certification in minimizing and compensating for project impacts; 6) recommendations on how mitigation measures might be changed to more effectively minimize and mitigate the impacts of future projects on the listed species; and 7) any other pertinent information, including the level of take of the listed species associated with the project;

9. In the event of a sighting in an active construction area (e.g., with equipment, vehicles, or workers), injury, kill, or relocation of any listed species, notify the CPM, BLM, and USFWS immediately by phone and in no event later than noon on the business day following the event if it occurs outside normal business hours so that the agencies can determine what further actions, if any, are required to protect listed species;

10. Prepare written follow-up notification via FAX or electronic communication to these agencies within 2 calendar days of the incident and include the following information as relevant:

    a. If a desert tortoise is injured as a result of project related activities during construction, the Designated Biologist will immediately take it to a BLM-approved wildlife rehabilitation and/or veterinarian clinic. Any veterinarian bills for such injured animals will be paid by the project owner. Following phone notification as required above, the CPM, BLM, and USFWS will determine the final disposition of the injured animal, if it recovers. Written notification shall include, at a minimum, the date, time, location, circumstances of the incident, and the name of the facility where the animal was taken.

    b. If a desert tortoise is killed by project-related activities during construction, or if a desert tortoise is otherwise found dead, submit a written report with the same information as an injury report. These desert tortoises shall be salvaged according to guidelines described in *Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming Desert Tortoise* prepared by Kristin

Berry, June 2001. The project owner shall pay to have these desert tortoises necropsied. The report will include the date and time of the finding or incident.

c. The CPM may issue the project owner a written stop work order to suspend any activity related to the construction or operation of the project for an appropriate period determined in consultation with BLM in order to prevent or remedy a violation of one or more conditions of certification (including but not limited to failure to comply with reporting, monitoring, or habitat acquisition obligations) or to prevent the illegal take of an endangered, threatened, or candidate species. The project owner shall comply with the stop work order immediately upon receipt thereof.

Verification: No later than 2 calendar days following the above required notification of a sighting, kill, or relocation of a listed species, the project owner shall deliver to the CPM, BLM, CDFG, and USFWS via FAX or electronic communication the written report from the Designated Biologist describing all reported incidents of injury, kill, or relocation of a listed species, identifying who was notified, and explaining when the incidents occurred. In the case of a sighting in an active construction area, the project owner shall, at the same time, submit a map (e.g., using Geographic Information Systems) depicting both the limits of construction and sighting location to the CPM, BLM, and USFWS.

BIO-11 IMPACT AVOIDANCE AND MINIMIZATION MEASURES

Any time the project owner modifies or finalizes the project design they shall incorporate all feasible measures that avoid or minimize impacts to the local biological resources, including the following:

1. The boundaries of all areas to be disturbed shall be flagged before beginning construction activities, and all disturbances, project vehicles and equipment shall be confined to the flagged areas. Survey crew vehicles would remain on existing roads.

2. Design, install and maintain transmission line poles, access roads, pulling sites, and storage and parking areas to avoid identified sensitive resources, including rare plant populations adjacent to linear facilities.

3. Design, install, and maintain transmission lines and all electrical components in accordance with the Avian Power Line Interaction Committee's (APLIC) suggested *Practices for Avian Protection on Power Lines: The State of the Art in 2006* to reduce the likelihood of electrocutions of large birds,

4. Design, install, and maintain transmission lines and all electrical components in accordance with the APLIC *Mitigating Bird Collisions with power lines: The State of the Art in 1994* to reduce the likelihood of bird collisions.

5. Prescribe a road surfacing and sealant as well as soil bonding and weighting agents to non-paved surfaces that are non-toxic to wildlife and plants.

6. Design, install, and maintain facility lighting to prevent side casting of light towards wildlife habitat. To minimize risk of avian collisions with the heliostat towers, use only flashing or strobe lights on these towers.

7. Concurrent with the desert tortoise clearance survey, Biological Monitors shall perform a preconstruction survey for badger dens in the project area, including areas within 250 feet of all project facilities, utility corridors, and access roads. If badger dens are found, each den will be classified as inactive, potentially active, or definitely active. Inactive dens will be excavated by hand and backfilled to prevent reuse by badgers. Potentially and definitely active dens will be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) at the entrance. If no tracks are observed in the tracking medium after 3 nights, the den will be excavated and backfilled by hand. If tracks are observed, the den will be progressively blocked with natural materials (rocks, dirt, sticks, and vegetation piled in front of the entrance) for the next 3 to 5 nights to discourage the badger from continued use. The den will then be excavated and backfilled by hand to ensure that no badgers are trapped in the den. This will be performed outside of the breeding season to ensure young are not affected.

8. If a Gila monster is encountered during clearance surveys or during construction, the Designated Biologist shall capture and maintain it in a cool (<85 degrees F) environment until it can be released to a safe, suitable area beyond the construction impact zone. The Designated Biologist shall coordinate with BLM and CDFG biologists in the transport and relocation of any Gila monsters encountered during project surveys, construction, or operation.

9. Any time a vehicle or construction equipment is parked in desert tortoise habitat outside the permanently fenced area, the ground under the vehicle shall be inspected for the presence of desert tortoise before it is moved. If a desert tortoise is observed, it will be left to move on its own. If it does not move within 15 minutes, a Biological Monitor may remove and relocate the animal to a safe location.

10. At the end of each work day, the Designated Biologist would ensure that trenches, bores and other excavations outside the permanently fenced area that constitute wildlife pitfalls would either be immediately backfilled, sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, covered, or fully enclosed with fencing to prevent any entrapment. All excavations outside the permanently fenced area would be inspected periodically throughout and at the end of each workday by the Designated Biologist or a Biological Monitor. Should a tortoise become entrapped, the Designated Biologist or Biological Monitor will remove and relocate the tortoise to a safe location.

11. Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches, stored less than 8 inches aboveground and within desert tortoise habitat (i.e., outside the permanently fenced area) for one or more nights, would be inspected for tortoises before the material is moved, buried or capped. As an alternative, all such structures may be capped before being stored outside the fenced area, or placed on pipe racks. These materials would not need to be inspected or capped if they are stored within the permanently fenced area after the clearance surveys have been completed.

12. Water applied to construction areas and dirt roads for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract desert tortoises and common ravens to construction sites.

13. All vehicles and equipment would be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist would be informed of any hazardous spills immediately as directed in the project Hazardous Materials Plan. Hazardous spills would be immediately cleaned up and the contaminated soil would be properly disposed of at a licensed facility.

14. All fuel, transmission or brake fluid leaks, or other hazardous waste leaks, spills or releases shall be reported immediately. The project proponent shall be responsible for spill material removal and disposal to an approved offsite landfill. Servicing of construction equipment would take place only at a designated area. All fuel or hazardous waste leaks, spills, or releases would be stopped or repaired immediately and cleaned up at the time of occurrence. Service/maintenance vehicles would carry a bucket and pads to absorb leaks or spills.

15. Dispose of all trash and food-related items in self-closing containers and remove from the project site at least once a week.

16. Workers shall not feed wildlife, or bring pets to the project site. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons.

17. Vehicular traffic shall be confined to existing routes of travel to and from the project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit when traveling on Colosseum Road and other dirt access routes within desert tortoise habitat shall not exceed 20 miles per hour.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures will be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying how measures have been completed.

BIO-12 RAVEN MANAGEMENT PLAN

The project owner shall implement a Raven Management Plan that is consistent with the most current USFWS-approved raven management guidelines, and which meets the approval of USFWS, CDFG, BLM, and the Energy Commission staff. The draft Raven Management Plan submitted by the applicant shall provide the basis for the final plan, subject to review and revisions from USFWS, CDFG, BLM, and the Energy Commission staff.

Verification: At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM, USFWS, CDFG, and BLM with the final version of a Raven Management Plan that has been reviewed and approved by USFWS and CDFG. The CPM will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved Raven Management Plan must be made only after consultation the Energy Commission staff, BLM, USFWS, and CDFG. The project owner

shall notify the CPM no less than 5 working days before implementing any CPM-approved modifications to the Raven Management Plan.

Within 30 days after completion of project construction, the project owner shall provide to the CPM for review and approval, a written report identifying which items of the Raven Management Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which items are still outstanding.

BIO-13 WEED MANAGEMENT PLAN

The project owner shall implement a Weed Management Plan that meets the approval of BLM and the Energy Commission staff/CPM. The draft Weed Management Plan submitted by the applicant shall provide the basis for the final plan, subject to review and revisions from USFWS, CDFG, BLM, and the Energy Commission staff/CPM. In addition to describing weed eradication and control methods, and a reporting plan for weed management during and after construction, the final Weed Management Plan shall include at least the following Best Management Practices to prevent the spread and propagation of noxious weeds:

1. Limit the size of any vegetation and/or ground disturbance to the absolute minimum, and limit ingress and egress to defined routes.
2. Maintain vehicle wash and inspection stations and closely monitor the types of materials brought onto the site.
3. Reestablish vegetation quickly on disturbed sites.
4. Monitoring and rapid implementation of control measures to ensure early detection and eradication for weed invasions.
5. Use only weed-free straw or hay bales used for sediment barrier installations, and weed-free seed.
6. Reclamation and revegetation shall occur on all temporarily disturbed areas, including pipelines, transmission lines, and staging areas.

Verification: At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM and BLM with the final version of a Weed Management Plan that has been reviewed and approved by BLM, USFWS, and CDFG. The CPM will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved Translocation must be made only after consultation with the Energy Commission staff, BLM, USFWS, and CDFG. The project owner shall notify the CPM no less than 5 working days before implementing any CPM-approved modifications to the Weed Management Plan.

Within 30 days after completion of project construction, the project owner shall provide to the CPM for review and approval, a written report identifying which items of the Weed Management Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which items are still outstanding.

BIO-14 REVEGETATION AND RECLAMATION PLAN

The project owner shall develop and implement a Revegetation and Reclamation Plan in cooperation with BLM and the Energy Commission staff to guide site restoration and closure activities, including methods proposed for revegetation of disturbed areas immediately following construction. This plan must address preconstruction salvage and relocation of succulent vegetation from the site to either an onsite or nearby nursery facility for study and propagation of seed sources to reclaim the disturbed area. In the case of unexpected closure, the plan should assume restoration activities could possibly take place prior to the anticipated lifespan of the plant. The project owner has prepared an outline of the draft Revegetation and Reclamation Plan which shall form the basis for the final plan.

Verification: At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM and BLM with the final version of a Revegetation and Reclamation Plan that has been reviewed and approved by BLM, CDFG, and the Energy Commission staff. The CPM will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved Revegetation and Reclamation Plan must be made only after consultation the Energy Commission staff, BLM, and CDFG. The project owner shall notify the CPM no less than 5 working days before implementing any CPM-approved modifications to the Revegetation and Reclamation Plan.

Within 30 days after completion of project construction, the project owner shall provide to the CPM for review and approval, a written report identifying which items of the Revegetation and Reclamation Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which items are still outstanding.

BIO-15 PRE-CONSTRUCTION NEST SURVEYS

Pre-construction nest surveys shall be conducted if construction activities will occur from February 1 through August 31. The Designated Biologist or Biological Monitor shall perform surveys in accordance with the following guidelines:

1. Surveys shall cover all potential nesting habitat in the project site or within 500 feet of the boundaries of the site and linear facilities;

2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. One of the surveys needs to be conducted within the 14-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks, an interval during which birds may establish a nesting territory and initiate egg laying and incubation;

3. If active nests are detected during the survey, a buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFG) and monitoring plan shall be developed. Nest locations shall be mapped and submitted, along with a report stating the survey results, to the CPM; and

4. The Designated Biologist shall monitor the nest until he or she determines that nestlings have fledged and dispersed; activities that might, in the opinion of the Designated

Biologist, disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made.

Verification: At least 10 days prior to the start of any project-related ground disturbance activities, the project owner shall provide the CPM a letter-report describing the findings of the pre-construction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor (s); and a list of species observed. If active nests are detected during the survey, the report shall include a map or aerial photo identifying the location of the nest and shall depict the boundaries of the no-disturbance buffer zone around the nest.

BIO-16 BURROWING OWL IMPACT AVOIDANCE AND MINIMIZATION MEASURES

The project owner shall implement the following measures for the burrowing owl:

1. Complete a pre-construction survey for burrowing owls for any areas subject to disturbance from construction no less than 30 days prior to the start of initial ground disturbance activities. If burrowing owls are present within 500 feet of the project site or linear facilities, then the CDFG burrowing owl guidelines (1995) shall be implemented;

2. Monitor burrowing owl pairs within 500 feet of any activities that exceed ambient noise and/or vibration levels;

3. Establish a 500-foot set back from any active burrow and construct additional noise/visual barriers (e.g., haystacks or plywood fencing) to shield the active burrow from construction activities. Post signs (in both English and Spanish) designating presence of sensitive area;

4. Passively relocate all owls occupying burrows that will be temporarily or permanently impacted by the project and implement the following CDFG take avoidance measures:

    a. Occupied burrows shall not be disturbed during the nesting season (February 1 – August 31) unless a qualified biologist can verify through non-invasive methods that egg laying/incubation has not begun or juveniles are foraging independently and able to fly;

    b. A qualified biologist must relocate owls, confirm that owls have left burrows prior to ground-disturbing activities, and monitor the burrows. Once evacuation is confirmed, the biologist should hand excavate burrows and then fill burrows to prevent reoccupation; and

    c. Relocation of owls shall be approved by and conducted in consultation with CDFG.

5. Submit a Burrowing Owl Mitigation and Monitoring Plan to CDFG for review and approval prior to relocation of owls (and incorporate it into the project's BRMIMP) as well as a construction termination report with results to CDFG and CPM 30 days after completing owl relocation and monitoring and at least 30 days prior to the start of commercial operation.

Verification: The project owner shall submit a report to CDFG, USFWS, and the CPM at least 30 days prior to the start of any project-related site disturbance activities that describes

when surveys were completed, observations, mitigation measures, and the results of the mitigation. If burrowing owls are to be relocated, the project owner shall coordinate with and report to CDFG on the number of new burrows to be created, their locations, and how any created burrows/individuals and compensation land will be protected for the life of the project in a Burrowing Owl Mitigation and Monitoring Plan. Within 30 days after completion of owl relocation and monitoring, and the start of ground disturbance or at least 90 days prior to the sale of power, the project owner shall provide to the CDFG and CPM a written construction termination report identifying how measures have been completed.

BIO-17 COMPENSATORY MITIGATION PLAN

To compensate for significant direct, indirect, and cumulative impacts to desert tortoise, loss of habitat for special-status plant and animal species, and impacts to waters of the state, the applicant shall implement a compensatory mitigation plan developed in cooperation with USFWS, CDFG, BLM, and the Energy Commission staff. This plan shall include appropriate levels of habitat acquisition and enhancement, as well as funding for other agency-sponsored actions that would benefit desert tortoise and Mojave Desert plant and animal communities in the Ivanpah Valley. In addition to land acquisitions and actions to enhance desert tortoise survivorship and reproduction, the compensatory mitigation plan package would also need to include measures that would mitigate impacts to other special-status plants and wildlife and to waters of the state to less than significant levels.

Verification: No later than 12 months following the publication of the Energy Commission Decision, the project owner will provide written verification to the CPM that the Compensatory Mitigation Plan has been completed. At the same time, the project owner will provide a certified check for the endowment and for initial protection and restoration activities, if required, to an approved third party and written verification to the CPM that the check has been provided. Within six months of the land purchase (as determined by the date on title), the project owner shall provide the CPM a management plan for the habitat compensation lands and associated funds for review and approval in consultation with CDFG.

Within 90 days after completion of project construction, the project owner shall provide the CPM aerial photographs taken after construction and an analysis of the amount of any habitat disturbance additional to that identified in this staff assessment. The CPM will notify the project owner of any additional funds required to compensate for any additional habitat disturbances at the adjusted market value at the time of construction to acquire and manage habitat.

BIO-18 STATE AND FEDERAL PERMITS

The project owner shall implement all terms and conditions described in the state and federal permits issued for this project, including a CDFG Lake and Streambed Alteration Agreement, CDFG Incidental Take Permit, 401 permit from Lahontan Regional Water Quality Control Board, a 404 permit from U.S. Army Corps of Engineers (if required), and shall incorporate these measures within the BRMIMP.

Verification: All terms and conditions described in the CDFG Streambed Alteration Agreement shall be included in the BRMIMP. Implementation of these terms and conditions will be described in the Monthly Compliance Reports and provided to the CPM. Within

thirty 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report describing how permit conditions have been satisfied.

BIO-19 CLOSURE PLAN MEASURES

The project owner shall implement and incorporate into the facility closure plan measures to address the local biological resources related to facility closure. A funding mechanism shall be developed in consultation with the BLM and Energy Commission staff to ensure sufficient funds are available for revegetation, reclamation, and decommissioning. The facility closure plan shall address biological resources-related mitigation measures. In addition to these measures, the plan must include the following:

1. Removal of transmission conductors when they are no longer used and useful;
2. Removal of all above ground and subsurface power plant site facilities and related facilities;
3. Methods for restoring wildlife habitat and promoting the re-establishment of native plant and wildlife species;
4. Re-vegetation of the project site and other disturbed areas utilizing appropriate seed mixture;
5. Criteria that would trigger implementation of the plan (e.g., nonoperational for one year or greater); and
6. A cost estimate to complete closure-related activities.

In addition, the project owner shall secure funding to ensure implementation of the plan and provide to the CPM written evidence of the dedicated funding mechanism(s).

Verification: At least 12 months prior to commencement of planned closure activities, the project owner shall address all biological resources-related issues associated with facility closure, and provide final measures, in a Biological Resources Element. The draft planned permanent or unplanned closure measures shall be submitted to the CPM for comment by staff, CDFG, and USFWS. After revision, final measures shall comprise the Biological Resources Element, which shall include the items listed above as well as written evidence of the dedicated funding mechanism(s) for these measures. The final Biological Resources Element shall become part of the facility closure plan, which is submitted to the CPM within 90 days of the permanent closure or another period of time agreed to by the CPM.

In the event of an unplanned permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan.

Upon facility closure, the project owner shall implement measures in the Biological Resources Element and provide written status updates on all closure activities to the CPM at a frequency determined by the CPM.

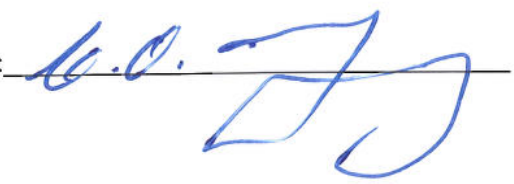
Funding Assurances

Responsibility for funding and implementing the conservation measures associated with Ivanpah SEGS is assumed by the Applicant through consultation with the USFWS under Section 7 of the Federal Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Certification

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

Print Name: S. A. DeYoung Title: Director, ES&H

Signature:  Date: 5/27/09

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ATTACHMENT BR5-1B

Draft Tortoise Translocation/Relocation Plan

Attachment BR5-1B
Revision 1

Draft Desert Tortoise Translocation/Relocation Plan for the Ivanpah Solar Electric Generating System

Prepared for

Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC

May 2009

CH2MHILL
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Contents

Approvals:

Bureau of Land Management_____
Approval

California Department of Fish and Game_____
Concurrence

1.0 Introduction

Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC and Solar Partners VIII, LLC (the Applicant), which are subsidiaries of BrightSource Energy, Inc., propose to develop a solar power project consisting of three adjacent solar energy facilities to be located in the Ivanpah Valley near the Interstate 15 (I-15) crossing of the California/Nevada border in San Bernardino County, California (Figure BR5-1, figures are located at the end of each section). The proposed project site is located on land administered by the Bureau of Land Management (BLM) and is less than 2 miles east of the Mojave National Preserve, less than 2 miles west of Ivanpah Dry Lake, less than a mile south of the Stateline Wilderness and Mesquite Wilderness areas of the Clark Mountains; approximately 0.5 miles west of the Primm Valley Golf Club; approximately 0.8 miles northwest of I-15; and approximately 4.5 miles southwest of the Primm Valley casinos.

This Desert Tortoise Translocation/Relocation Plan (Plan) has been prepared for the Bureau on behalf of the Applicant following guidelines developed by the U.S. Fish and Wildlife Service (Service).

1.1 Background

The Ivanpah SEGS site is located in Township 17N, Range 14E, and Township 16N, Range 14E on land administered by the BLM. Access to the site is via the Yates Well Road interchange on I-15 and Colosseum Road to the west of the Primm Valley Golf Club. The project will be built in three phases. The first 100-megawatt (MW) plant at the south end of the project, known as Ivanpah 1, would be owned by Solar Partners II, LLC. Solar Partners I, LLC, would own the middle 100-MW plant known as Ivanpah 2. The northernmost 200-MW plant, known as Ivanpah 3, would be owned by Solar Partners VIII, LLC. The three proposed facilities and their shared operations (owned by Solar Partners IV) are collectively known as the "Ivanpah Solar Electric Generating System" or "Ivanpah SEGS" (see Figure BR5-2).

In order to permit the three plants and the common facilities the Applicant has consulted the BLM, Service, California Department of Fish and Game (CDFG) and the California Energy Commission (CEC) the state lead agency under the CEC's California Environmental Quality Act (CEQA) equivalent certified regulatory program.

The total area required for construction and operation of all three solar plant sites including the shared infrastructure is approximately 4,072 acres (minus the acreage for existing established dirt roads equals about 4,065 acres, net). This includes approximately 3,715 acres of permanent effects and approximately 357 acres[1] of work area that would be subject to restoration following construction. Based on the protocol surveys, the proposed action would likely result in the need to relocate about 25 tortoises.

[1] These numbers may be less once the stormwater plan is completed.

1.2 Plan Purpose

This Plan will be incorporated into the Ivanpah SEGS Biological Resources Mitigation, Implementation and Monitoring Plan (BRMIMP), as part of the proposed action. This Plan has incorporated the Guidelines for Clearance and Translocation of Desert Tortoises from the Ivanpah SEGS Project prepared by the Service's Ventura Office as technical assistance for the Project on December 12, 2008 (Service 2008). This document is provided in Appendix A. This Plan, in turn, conforms to the Translocation Guidelines specified in Appendix B of the Desert Tortoise Recovery Plan (Service 1994; reproduced here in Appendix B). Once this Plan meets BLM approval, it will become part of the project's proposed action upon which the Service would base its biological opinion. The BLM will seek CDFG concurrence with this Plan prior to initiating formal Section 7 consultation with the Service. Any necessary, unforeseeable actions taken that are not anticipated by this Plan would be approved by all agencies involved prior to implementation. This would include newly developed adaptive management measures.

The Service's (2008) Guidance (Appendix A) defines "translocation" as when a tortoise must be moved more than 1000 meters to clear it from the project site, while a "relocation" requires a movement of less than 1000 meters. Both are referred to in the Guidance as well as this Plan. In the long-term interests of the tortoise requiring clearance from the site, the preference of all stakeholders is relocating tortoises as long as all other conditions can be met (e.g., density constraints).

1.3 Plan Goals

The goals of this translocation/relocation effort are to:

- Translocate/relocate all desert tortoises from the fenced sites to nearby suitable habitat
- Minimize impacts on resident desert tortoises outside fenced areas
- Minimize stress, disturbance and injuries to translocated/relocated tortoises
- Assess the success of the translocation/relocation effort through monitoring

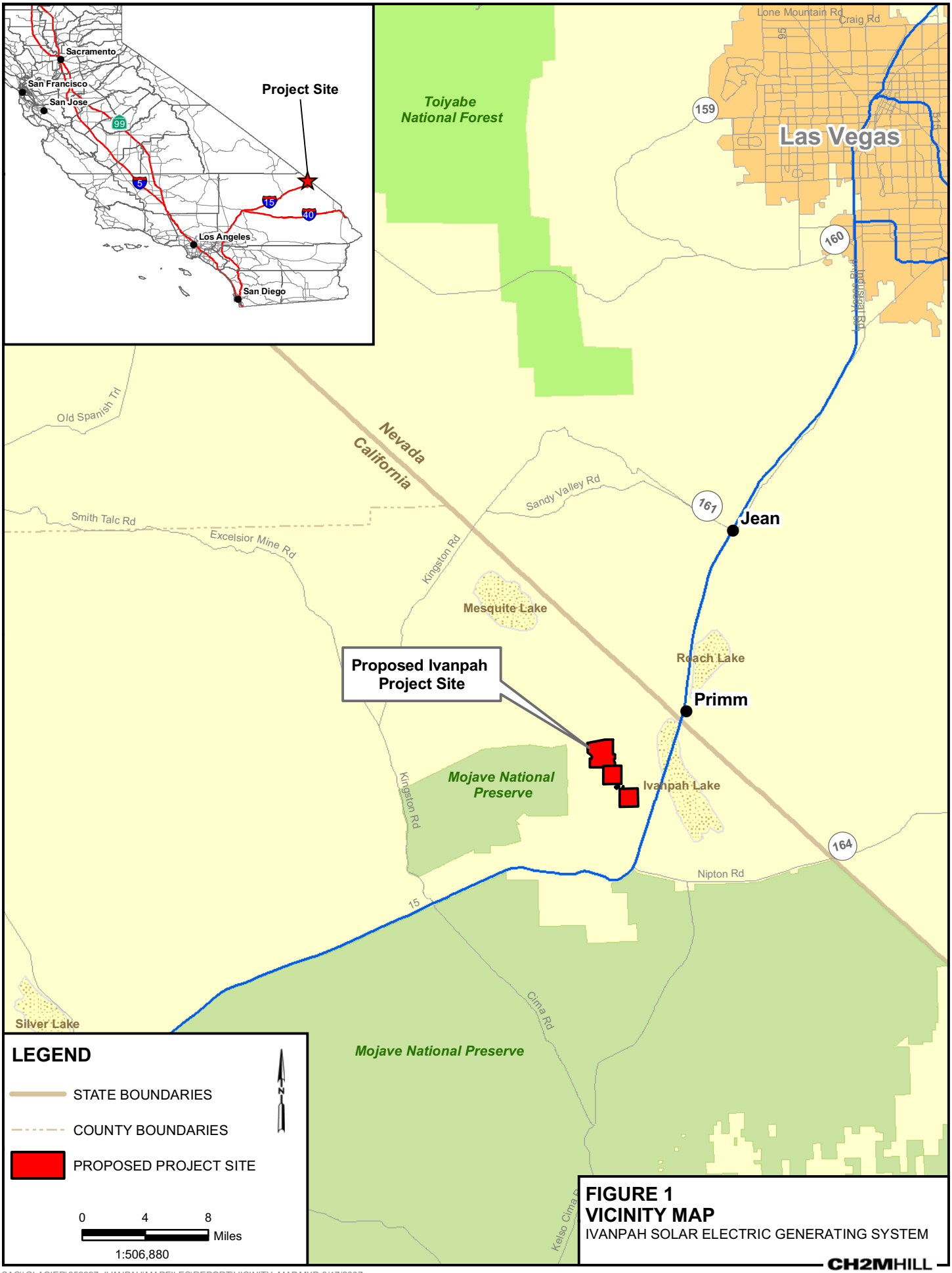

FIGURE 1
VICINITY MAP
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

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TAP STATION

IVANPAH 3

METERING SET

IVANPAH 2

METERING SET

REROUTED COLOSSEUM ROAD

Colosseum Road

ADMINISTRATION AND STORAGE

Colosseum Road

Colosseum Road

SUBSTATION

PROPOSED
MONITORING WELL

WELLS

IVANPAH 1

LEGEND

- WELLS
- DIRT ROAD
- PAVED ROAD
- UTILITIES CORRIDOR
- NATURAL GAS LINE
- GEN-TIE LINE
- KERN RIVER GAS LINE
- 4WD TOURING/TRAILS
- SECTION LINES
- PROJECT SITE

0 3,000 Feet

N

FIGURE 2
SITE PLAN AND LINEAR FACILITIES
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

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2.0 Translocation/Relocation Plan

2.1 Permanent Fencing

Prior to translocation/relocation activities the site boundary of the unit being developed would be permanently fenced with an 8-foot-high chain link fence for security purposes and permanent desert tortoise exclusionary fencing would either be attached to the base of the security fence or installed outside the security fence for construction of linear facilities. In areas where a security fence is not required, such as along Colosseum Road or the access road along the west side of the project going from Colosseum Road to the power blocks in Ivanpah 2 and 3, only a tortoise exclusion fence would be installed. A permanent I-beam design desert tortoise guard would be installed to allow equipment access to the fenced sites and exclude desert tortoises. The specifications for the proposed desert tortoise guard are included in Appendix C. If monitoring indicates that the proposed permanent I-beam barriers for use as desert tortoise guards across roads proves to be ineffective or problematic these barriers would be replaced with another means of exclusion. This would be implemented with input from the permitting agencies if monitoring of the facility indicates that they are needed. Tortoise guards will be maintained and monitored as part of the permanent fence inspections and maintenance.

The boundaries of all areas to be disturbed would be flagged before beginning any activities, and all disturbances would be confined to the flagged areas. All project vehicles and equipment would be confined to the flagged areas. Survey crew vehicles would remain on existing roads. To reduce the potential for tortoise strikes by vehicles, a 35 mph speed limit will be enforced on paved roads and 20 mph speed limit on dirt roads. Disturbance beyond the construction zone would be prohibited except to complete a specific task within designated areas or emergency situations.

Once flagged, the next step prior to any site clearance work is fencing the perimeter of the area to be cleared. Within 24 hours prior to the initiation of construction of the desert tortoise-exclusion fence, a desert tortoise survey would be conducted using techniques providing 100-percent coverage of the construction area and an additional transect along both sides of the fence line transect to provide coverage of an area approximately 90 feet wide centered on the fence alignment. Transects would be no greater than 10 feet apart. Two passes of complete coverage would be conducted. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, would be examined to determine occupancy. Any burrow within the fence line would be collapsed after confirmation that it is not occupied by a desert tortoise, or if occupied, the desert tortoise has been removed (CH2M HILL 2008).

Next, an approximate 10-foot-wide linear swath of vegetation along the entire outer edge of the area to be developed would be cleared to create an internal perimeter path for installation of either the tortoise fencing, or combined tortoise and security fence. All fencing will be constructed with durable materials (i.e., 11 gauge or heavier) suitable to resist desert environments, alkaline and acidic soils, wind, and erosion. Tortoise

exclusionary fence material will consist of 1-inch horizontal by 2-inch vertical, galvanized welded wire, 36 inches high. This fence material will be buried a minimum of 12 inches below the ground surface, leaving 22 to 24 inches above ground. A trench will be dug to allow 12 inches of fence to be buried below the natural level of the ground. Specifications for desert tortoise-proof fencing are provided in Appendix C and can be found at the following website: http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/dt/DT_Exclusion-Fence_2005.pdf

Where a combined security/tortoise fence is needed, 6-foot-high standard chain link fencing will be placed above the tortoise fence with about 1 inch overlap creating a combined security/tortoise fence about 8 feet tall. The top end of the tortoise fence will be secured to the security fence with hog rings at 12- to 18-inch intervals. Distance between posts will not exceed 10 feet. Concrete footings for metal posts will not be required. The fence is to be perpendicular to the ground surface, or slightly angled away from the road, towards the side encountered by tortoises. After the fence has been installed, excavated soil will be replaced and compacted to minimize soil erosion. Fence installation will be monitored by a desert Tortoise Monitor (TM) and an Authorized Biologist (AB) would be available at all times to move any desert tortoises that are within the path of the fence line work.

Areas requiring permanent fencing include:

- Colosseum Road from the golf club to the Construction Logistics Area (CLA) where the road will be widened and paved
- The portion of the Construction Logistics Area that will be used for construction activities. It is possible that the entire CLA would not need to be fenced at the outset. Figure BR5-3 shows the portion of the CLA that would likely be fenced as part of the initial construction activity. Regardless, permanent fencing would be required around the substation and the Administration/warehouse building.
- The individual heliostat fields
- Gas tap station and gas metering sets

The location of all permanent tortoise exclusion fencing will be identified on construction drawings and preapproved by the permitting agencies prior to the start of construction activities. The installation of permanent tortoise fencing along roadways (e.g., Colosseum Road) would occur as described below for the installation of temporary construction fence, except that permanent fencing would be installed.

Prior to translocation/relocation activities, the Applicant (or Caltrans) will fence the north side of I-15 with desert tortoise-proof fencing from Nipton Road to the Primm Valley Golf Club. The Applicant will work with Caltrans regarding the appropriate location for this fencing along the I-15. The Applicant will also coordinate the location of the proposed Joint Port of Entry in locating this fencing. A records of conversations with Caltrans is provided in Appendix D.

Any damage to the permanent fencing will be repaired immediately. Following installation, the permanent fencing would be inspected bimonthly (i.e., every other month) and after major rainfall events. A major rainfall event would be any rainfall that causes the ephemeral

washes in the project vicinity to flow and thereby potentially damage the fencing. Extra fencing material would be kept onsite to accommodate needed repairs.

2.2 Temporary Construction Fencing

Temporary fencing, such as chicken wire, snow fencing, chain link, and other suitable materials will be used in designated areas to reduce encounters with tortoises on short-term projects. The fencing material will be attached to metal posts with a minimum of 12-gauge steel wire. The grid opening of the wire will not exceed 1 inch by 2 inches and the fence height will be no less than 30 inches. Posts will be metal and not less than approximately 40 inches long. Concrete footings for metal posts will not be required. Because of the short duration of the work, the fencing need not be buried but any high or low points along the wire mesh fence line will be hand-excavated to maintain integrity with the ground. If non-metal fencing is use, it will be staked to the ground at minimum intervals of 10 feet.

Areas that would require temporary construction fencing include:

- Construction of the gas line from the Kern River Gas Transmission tap station to the power block at Ivanpah 1
- Construction of the tap station and gas metering set construction areas
- Construction of any trails or temporary access roads outside of the fenced heliostat fields
- Construction of any transmission lines, other utilities or access roads located outside of the permanently fenced areas that are specifically attributable to the ISEGS project.

The location of temporary construction fencing will be identified on construction drawings and approved by the permitting agencies prior to the start of construction activities.

- Within 24 hours prior to the initiation of construction of the temporary desert tortoise-exclusion fence, a desert tortoise survey would be conducted using techniques providing 100-percent coverage of the construction area and an additional transect along both sides of the fence line transect to provide coverage of an area approximately 90 feet wide centered on the fence alignment. Transects would be no greater than 10 feet apart. Two passes of complete coverage would be conducted. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, would be examined to determine occupancy. Any burrow within the fence line would be collapsed after confirmation that it is not occupied by a desert tortoise, or if occupied, the desert tortoise has been removed by an AB.
- An AB or TM will be onsite during installation of the temporary desert tortoise fence. If installation of temporary fencing, surveying or clearing is occurring at more than one location, more than one AB may need to be onsite to provide appropriate supervision. After installation of this temporary fencing and prior to initiation of construction activities, an AB and/or TM will perform a pre-construction sweep for desert tortoises. An AB will relocate any desert tortoises found in the project impact area. Desert tortoises will be moved to suitable habitat outside the impact area and placed in a natural or artificial burrow or under a shrub, depending on time of day and year. An AB

will also be available to relocate any desert tortoises that may wander into the impact area during construction.

- To avoid any additional disturbance beyond what is proposed, the undisturbed areas outside the temporary desert tortoise exclusion fence will be designated Environmentally Sensitive Areas. All construction activities will be confined within the fenced project impact area. Equipment or personnel will not be allowed within the Environmentally Sensitive Areas.
- Prior to performing onsite work, all personnel involved in the construction project will participate in Worker Environmental Awareness Program (WEAP) training that includes desert tortoise protection training approved by the permitting agencies. At a minimum, training will include discussion of the fragility of desert habitats, the importance of the desert tortoise to the environment, the protections afforded to the desert tortoise by the Endangered Species Act, locations of Environmentally Sensitive Areas, and the correct protocol to follow should a desert tortoise be encountered.
- Once temporary exclusion fencing has been installed, the area within the temporary fencing may be mowed to facilitate access by the construction equipment. Unlike installation of the permanent fencing, clearing of vegetation would not be done for installation of the temporary fence. Vegetation clearing would be limited to the areas required for construction.
- At the end of each working day, the contractor will inspect the integrity of all temporary desert tortoise fencing to ensure that desert tortoises are prohibited from entry. If the fence is compromised, repairs must be completed at that time. Extra fencing material will be kept onsite during periods when construction requiring the use of temporary fencing is occurring.
- Prior to the start of work each day the AB or TM will re-check the site to ensure that it is clear of tortoises. If work in the area has been delayed more than 24 hours (e.g., weekend or due to a storm), a more detailed search for tortoises will be required prior to the start of work.
- Open trenches, auger holes, or other excavations that may act as pit-fall traps will be inspected by an AB before back filling. Any desert tortoise found will be safely removed and relocated out of harm's way by an AB. For open trenches, earthen escape ramps will be maintained at intervals of no greater than 0.25 mile. The open trenches will be inspected three times per day (four times per day during the summer) by a qualified biologist. Other excavations that remain open overnight will be covered to prevent them from becoming traps.
- Project personnel will carefully check under parked vehicles and equipment for desert tortoises before operation. An AB will move desert tortoises found within the parking, staging, construction or other traffic areas to a location away from danger and only as specified in the biological opinion.
- At water and trash sources, measures will be implemented by the AB to preclude access by common ravens (*Corvus corax*). Trash will be placed in sealed containers and emptied at the close of business each day. Each water source will be caged. Fencing and netting

will prevent desert tortoises and common ravens from accessing water sources in construction areas.

- If a desert tortoise that is either dead, injured, or entrapped, is found, the contractor will immediately notify the AB/TM who will then immediately notify the permitting agencies directly or through the CEC's biology staff. Work in the immediate area will be temporarily halted while the AB consults with the permitting agencies. Any entrapped desert tortoise will be permitted to escape. The disposition of any carcasses or recovery of dead animals will be coordinated through the CEC.
- If a desert tortoise is injured during the course of construction, the CEC will be notified and the AB will transport the animal to a qualified veterinarian[2]. If a desert tortoise is killed during the course of construction, it will be left in place as is and the permitting agencies will be notified. The AB will document and remove the carcass.

2.3 Clearance Surveys of Permanent Exclusion Areas

Within 72 hours after the area to be cleared is fully enclosed with combined security and/or tortoise fencing, a desert tortoise clearance survey would be performed per Service protocol (Service 1992) and recent Guidelines (Service 2008). Two complete passes with complete coverage would be conducted as described above. If no desert tortoises are observed during the second survey, a third survey would not be conducted. Each separate survey would be walked in a perpendicular direction to allow opposing angles of observation. If a desert tortoise is located on the second survey, a third survey would be conducted. Once the area surveyed is deemed free of desert tortoises the areas may be open to a vegetation salvage program, if the BLM desires to do so (CH2M HILL 2008).

The ABs would be primarily responsible for the clearance surveys. Some ABs may be substituted with TMs who would be placed between ABs during the surveys. Once the sites are deemed free of desert tortoises after at least two consecutive clearance surveys then heavy equipment would be allowed to enter the construction site to perform earth work such as clearing or cutting vegetation, grubbing, leveling, and trenching. A TM would monitor initial clearing and grading activities to find and relocate any tortoises missed during the initial tortoise clearance survey. Should a tortoise be discovered, then the AB would be responsible for relocating it outside the fence or translocating it.

The specific instructions for handling and processing of tortoises as outlined in the Guidelines for Handling Desert Tortoises During Construction Projects (Desert Tortoise Council, 1999) will be followed. The ABs will maintain a record of all desert tortoises encountered and relocated or translocated during project surveys and monitoring. This information would include for each individual: the location (narrative, vegetation type, and maps) and dates of observations; borrow data; general conditions and health; measurements; any apparent injuries and state of healing; if moved, the location from which it was captured and the location in which it was released (whether animals voided their bladders); and diagnostic markings (i.e., identification numbers).

[2] A list of licensed veterinarians in the Las Vegas area who treat desert tortoises can be found on the internet at: http://www.deserttortoise.org/answeringquestions/appendix2.html

All potential desert tortoise burrows located would be excavated by hand by an AB, desert tortoises removed, and collapsed or blocked to prevent occupation by desert tortoises. The AB would also search for desert tortoise nests/eggs, which are typically located near the entrance to burrows. All desert tortoise handling and removal, and burrow excavations, including nests, would be conducted by ABs in accordance with the Service-approved protocol (Desert Tortoise Council 1994, revised 1999). If the Desert Tortoise Council releases a revised protocol for handling of desert tortoises before initiation of project activities, the revised protocol would be implemented for the project (CH2M HILL 2008).

All Service (2008) Guidelines for clearance surveys (Appendix A) will be followed.

2.4 Transportation and Release

Activities addressed here include excavation, handling, and artificial burrow construction.

All potential desert tortoise burrows within the fenced area would be searched for presence. In some cases, a fiber optic scope may be used to determine presence or absence within a deep burrow. Burrows inhabited by tortoises would be excavated by ABs or by TMs supervised by an AB using hand tools. To prevent reentry by a tortoise or other wildlife, all burrows would be collapsed once absence has been determined. Tortoises excavated from burrows would be relocated or translocated to unoccupied natural or artificial burrows outside the fenced site immediately following excavation. Prior to excavating and transporting a tortoise a suitable burrow will have been located, or an artificial burrow constructed, to expedite the process and minimize handling time. The receiving burrow will be of the same size and orientation as the original burrow. The final determinations on placement of relocated/translocated tortoises would take place during Service-approved protocol level surveys of the areas prior to handling activities.

Tortoise excavation, handling, artificial burrow construction, egg handling and other procedures would follow those described in the *Guidelines for Handling Desert Tortoise During Construction Projects* (Desert Tortoise Council, 1994 (Revised 1999), included as Appendix E). Processing of tortoises found during the clearance surveys will be done in an appropriate facility to provide shade, should temperatures require such. A processing facility may use temporary shade structures (e.g., E-Z Ups) or a temperature-controlled facility (e.g., a recreational vehicle).

If desert tortoises need to be moved at a time of day when ambient temperatures could harm them (less than 40 degrees Fahrenheit (°F) or greater than 90 °F), they would be held overnight in a clean cardboard box or plastic tote. These tortoises would be kept in the care of the AB under appropriate controlled temperatures and released the following day when temperatures are favorable. All cardboard boxes would be appropriately discarded after one use and never hold more than one tortoise. Plastic totes will be disinfected with a 20 percent bleach solution.

Data will be collected on all tortoises handled, as described above. They will also be photographed and closely examined for clinical signs of animal disease at the time of capture. All ABs and TMs performing examinations for health characteristics would be required to have experience identifying the clinical signs of URTD, herpes virus, and cutaneous dyskeratosis in tortoises. Desert tortoises will be transported in clean cardboard

boxes or plastic tote. If a cardboard box is used, a new box would be used for each individual tortoise and would be properly discarded after a single use. If a plastic tote is used, it will be sterilized with a 20 percent bleach solution between each use. The new burrow would be located at least 300 feet from the outside of the permanently fenced sites and would be of similar size, shape and orientation to the original burrow. The new burrow locations would be determined by the AB. Relocated tortoises would not be placed in existing occupied burrows.

The ABs would wear disposable surgical gloves when handling desert tortoises. A new pair would be donned for each tortoise handled to avoid the transmission of upper respiratory tract disease (URTD). Shell notching would not be performed. Any equipment used to handle tortoises will be sterilized with a 20 percent bleach solution between each use.

All Service (2008) Guidelines for transportation and release (Appendix A) will be followed unless modified herein. All standard handling procedures, such as keeping desert tortoises upright during handling, will be followed by the ABs and TMs.

Per the protocol, tortoises that can be relocated will be moved less than 1,000 meters to the west side of the project fencing within the relocation area (see Figure BR5-3). The translocation area beyond 1,000 meters would be used to accommodate all project-site desert tortoises that cannot be moved to safe locations within 1,000 meters of their capture location. Should it be determined that a tortoise needs to be transported more the 1,000 meters it will be relocated within the preferred translocation area as specified by the agencies approving this plan. Once the agencies concur as to the location of the translocation areas, they will be assessed as to their habitat suitability and a technical memo prepared documenting the findings. The memo will also describe the presence or absence of potential desert tortoise predators observed during the habitat characterization. This habitat characterization will be done to confirm that the proposed translocation areas are suitable to sustain tortoises.

The translocation areas will be surveyed to estimate tortoise densities and the distribution of resident tortoises prior to the relocation/translocation activities. Surveys will be conducted using Service protocols. The results of these surveys will be used to determine whether the area meets the requirement of having a density of resident and relocated/translocated tortoises that does not exceed 39 tortoises per square kilometer. The first protocol survey would be within the one square kilometer translocation area for Ivanpah 1 to determine tortoise density, distribution, and further assess habitat suitability. If this area were determined to meet the relocation criteria, the subject tortoises would be relocated to this area. The survey results will also be used to determine the placement of translocated tortoises with an emphasis on avoiding resident tortoises and active burrows as well as areas supporting potential predators, most notably ravens. Subsequent protocol surveys would be conducted in one square kilometer areas of suitable habitat prior to the development of each of the Ivanpah SEGS units. An additional one square kilometer area will be surveyed at the time the Ivanpah 1 translocation area is surveyed to provide a pre-approved area should additional space be needed. Hence, prior to the commencement of the translocation activities, at least two 1-square-kilometer areas will have been surveyed and pre-approved.

As shown in Figure BR5-3, four 1-square-kilometer areas have been initially identified. This provides an area for each of the Ivanpah SEGS units, with an additional area as a reserve, should the first area have insufficient capacity. As stated earlier, once the initial translocation areas are approved by the agencies, the habitat assessment of those areas will be performed and a technical memo of the results prepared. A copy of the proposed habitat assessment protocol is included as Appendix F.

The survey results of the proposed translocation areas will be submitted to the permitting agencies prior to the commencement of each construction phase. This will ensure these proposed locations are in a suitable area.

2.5 Scheduling

Construction of the generating facility, from site preparation and grading to commercial operation, is expected to take place as early as late Fourth Quarter of 2009 to the Fourth Quarter of 2013 (48 months total). It is anticipated that Ivanpah 1 (southern site) will be constructed first, followed by Ivanpah 2 (middle site), then Ivanpah 3 (northern site), though the order of construction may change. Construction of the shared facilities would occur with the first plant.

Translocations/relocations will take place in the fall (i.e., late August/September to October/November) and in the spring (i.e., March/April – May) to avoid extremely high thermal conditions (Cook et al. 1978, Nussear 2004, *in* Esque et al. 2005). No desert tortoise would be captured, moved, transported, released, or purposefully caused to leave its burrow for whatever reason when the ambient air temperature is above 95ºF (35ºC). Ambient air temperature would be measured in the shade, protected from wind, at a height of 2 inches (5 centimeters) above the ground surface. No desert tortoise would be captured if the ambient air temperature is anticipated to exceed 95ºF (35ºC) before handling and relocation can be completed. If the ambient air temperature exceeds 95ºF (35ºC) during handling or processing, desert tortoises would be kept shaded in an environment that does not exceed 95ºF (35ºC), and the animals would not be released until ambient air temperature declines to below 95ºF (35ºC). As stated in the Service (2008) Guidelines (Appendix A, item I.F), "BrightSource must obtain approval of the translocation area and timing of the translocation activities from the Service, CDFG, and the Bureau prior to initiating any translocation activities."

2.6 Translocation/Relocation Areas

Tortoises will be translocated/relocated in the Ivanpah Valley adjacent to the site areas or in areas depicted in Figure BR5-3. This area meets the Guidelines provided by the Service (2008). Tortoises excavated from burrows would be relocated to unoccupied natural or artificial burrows outside the fenced sites immediately following excavation. Prior to translocation and relocation activities this area will be surveyed to locate suitable unoccupied burrows and/or construction of a sufficient number artificial burrows. Ideally all tortoises would be relocated to within 1000 meters of the site(s). The primary constraint is that resident and relocated desert tortoises do not exceed 39 individuals per square kilometer. To obtain approval for the proposed translocation area, a habitat assessment will be

conducted to determine whether habitat of the proposed translocation area is suitable to sustain tortoises. The proposed protocol for this assessment is provided in Appendix F.

All Service (2008) Guidelines for the selection of translocation/relocation area (Appendix A) will be met. Included in the Service (2008) Guidelines in item II.B.3 are guidelines to ensure proper rehydration. Further, as stipulated in these Guidelines (item I. F); "BrightSource must obtain approval of the translocation area and timing of the translocation activities from the Service, CDFG, and the Bureau prior to initiating any translocation activities. Translocations shall not be permitted if these agencies determine that environmental conditions such as an extended drought might significantly reduce the survival of the translocated desert tortoise."

2.7 Monitoring and Reporting

To monitor for survivorship and health, for a period of 3 years following their translocation/relocation, the desert tortoises will be located at least monthly by the AB. In order to locate all translocated/relocated tortoises, it will be necessary that they be marked and fitted with radio transmitters. Tortoises would be marked with Passive Integrated Transducer (PIT) tags (Gibbons and Andrews 2004) (e.g., Biomark model TX1400L); 2) fitted with an external label (ASIH 2004), and 3) have a light-weight radio transmitter attached with a battery life of at least one year (e.g., Holohil model AI-2F). This redundant method of marking tortoises ensures that tortoises are easily identified by field workers, even in the case of predation or shell wear. Transmitters will be attached using methods similar to those described in Boarman et al. (1998). All transmitters would be removed at the end of this monitoring period.

Juvenile tortoises located during clearance surveys would be treated differently than adult tortoises. Before being released, all juvenile tortoises located would be affixed with specially designed radio transmitters that are small enough to minimize stress. Due to the small size of these transmitters and the subsequent short battery life, these juvenile transmitters will have to be exchanged out approximately every 10 weeks. Juveniles will also be marked using either a Passive Integrated Transducer (PIT) tag and/or fitted with an external label using appropriate standards (ASIH 2004) (adapted from Esque et al. 2005).

Upon locating the translocated/relocated tortoises, all pertinent information will be recorded, such as behavior, physical characteristics, health characteristics, as well as any potential anomalies the individual desert tortoise might display. All ABs and TMs performing examinations for health characteristics would be required to have experience identifying the clinical signs of URTD, herpes virus, and cutaneous dyskeratosis in tortoises. As stated in the item II.A.5 of the Service (2008) Guidelines, "the authorized biologist(s) will remove and quarantine any desert tortoises showing clinical signs of disease. They must then contact the Service within 24 hours to determine the disposition of these individuals." Quarantined tortoises will be kept in a temperature-controlled area away from all other tortoises that are being processed for translocation. The AB will be responsible to ensure that quarantined tortoises have adequate food. If blood testing is warranted, a licensed

veterinarian in the Las Vegas area[3] will be used to draw blood and ship it to an appropriate laboratory for testing.

All observations will be reported to the AB who will record the following information for the monthly compliance report: (1) species name; (2) location (global positioning system coordinates, narrative and maps) and dates of observations; (3) general condition and health, including injuries and state of healing; (4) diagnostic markings, including identification numbers or markers; and (5) locations moved from and to.

All Service (2008) Guidelines for monitoring and reporting (Appendix A) will be followed unless modified herein. Including the requirements in item III.2 about adaptive management should abnormally high mortality rates among the translocated desert tortoises occur. Hence, if monitoring shows a mortality rate of 10 percent or higher among the translocated population, the project owner will consult with the permitting agencies to develop a remedial action plan prior to further phased translocation activities.

[3] A list of licensed veterinarians in the Las Vegas area who treat desert tortoises can be found on the internet at: http://www.deserttortoise.org/answeringquestions/appendix2.html

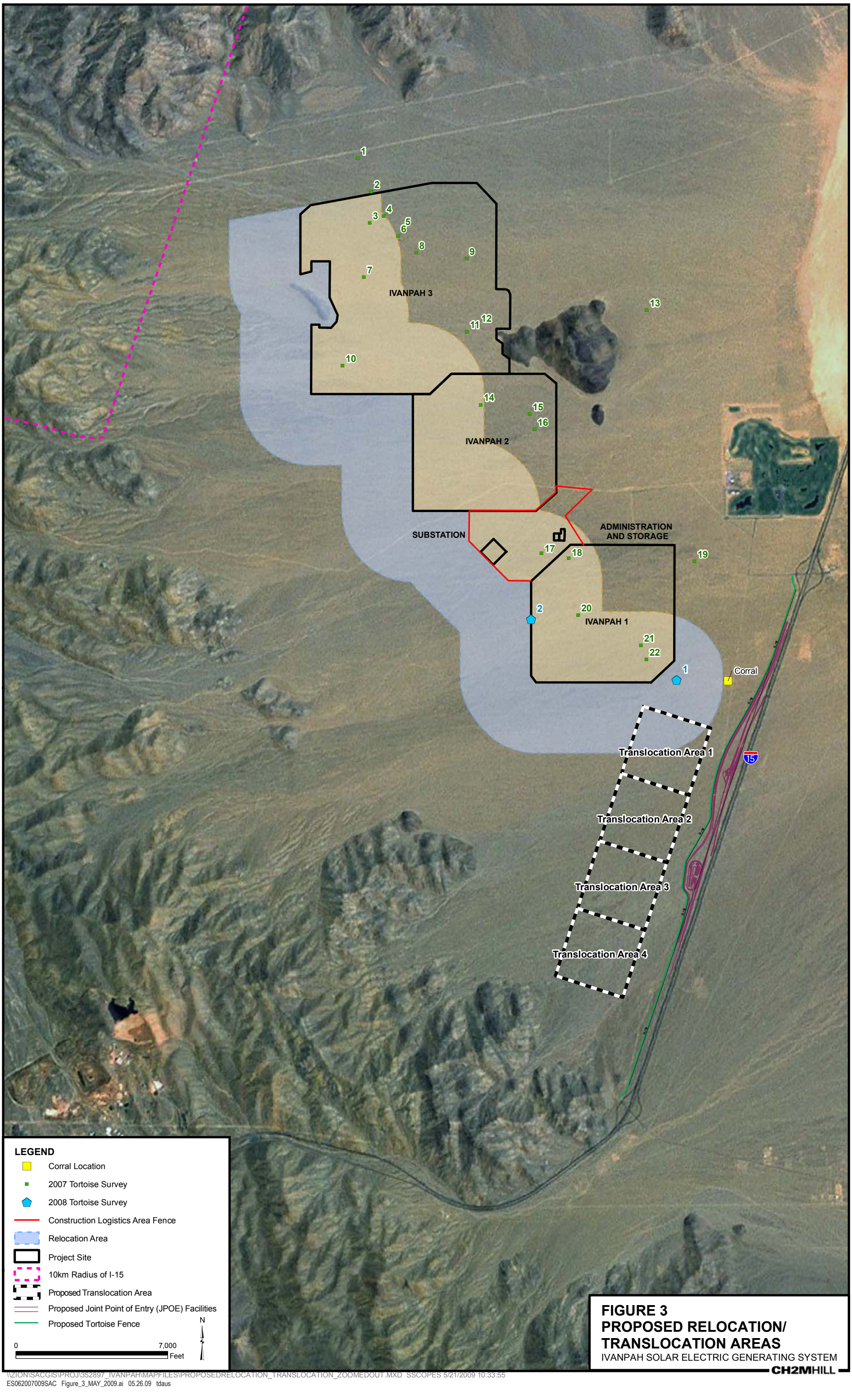

FIGURE 3
PROPOSED RELOCATION/ TRANSLOCATION AREAS
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

CH2MHILL

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ES062007009SAC Figure_3_MAY_2009.ai 05.26.09 tdaus

3.0 References

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APPENDIX A

Guidelines for Clearance and Translocation of Desert Tortoises from Ivanpah SEGS Project

December 12, 2008

GUIDELINES FOR CLEARANCE AND TRANSLOCATION OF DESERT TORTOISES FROM THE IVANPAH SOLAR ELECTRIC GENERATING SYSTEM (ISEGS) PROJECT

U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, 2493 Portola Road, Suite B, Ventura, California, 93003

The Fish and Wildlife Service (Service) is providing these guidelines for clearance and translocation of desert tortoises as technical assistance to permitting agencies and project proponents for developing a comprehensive set of procedures to follow for translocating desert tortoises from the ISEGS project. Upon issuance of our biological opinion, all procedures to be used in translocation activities and subsequent monitoring will become mandatory and must be fully implemented to avoid violating the provisions against the taking of federally listed species, as defined in section 9 of the Endangered Species Act.

All methods used for handling desert tortoises during translocation must be in accordance with the *Guidelines for Handling Desert Tortoises During Construction Projects* (Desert Tortoise Council 1999) or the most recent handling guidance provided by the Service. Biologists that handle desert tortoises during translocation activities must have the appropriate authorizations from the Service and the California Department of Fish and Game.

In this document, we refer to both translocation and relocation activities and the specific instances when each is appropriate. For the purpose of this guidance, a translocation is required when a desert tortoise must be moved more than 1000 meters to clear it from the project site, while a relocation requires a movement of less than 1000 meters.

Bureau of Land Management (Bureau) will direct Bright Source Energy (BrightSource) to prepare a desert tortoise translocation plan that adopts the guidance below. The Bureau-approved plan will be part of the proposed action for which the Service will render its biological opinion. The Bureau will seek California Department of Fish and Game (CDFG) concurrence with the plan prior to initiating formal consultation, and will obtain CDFG input during plan implementation.

I. Translocation Area Identification

A. Prior to clearance of desert tortoises from the project site, BrightSource, must identify a specific translocation area(s) with boundaries that encompass an area of desert tortoise habitat of sufficient size to accommodate resident and translocated desert tortoises at a density that will not exceed 39 individuals per square kilometer. This density is consistent with that identified in the Fort Irwin translocation plan. This translocation area will be used to accommodate all project-site desert tortoises that cannot be moved to safe locations within 1000 meters of their capture location (see I.E below).

B. Translocation areas must be on Federal or State lands in California that are located outside of desert tortoise critical habitat, off-highway vehicle management areas, and desert wildlife management areas that the Bureau of Land Management (Bureau) has

established through its resource management plans. The translocation area(s) must not have any proposed rights-of-way or other encumbrances at the time of its establishment.

C. To minimize potentially adverse genetic effects and to provide suitable habitat for translocated individuals, the translocation area(s) must be in Ivanpah Valley, below 4200 feet, and it must be composed of desert tortoise habitat that resembles the habitat on the project site. Analysis of the habitat must consider precipitation, soils, vegetation community, vegetation density and abundance, perennial plant cover, forage species, geomorphology, and slope.

D. To minimize the potential for loss of desert tortoises due to vehicle strikes, the translocation area must be at least 10 kilometers away from major highways (e.g. Interstate 15) to provide a safety buffer for long-distance movements that some desert tortoises are likely to make following translocation. If BrightSource cannot identify a suitable translocation area (i.e., area that meets I.A. through I.C) outside of this buffer distance, it must fence the highway with desert tortoise proof fencing prior to translocation of desert tortoises. BrightSource should work with CalTrans regarding the appropriate location for this fencing along the I-15 if it is required. To effectively prevent movement of desert tortoises onto I-15 the fence should at least cover the distance between Nipton Road and the Ivanpah Lake. BrightSource should also consider the location of the proposed Joint Port of Entry in this area when planning this fencing.

E. Desert tortoises that the authorized biologist can relocate outside of the project site to an area that meets the requirements of I.A through I.D within 1000 meters of their capture location must not be translocated to the more remote translocation area. BrightSource must identify zones within the project site where these shorter distance relocations would apply. Other desert tortoises within the project site that will require movement of greater than 1000 meters to meet the requirements of I.A through I.D must be translocated to the identified translocation area. This measure will help to minimize the number of project-site desert tortoises that are moved outside of their natural home range.

F. BrightSource must obtain approval of the translocation area and timing of the translocation activities from the Service, CDFG, and the Bureau prior to initiating any translocation activities. Translocations shall not be permitted if these agencies determine that environmental conditions such as an extended drought might significantly reduce the survival of the translocated desert tortoises.

Note: Based on our own cursory analysis of the translocation issue for ISEGS, we believe that fencing of I-15 will probably be necessary to minimize the loss of desert tortoises. We also believe that desert tortoises will have to be translocated to the west and/or south of the proposed facility to avoid another proposed solar facility. If it become necessary to fence I-15 in order to translocate desert tortoises from the project site, we recommend that the translocation area be located as close to the fence line as possible to minimize adverse effects to resident populations. As discussed in I.E, desert tortoises that can be relocated to an appropriate location (i.e., one that complies with I.A through I.D) outside of the project site without moving them more than 1000 meters must not be translocated to the identified translocation site.

II. Translocation Procedures and Guidance

A. Clearance surveys

1. BrightSource must not commence clearance surveys on any portion of the project site unless it has fenced that area with desert tortoise-proof fencing. Specifications for desert tortoise-proof fencing can be found at the following website:

   http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/dt/DT_Exclusion-Fence_2005.pdf

   Clearance surveys must consist of two consecutive surveys of the site using 10-foot wide transects. The direction of transects from the second survey must run perpendicular to those of the first. BrightSource must perform all clearance survey and translocation procedures for any portion of the project site during the spring (i.e., March - May) or fall (i.e., late August to early October) to avoid extreme temperatures. Two consecutive clearance surveys will be sufficient to declare the site free of desert tortoise as long as the site is completely fenced with desert tortoise exclusion fencing prior to the surveys. BrightSource must perform clearance surveys to coincide with each phase of development as opposed. Clearing all three phases at one time will allow for adaptive management on each phase's translocation to benefit from the monitoring information gathered from the previous phases. Any desert tortoises found within the project area fencing after completion of the official clearance surveys must be removed from harm's way and moved to the translocation area as described below.
2. BrightSource must mark and affix transmitters to all desert tortoises cleared from the project site, so that they can be located and identified during post-translocation monitoring (see below).
3. During clearance, the authorized biologist(s) may remove desert tortoises that are in burrows through tapping or careful excavation following the *Guidelines for Handling Desert Tortoises During Construction Projects* (Desert Tortoise Council 1999). Multiple visits will be necessary if desert tortoises are inaccessible in burrows during clearances. Construction must not proceed until BrightSource has cleared all desert tortoises from the project site.
4. All clearance and translocation activities (capture, transportation, release, etc.) must occur when ambient temperatures are below 35°C and not anticipated to rise above 35°C before handling and processing are completed. Temperature must be measured in the shade at a height of 5 centimeters above the ground. If additional guidance on temperature tolerances becomes available, the Service will provide it to BrightSource for use.
5. Prior to translocation, authorized biologist(s) for BrightSource, trained to identify clinical signs of disease in desert tortoise, must evaluate all desert tortoises to be translocated from the project site for overall condition, trauma, and clinical signs of upper respiratory tract disease (URTD), herpes virus, and cutaneous dyskeratosis. The authorized biologist(s) must remove and quarantine any desert tortoises showing clinical signs of disease. They must then contact the Service within 24 hours to determine the disposition of these individuals. Desert tortoises that are relocated based on I.E do not require health assessments prior to relocation.

B. Transportation and release

1. During translocation, BrightSource must move desert tortoises to the translocation area and distribute them evenly through the site. The specific location of each desert tortoise release point must be recorded for use in analyzing data gathered through post-translocation monitoring.
2. During translocation, authorized biologists will transport all desert tortoises in clean protective containers to ensure their safety. These containers must be sterilized using a 10 percent bleach solution before being used to translocate other desert tortoises.
3. Immediately prior to release, all desert tortoises must be provided drinking water for 15 to 20 minutes (preferably by placing water a few centimeters deep directly into each tortoise's plastic tote), after which they must be released into an unoccupied desert tortoise burrow (if available) or in the shade of a shrub. If the desert tortoises tote is fouled by urine or feces during transportation, it must be cleaned prior to use for desert tortoise hydration.
4. All clearance and translocation activities (capture, transportation, release, etc.) must occur when ambient temperatures are below 35°C and not anticipated to rise above 35°C before handling and processing are completed. Temperature must be measured in the shade at a height of 5 centimeters above the ground.
5. If workers locate desert tortoises during construction activities that the initial clearance surveys missed, BrightSource must utilize an authorized biologist to complete translocation of the desert tortoise according to these guidelines.

III. Post-translocation Monitoring and Reporting

1. Following translocation, the translocated and relocated desert tortoises must be located at least once per month for 3 years to monitor for homing behavior and to determine how translocated animals are adapting to their new location. These surveys must note the location of the translocated tortoises, overall condition, health status, translocation area threats (type and intensity), and identify any mortalities among the translocated population. All mortalities within the translocation area should be reported to the Ventura Fish and Wildlife Office, California Department of Fish and Game (Victorville Office), and the Bureau's Needles Field Office within 48 hours of discovery. BrightSource in coordination with the Service will use the information gathered through this monitoring to inform adaptive management decisions for the translocation program on subsequent phases of the project.
2. In addition, adaptive management of the translocation area may be required if monitoring identifies abnormally high mortality rates among the translocated desert tortoises. If monitoring shows a mortality rate of 10 percent or higher among the translocated population, BrightSource will consult with the Service, CDFG, and the Bureau to develop a remedial action plan prior to further phased translocation activities.
3. BrightSource must submit annual translocation area monitoring reports to the Ventura Fish and Wildlife Office and California Department of Fish and Game (Victorville Office) that detail the results of the radio telemetry and transect

monitoring by January 31 of each year. These reports should analyze the effectiveness of the translocation program and identify any needed adaptive management strategies.

References Cited

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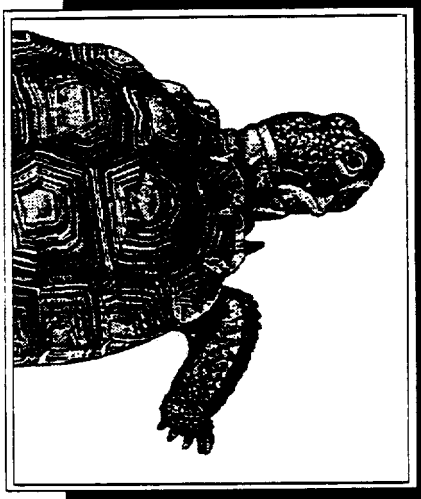
APPENDIX B

Appendix B of the Desert Tortoise Recovery Plan

Appendix B

Desert Tortoise
(Mojave Population)



Recovery Plan

Appendix B: Guidelines for Translocation of Desert Tortoises

(1) Experimental translocations should be done outside experimental management zones. No desert tortoises should be introduced into DWMAs—at least until relocation is much better understood.

(2) All translocations should occur in good habitat where the desert tortoise population is known to be substantially depleted from its former level of abundance. Translocation of reproductively competent adults into depopulated areas can have beneficial effects on population growth. Before population growth can occur, however, individuals must establish home ranges and enter into any existing social structure. Desert tortoises should be periodically evaluated against a defined health profile (proportional weight/size, fecal scans, and blood panels).

(3) Areas into which desert tortoises are to be relocated should be surrounded by a desert tortoise-proof fence or similar barrier. The fence will contain the desert tortoises while they are establishing home ranges and a social structure. If the area is not fenced, past experience suggests that most animals will simply wander away from the introduction site and eventually die. (Fencing is not cheap; estimates range from $2.50 to $5.00 per linear foot). Once animals are established some or all of the fencing can be removed and probably reused.

(4) The best translocations into empty habitat involve desert tortoises in all age classes, in the proportions in which they occur in a stable population. Such translocations may not always be possible, since young desert tortoises are chronically underrepresented in samples, often due to observer sampling error, and may now actually be underrepresented in most populations due to poor recruitment and juvenile survivorship during the last several years. Desert tortoises smaller than the 7-year age-size class are particularly vulnerable to predation and may be a poor investment for translocation, unless predator exclusion (fencing, for example) is incorporated into such endeavors. Mature females would probably be the best sex/age class to introduce into below carrying capacity extant populations because of their high reproductive value (low potential mortality, high potential fecundity for many years).

(5) The number of desert tortoises introduced should not exceed the pre-decline density (if known). If the pre-decline density is not known, introductions should not exceed 100 adults or 200 animals of all age classes per square mile in category 1 habitat (Bureau of Land Management designation for management of desert tortoise habitat) unless there is good reason to believe that the habitat is capable of supporting higher densities. Post-introduction mortalities

might be compensated by subsequent introductions if ecological circumstances warrant this action.

(6) All potential translocatees should be medically evaluated in terms of general health and indications of disease, using the latest available technology, before they are moved. All translocatees should be genotyped unless the desert tortoises are to be moved only very short distances or between populations that are clearly genetically homogeneous. All translocated animals should be permanently marked, and most should be fitted with radio transmitters so that their subsequent movements can be closely tracked.

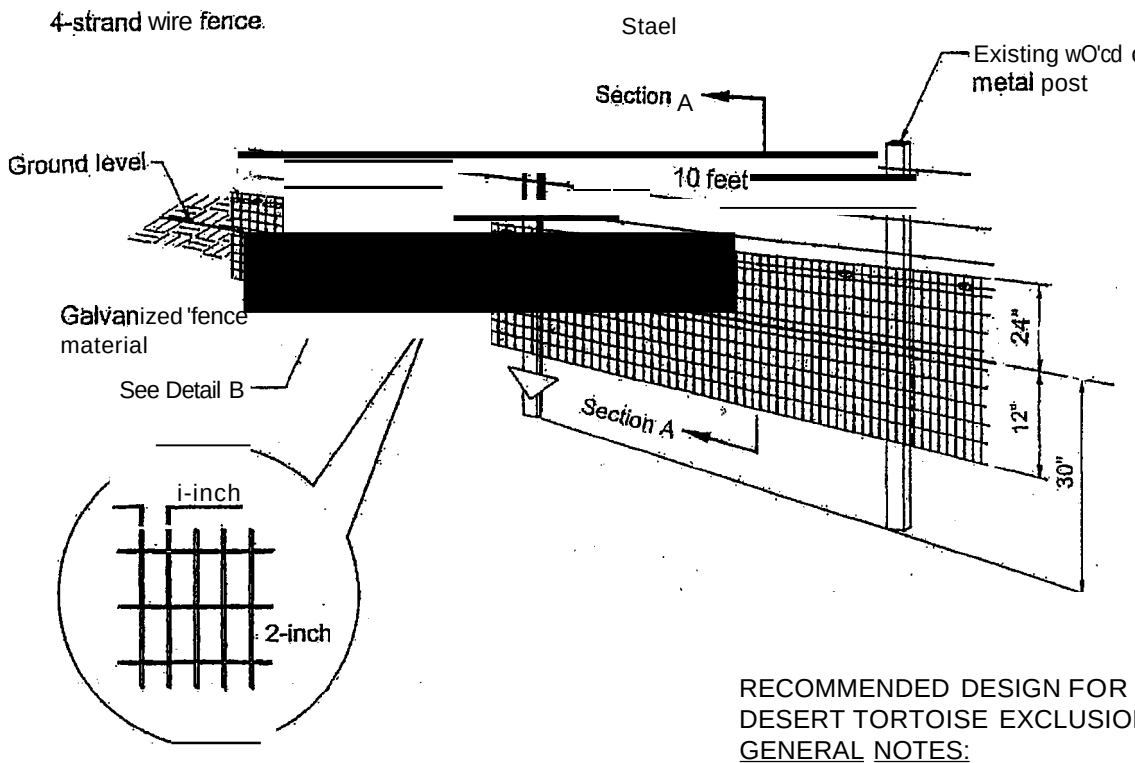
(7) If desert tortoises are to be moved into an area that already supports a population--even one that is well below carrying capacity--the recipient population should be monitored for at least 2 years prior to the introduction. Necessary data include the density and age structure of the recipient population, home ranges of resident desert tortoises, and general ecological conditions of the habitat.

Areas along paved highways can serve as good translocation sites, if properly fenced. Many such areas support good habitats, but vehicle-caused mortalities and/or collecting have substantially reduced or totally extirpated adjacent desert tortoise populations. Any translocation sites should be isolated by a desert tortoise barrier fence or similar barrier next to the highway or road. The purpose of fencing the highway is obvious--to keep translocated animals from being crushed by vehicles on the road. However, fencing the other sides of the translocation area is critical for establishment. If a fenced area or strip of habitat approximately 0.125 to 0.25 mile wide is established along highways, some translocatees should establish home ranges and a social structure within this strip. When the inside fence is removed, the translocated desert tortoises and those from the extant population farther away from the road will eventually expand their home ranges into the remaining low-density areas. A second reason for inside fencing is to prevent any diseased, but asymptomatic, desert tortoises from infecting nearby, healthy populations. In the event that disease is an issue and a resident population is present nearby, double inside fencing should be considered.

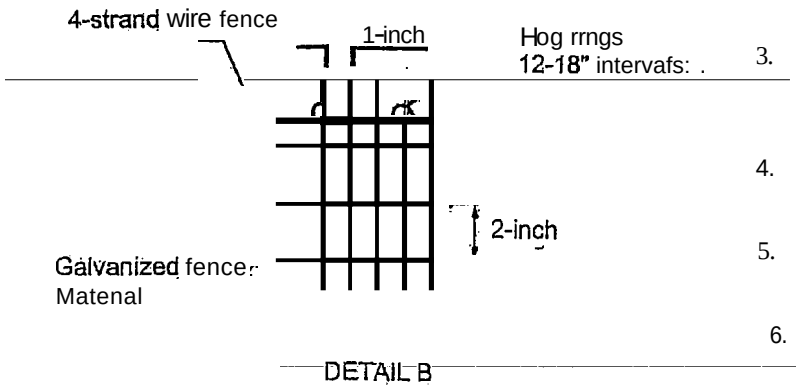
APPENDIX C

Recommended Specifications for Desert Tortoise Exclusion Fencing and Tortoise Guard

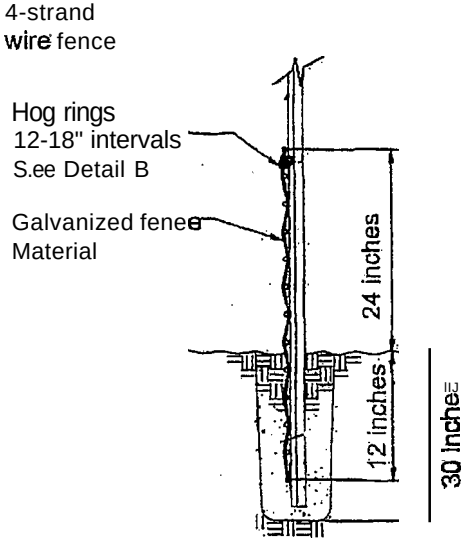
DESERT TORTOISE EXCLUSION FENCE (2005)



DETAIL A



DETAIL B



SECTION A

RECOMMENDED DESIGN FOR DESERT TORTOISE EXCLUSION FENCE

GENERAL NOTES:

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

FOR BEDROCK OR CALICHE SUBSTRATE

1. Use this fence design (see below) only for that portion of the fence where fence material cannot be placed 6 inches below existing ground level due to presence of bedrock, large rocks or caliche substrate.

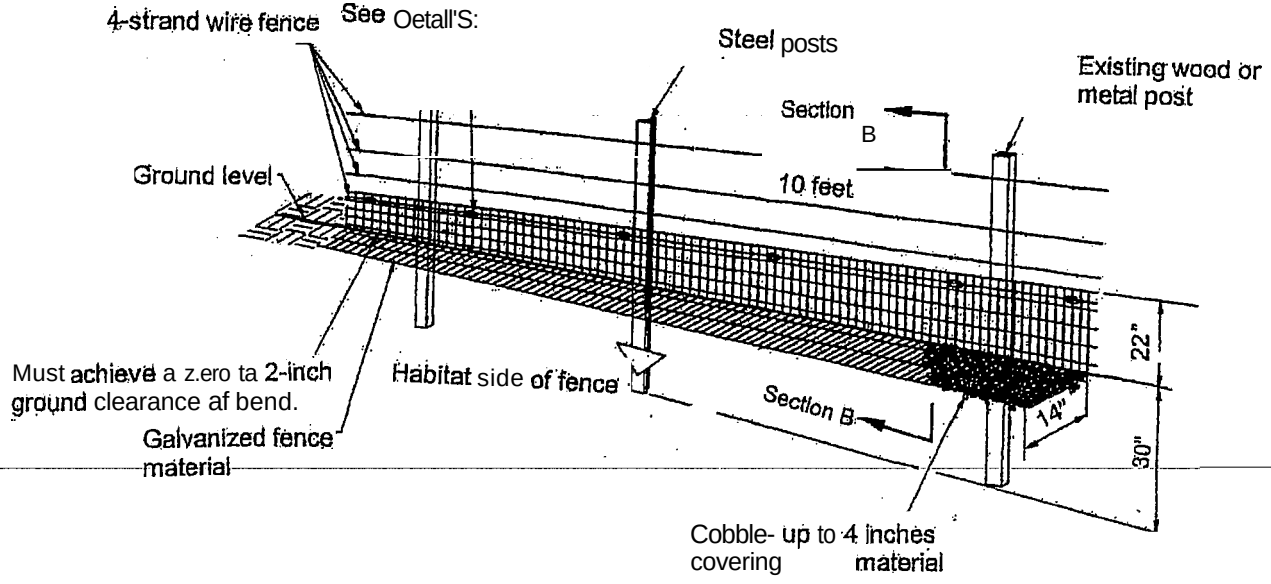
2. Ensure that the fence height above ground level is no less than 22 inches.

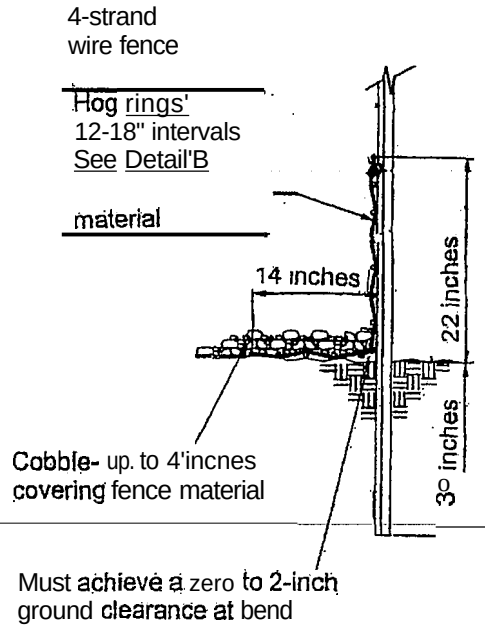
3. Ensure that there is a zero to 2-inch ground clearance at the bend.

4. Ensure that the bent portion of the fence is lying on the ground and pointed in the direction of desert tortoise habitat.

5. Cover the portion of the fence that is flush with the ground with cobble (rocks placed on top of the fence material to a vertical thickness up to 4 inches).

6. When substrate no longer is composed of bedrock or caliche, install fence using design shown above.

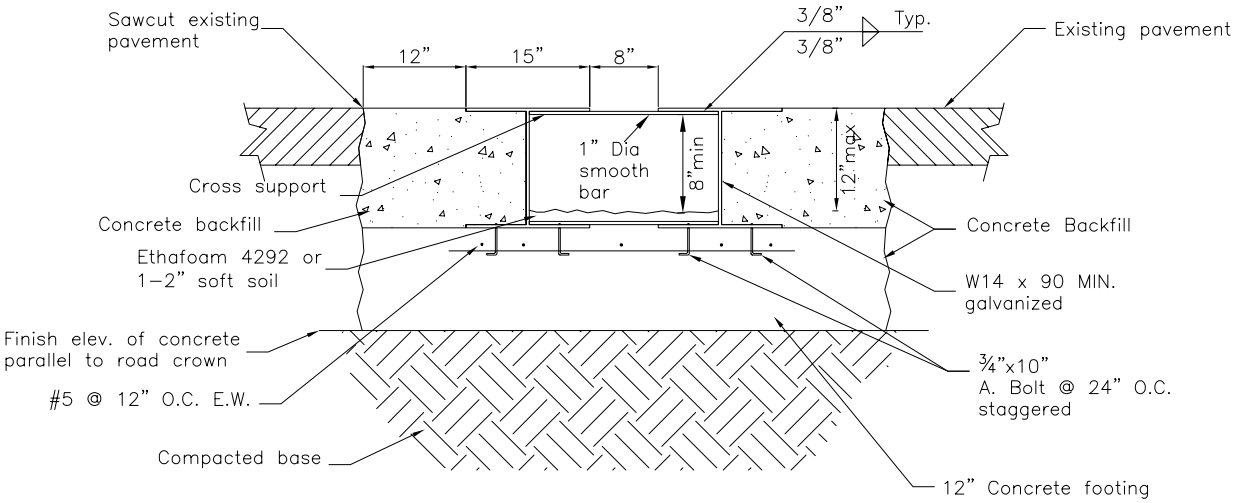




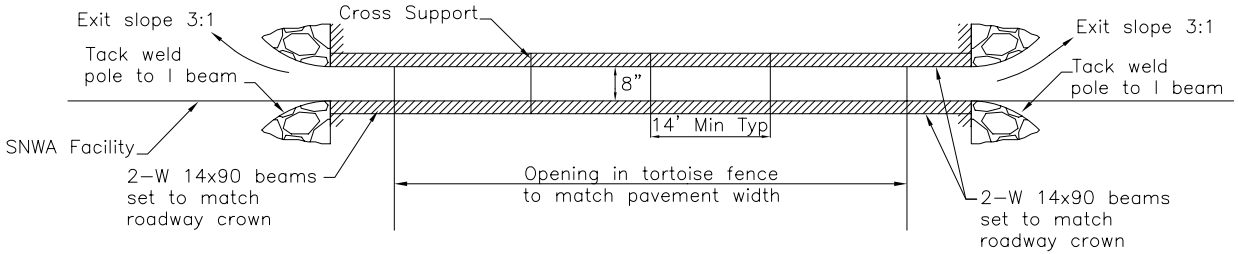
SECTIoN B

PERMANENT TORTOISE GUARD

CROSS SECTION



TOP VIEW



NOTE:
All metal should be galvanized per spec 05500, paragraph 3.3

APPENDIX D

Record of Conversation with Caltrans

CH2MHILL CORRESPONDENSE RECORD

Emails To: Don Copeland

Phone No.: (909) 288-1252 **Email:** don_copeland@dot.ca.gov

Emails From: John Cleckler **Dates:** December 2008 to May 2009

Message Taken By: CH2M HILL

Subject: Coordination with Caltrans for the tortoise translocation efforts for the ISEGS and JPOE projects

John Cleckler began contacting Don Copeland, Caltrans Senior Biological Construction Monitor, via electronic mail (email) in December 2008 at the recommendation of Charles Sullivan of the BLM. Charles and Brian Croft of the Fish and Wildlife Service recommended a relocation/translocation plan for ISEGS that would include translocating tortoises south towards I-15 given the planned installation of tortoise exclusion fencing associated with the construction and formal consultation for Caltrans' Joint Point of Entry (JPOE) project. Cleckler exchanged emails with Don Copeland between December 2008 and May 2009 to coordinate the efforts and schedules between the two projects to enable the proposed translocation plan. The following is a summary of key communications:

December 11, 2008 — At Cleckler's request, Copeland emailed typical Caltrans design specifications for a permanent tortoise exclusion fence that would be attached to a Caltrans right-of-way fence.

May 14, 2009 — Cleckler emailed Copeland a copy of the draft ISEGS translocation plan for review and comment. Cleckler also proposed that Caltrans biologists participate in the planned assessment of the proposed translocation areas given that Caltrans is likely to be moving desert tortoises to the same area.

May 20, 2009 — Copeland informed Cleckler that although the JPOE project was expected to begin construction in the fall of 2010, Caltrans needed to reinitiate section 7 consultation to reflect desert tortoise mitigation changes that would come about during consultation with the California Department of Fish and Game. Caltrans had been issued a biological opinion for the JPOE project but had not been issued a 2081 from the State.

Copeland stated that Caltrans only planned to fence the westbound I-15 from just past Yates Well Road to the end of the JPOE project. The western terminous of their proposed tortoise exclusion fence would not extend to Nipton Road as proposed in the ISEGS draft translocation plan. Copeland postulated that BrightSource Energy would perhaps pick up the cost of the additional fencing. Copeland also stated that Caltrans may need to also install permanent desert tortoise exclusion fencing on eastbound I-15 as well due to recent roadkills.

APPENDIX E

Guidelines for Handling Desert Tortoise During Construction Projects

GUIDELINES FOR HANDLING DESERT TORTOISES

DURING CONSTRUCTION PROJECTS

July 1994
(Revised July 1999)

prepared by:

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U.S. Bureau of Land Management
California Department of Fish and Game
Nevada Department of Wildlife
Arizona Game and Fish Department
Utah Division of Wildlife Resources

Warning: These Guidelines do not authorize individuals to handle tortoises. Such authorization should come from Federal and State wildlife resource agencies, including, at least, those listed above.

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GUIDELINES FOR HANDLING DESERT TORTOISES DURING CONSTRUCTION PROJECTS

Developed by the Desert Tortoise Council

Handling of desert tortoises and other forms of "take" (includes to harass, harm, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct) are prohibited by section 9 of the Endangered Species Act of 1973, as amended. Desert tortoise handling can only be authorized through an incidental take statement in a biological opinion, an incidental take permit (section 10(a)(1)(B) permit), or a scientific collecting permit (section 10(a)(1)(A) permit). The regulatory document(s) or permit(s) authorizing handling are the ultimate guides to how desert tortoises should be handled. We expect that these documents will often authorize handling in accordance with the following handling guidelines.

The following Guidelines have been reviewed and are based on information provided to the Desert Tortoise Council (DTC) by the U.S. Fish and Wildlife Service (Reno and Las Vegas, NV; Ventura and Carlsbad, CA; Phoenix, AZ; Salt Lake City, UT), California Department of Fish and Game (Chino and Long Beach, CA), Utah Division of Wildlife Resources (Cedar City, UT), Nevada Department of Wildlife (Las Vegas, NV), Arizona Game and Fish Department (Phoenix, AZ), U.S. Bureau of Land Management (Saint George, UT; Riverside, CA; Phoenix, AZ), several private consultants, and other individuals. Individuals contacted to develop and/or review these Guidelines are listed in Attachment 1.

The Guidelines are intended for use during construction projects monitored by authorized biologists (tortoise monitors) who are working on behalf of a project proponent in the absence of special regulatory requirements, such as a 10(a)(1)(A) scientific collecting permit. The Guidelines will be helpful to tortoise monitors performing clearance surveys and construction monitoring where tortoises need to be moved out of harm's way. They are intended to be used in coordination with U.S. Fish and Wildlife Service (USFWS) Biological Opinions issued to federal action agencies (e.g., U.S. Bureau of Land Management (BLM), U.S. Army Corps of Engineers, etc.), and state agency documents for state-authorized actions. Although useful information is provided, the Guidelines are **not** intended to replace scientific research project methodologies for handling and processing tortoises.

These Guidelines do not authorize tortoise handling. Depending on the project, responsible federal and state agencies review a person's résumé and authorize him/her to handle tortoises. These Guidelines are provided for tortoise monitors already authorized, or who hope to be authorized, by federal and state agencies. The DTC assumes that such monitors are qualified to handle and process tortoises. These Guidelines include methods and alternatives that are effectively used by professional tortoise researchers to safely handle tortoises in the field. The DTC believes that tortoise handling should be an evolving process, continually updated to include the latest, most effective and efficient methods for safe handling. A wealth of information is already available, and these Guidelines provide that information to construction monitors.

A sequential checklist for use in the field is included (section **F.**). When necessary, the checklist should be cross-referenced with the Guidelines for more detailed information. The inexperienced monitor should use the checklist as a reminder of steps to be taken when handling and processing tortoises, and should be completely familiar with the Guidelines **before** handling tortoises. The experienced monitor may also gain useful information from these Guidelines.

You are encouraged to submit comments on these Guidelines to the USFWS and the DTC. In subsequent years, the DTC will work with the USFWS, using your input, to ensure that the Guidelines are revised to incorporate new information and techniques.

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GUIDELINES FOR HANDLING DESERT TORTOISES

A. PRELIMINARY STEPS

A.1. Federal and state authorizations

Once you are selected by a project proponent to monitor construction, your résumé is typically submitted to the nearest field office of the USFWS at least 15 days prior to construction. You may also need to submit your résumé to the federal action agency (i.e., the federal agency with whom the USFWS has consulted under Section 7 of the Act) and state wildlife agencies. Within the State of Utah, any individual (including any qualified biologist) must obtain a section 10(a)(1)(A) permit from the USFWS to be authorized to handle desert tortoises. Within the States of Arizona, California, Nevada, and Utah, individuals must obtain the appropriate permits from the respective State wildlife agency to be authorized to handle tortoises. If your résumé has not been previously accepted by the responsible agency(s), you should not assume that you are approved until you have written or verbal confirmation from them. After you are authorized, you must read and comply with any federal and state regulatory documents for the project.

A.2. Specific requirements for monitors

The USFWS requires that you observe field demonstrations for egg handling or artificial burrow construction before performing either of these activities. Since 1993, the DTC has arranged for USFWS-authorized biologists to demonstrate these procedures at its annual workshop. Those observing the demonstrations were given certificates. Such demonstrations may be available at future DTC workshops, depending on demand.

The USFWS distinguishes between desert tortoise biologists and environmental monitors as follows: Biologists should (a) possess a bachelor's or graduate degree in biology, ecology, wildlife biology, herpetology, or related fields; (b) demonstrate a minimum of 60 days prior field experience using accepted resource agency techniques to survey for desert tortoises; and (c) have the ability to recognize and to accurately identify and record all types of desert tortoise sign. Generally**,** only qualified biologists, and not environmental monitors, may handle tortoises. Environmental monitors may handle tortoises in emergency situations, but only if they have explicit authorization to do so by the appropriate office of the USFWS.

A.3. Sequential numbering scheme

Prior to beginning the project, you should contact the USFWS and/or other regulatory agency to determine if tortoises are to be marked for your project. In California, the BLM and United States Geological Survey - Biological Resources Division (USGS - BRD) assign tortoise numbers that are used by scientists to mark tortoises on study plots located throughout the Mojave and Colorado Deserts. If your project is near one of these plots, it is important that you contact the appropriate offices of the BLM and USGS - BRD before marking tortoises to ensure that your numbers will not be confused with those used by the federal agencies.

A.4. Examples of numbering schemes

If tortoises are to be marked, they should be identified by project initials and numbers. Examples include: (a) initials of the project followed by a sequential number; (e.g., "MB1" for the first tortoise marked on the Morongo Basin Pipeline project, "MB2" for the second, etc.); (b) initials of the monitoring organization followed by a sequential number; (e.g., "DTC1" for the first tortoise marked by the Desert Tortoise Council on a project, "DTC2" for the second, etc.).

A.5. Getting organized

The materials that you are likely to need for handling tortoises are listed in Attachment 2. Many researchers organize their materials so that they have a "tortoise handling kit for the field," "tortoise handling kit for the truck," "burrow excavation kit," "tortoise marking kit," etc. In any case, it is important that you have all the materials that you need to safely and quickly handle tortoises. It is equally important that you be organized and ready to handle tortoises expeditiously when they are found.

B. IN THE FIELD

While monitoring construction, you will observe tortoises either aboveground or in burrows. When aboveground, tortoises should only be moved if in harm's way. If not, do not handle them, but monitor them to ensure that they are not adversely affected by construction. Depending on the circumstances, tortoises that are beneath machinery, in trenches or pipes, under pallets, or anywhere within the right-of-way may be in danger and need to be moved. If they must be moved, use the appropriate recommendations in these Guidelines to ensure safe handling.

You will also find tortoises in burrows in areas where they will be harmed if not moved. The following sections advise you on how to handle such tortoises.

B.1. Prior to excavating burrows

B.1.a. Determining if burrows should be excavated - According to most agency documents, tortoise burrows are excavated only if they occur within a construction right-of-way, in an area to be cleared of vegetation, or in areas that will not be cleared, but will be negatively impacted by heavy equipment, such as staging areas and turnarounds. The agency document typically requires that such areas be flagged and that construction activities be confined to those areas.

If a tortoise burrow is inside the designated construction area and will be damaged or destroyed, excavate it. Spider webs, litter, and other debris may accumulate in burrow openings overnight, and openings may collapse during winter rains. Do not assume that a burrow is inactive if it looks unused or collapsed. Tortoises may use canid or mustelid digs, and may be found in burrows of other animals, particularly kit foxes. Burrowing owls may use tortoise burrows, but do not assume that burrows occupied by owls are not also occupied by tortoises. Juvenile tortoise burrows may resemble rodent burrows, or juveniles may be inside such burrows. Therefore, excavate **all** burrows that will be lost to construction. If a burrow opening is outside the construction area, but a tortoise at the end of the burrow may be within the area, excavate it. Remember that a burrow may extend 30 feet beyond the opening.

B.1.b. Describing burrows - When possible, we recommend that you take measurements of the burrow before excavating it. The information should be recorded in your field notebook, and, if a tortoise is present, would be transferred to the data sheet (section **E.**). Measure the width and height just inside the opening of the burrow, the length (in many cases you cannot measure the length until you are finished excavating the burrow), determine burrow orientation using a compass, and record its condition using the categories given below. We recommend that you use permanent black ink and high rag content, acid-free paper for recording data. The following categories may be used to describe the conditions of burrows (U.S. Fish and Wildlife Service 1992):

Class: 1. currently active, with tortoise or recent tortoise sign
2. good condition, definitely tortoise; no evidence of recent use
3. deteriorated condition; definitely tortoise (please describe)
4. good condition; possibly tortoise (please describe)
5. deteriorated condition; possibly tortoise (please describe)

B.1.c. Other considerations - Depending on the time of year and other conditions (*B.5.c.ii.*) you may need to construct a burrow **before** you remove a tortoise from its natural burrow. Recommended techniques for burrow construction are discussed in section *B.5.f.*

B.2. Mapping burrows

If a burrow is to be excavated, there are several important reasons for mapping it: (a) resource agencies can determine how many tortoises were encountered on the project compared with the number of burrows excavated; (b) the information will be available for future projects in the same area; (c) burrow locations may be important for organizing monitors and determining tortoise "hot spots" versus areas where few, if any, tortoises are found; and (d) the number and location of burrows found during initial tortoise surveys can be compared with the number and location of burrows found during monitoring; (i.e., the data may provide information to determine appropriate take limits based on the findings of initial surveys). Typically, the USFWS requires that the number of tortoises observed during construction be reported. Mapping the information will show the location of the tortoises. Some monitoring supervisors require that all tortoise sign be mapped. If an artificial burrow is used, we recommend that it be accurately mapped. If the burrow is blocked (section *B.5.f.i.*), it is essential that you map it and mark it in the field so you can find and unblock it later.

B.3. Map types

When you map burrows, we recommend that they be numbered and shown on maps of appropriate scale. If monitoring a linear right-of-way, it often helps to number burrows sequentially within a given section of the alignment (e.g., "B-23-2," for burrow #23 on reach 2). Mapping is important if many monitors are locating, numbering, and mapping burrows simultaneously. United States Geological Survey (USGS) 7.5' topographical maps (scale 1" = 2,000'), or enlargements of them, are useful. Project maps at a scale of 1" = 100' or 1" = 200' are particularly useful when burrows are common and better resolution is necessary. The assigned numbers may be cross-referenced with data sheets, field notes, and photographs.

B.4. Excavating burrows

B.4.a. Looking for eggs - Feel for tortoise eggs by gently probing the soil in front of the burrow opening (i.e., the mound) and along the floor as you excavate the burrow. Eggs have been found up to six feet in front of burrow openings and up to six feet within the entrance of a burrow; they may occur in the mound at the burrow opening. To avoid crushing eggs, do not scrape the shovel across the bottom of the burrow, but continue to probe the area with your fingers as you proceed. Removal of the top ten inches of soil (or until a hard layer of soil is encountered) will typically ensure that you find any tortoise eggs. Be particularly careful between late April and mid-October when eggs are most likely present. If found, follow the USFWS's egg handling protocol (Attachment 3). Although not included in the protocol, we strongly recommend that you wear disposable latex gloves when handling eggs.

B.4.b. Excavating burrows - We recommend that monitors wear leather or cloth gloves during burrow excavation to avoid being bitten or stung by venomous animals. Blunt-nosed shovels or garden trowels are useful. If available, two monitors, each with a shovel, may excavate a burrow. One person may place his/her shovel in the burrow entrance and the other person, using a similar shovel or spade, would slice away the ceiling. Excavate the burrow slowly and carefully and stop often to see if a tortoise is within reach. It may take several minutes or several hours to excavate a tortoise burrow, depending on its length and other characteristics.

If you are the only monitor present, we recommend the following. Depending on the size and depth of the burrow, carefully slide an appropriate-sized plank six inches to two feet into the opening. You could use a 1" x 2" plank for smaller burrows and a 2" x 4" plank for larger burrows. Gradually collapse the burrow onto the plank, and remove the soil from the burrow tunnel as you go. Do not collapse the burrow ahead of the plank. You should feel the shovel contact the plank with each stroke. In this way, you will avoid striking a tortoise with the shovel. Alternatively, you may use a second shovel instead of the plank, which will facilitate removing soil from the burrow as you collapse it.

B.4.c. Finding and removing all tortoises - Regardless of the excavation method, you should always excavate the burrow to its absolute end(s), then excavate an additional foot-or-so of harder soil beyond the suspected end to ensure that a tortoise is not behind a dirt "plug" or mound. Search all side tunnels within the burrow for tortoises, especially in kit fox dens. If a tortoise is found, do not assume that it is alone. After removing the first tortoise encountered, you should return to the burrow and continue to excavate it looking for additional tortoises. After excavating the burrow, leave it collapsed so that no tortoise may reuse it easily.

B.5. Finding tortoises in burrows

B.5.a. Taking temperature readings - When a tortoise is encountered during burrow excavation, we recommend that you stop digging and check and record the air temperature [thermometer shaded at 1.5 m (4.9 ft) above the ground] and ground temperature [thermometer shaded at 1.0 cm (0.4 in) above the ground].

B.5.b. Deciding if tortoises should be processed - Data collected in a consistent manner during construction projects will be useful to resource agencies developing mitigation measures for future projects. However, the health of a tortoise is your number one priority. Only process a tortoise (i.e., weigh, measure, sex, and photograph it; section **B.7.**) if the situation allows you to do so without harming it or neglecting additional tortoises that may enter the construction site. If you are unable to do more than move a tortoise out of harm's way and monitor it to ensure its safety, you have done your job. Skip section **B.7.** if the situation is not right for processing a tortoise. The following sections discuss situations where you should or should not process tortoises.

B.5.c. Specific considerations before processing tortoises

B.5.c.i. Tortoise temperature preferences - The preferred daytime body temperature of desert tortoises is 69 °F to 101 °F (McGinnis and Voigt 1971). The critical maximum body temperature is between 103 °F and 112 °F (Brattstrom 1965, Naegle 1976). Berry and Turner (1984) found that juvenile tortoises preferred air temperatures of 63 °F to 66 °F during March, and 77 °F to 83 °F during June. Consequently, more juvenile tortoises were located in the morning (76.1%) than in the afternoon (23.9%). USFWS (1991) requires that measures be taken to ensure a tortoise does not overheat if it is processed when air temperature exceeds 90 °F at 1.5 m above the ground or if ground temperature exceeds 95 °F. Unless detailed processing (i.e., weighing, measuring, and photographing tortoises) is specifically required by federal or state agencies, we recommend that tortoises **not** be completely processed when air temperature exceeds 90 °F or ground temperature exceeds 95 °F. Under such conditions, the tortoise should be only inspected (section *B.7.d., B.7.e.,B.7.f.*), marked (section *B.7.g.*), and released (section *B.8.*).

B.5.c.ii. Other considerations - Based on the time of year and other conditions, we make the following recommendations to help you decide if tortoises should be processed. In this section, we assume that (1) you are authorized to handle tortoises during the authorized construction project, and (2) the tortoise must be moved out of harm's way regardless of extreme weather conditions or other potentially threatening situations.

B.5.c.ii.(a). During hot temperatures - When air temperature is greater than 90 °F or if the ground temperature is greater than 95 °F at the time you find a tortoise in a burrow that must be excavated, we recommend that you only inspect, mark, and release the tortoise (section *B.5.c.i*); construction of an artificial burrow may be necessary (*B.5.f.*). If possible, only excavate burrows and remove tortoises when temperatures do not exceed these limits. If a tortoise is found aboveground when these upper temperatures are exceeded, and the tortoise must be moved from harm's way, place it in the shade of a shrub, ideally in the vicinity of a nearby burrow of similar size (*B.8.a.*).

B.5.c.ii.(b). During cold temperatures - When tortoises are likely inactive (section *B.5.e.*), prior to removing them from their burrows, construct an artificial burrow and place the tortoise inside after it has been processed. The USFWS requires that you receive written permission from the private land owner if a tortoise is to be placed on private property.

B.5.c.ii.(c). At or near sunset - If a tortoise with a midline carapace length (MCL) (section *B.7.h.*) less than or equal to 180 mm is rescued from the construction site at or near sunset, we recommend that it be held overnight in a clean, unused cardboard box and released the next morning near the capture site. A larger tortoise (i.e., MCL greater than 180 mm), which may be less prone to predation than a juvenile tortoise, does not need to be held overnight, but should be released under a shrub (section **B.8.** for more information on releasing tortoises). We recommend that the tortoise be monitored until it resumes normal behavior, "settles in" for the night, or until you are no longer able to watch it due to darkness. In such a situation, we recommend that you be at the release site at or before sunrise the next morning to look for and continue to monitor the tortoise.

B.5.c.ii.(d). If tortoises are seriously ill - If a tortoise has prevalent signs of Upper Respiratory Tract Disease (section *B.7.d.iv.*) or hyperthermia (section *B.6.a.i.*), or otherwise appears to be seriously ill, we recommend that you construct a burrow, place the tortoise inside, block its entrance (section *B.5.f.i.*), and call the USFWS or the action agency to inform them of the situation. If you are unable to reach the appropriate agency for further instruction, check the tortoise on the next day(s), continue to record observations on its health, and contact the agency as soon as possible.

B.5.c.ii.(e). Other situations - There will be times when you will be required to exercise judgment on the appropriate disposition of a tortoise. For example, if you are the only monitor on a pipeline project in an area of high tortoise density, you would not likely process tortoises because other tortoises may wander, unseen, into harm's way while you were doing so. You may put an "excavated" tortoise in an artificial, plugged burrow until pipe installation has moved out of the area. Use your common sense, and always keep the welfare of the tortoise in mind.

B.5.d. Transporting tortoises

B.5.d.i. Use a box - There are a few situations where a tortoise may be taken from the field, held overnight, and then released the next morning. We recommend that during transport each tortoise remain in a clean, unused cardboard box that is covered or closed. Newspaper placed in the bottom will absorb any urine that is voided. The box should be ventilated in such a way that a tortoise's leg or head will not get stuck. Never put more than one tortoise in a box. Do not allow tortoises to roam freely in the vehicle, nor should they be transported in shopping bags or other containers less sturdy than a new cardboard box. Mark the box or discard it immediately after use to be sure that it is not used for another tortoise.

B.5.d.ii. Precautions - Never place tortoises over the catalytic converter or other area that becomes hot with vehicle operation. Truck beds or floorboards should be padded and travel should be at speeds that minimize vibrations or shifting of the box. A tortoise should never be left unattended in a vehicle. During summer months, desert tortoises may be transported in an air conditioned vehicle as long as they are in a covered cardboard box and the vehicle interior temperature is maintained between approximately 75 °F and 80 °F. If a tortoise is taken during the winter inactivity period, it should be maintained at approximately 55 °F, which will be less stressful to it than much warmer temperatures, and may allow it to remain in a physiological state of hibernation.

B.5.e. Preliminary steps to handling tortoises - When a tortoise is encountered, stop digging. If it is during the tortoise inactivity period (i.e., typically during July and August, and between November and February, when tortoises are less likely found aboveground; in Arizona the inactivity period may begin in late May or June), we recommend that you or another monitor construct an artificial burrow into which the tortoise will be placed after processing. If it is during the activity period (i.e., when tortoises are typically found aboveground between March and June and again between September and October), we recommend that you place the tortoise in the shade of a shrub, or depending on conditions (section *B.5.c.ii*), in an artificial burrow.

In previous federal Biological Opinions, the USFWS has recommended that a tortoise removed from its burrow be placed in a similar-sized burrow found in the area. We do not recommend this for the following two reasons: (a) there is the possibility of exposing a clinically healthy tortoise to URTD or another pathogen in the similar-sized burrow; and, (b) burrows are often too deep to tell if a resident tortoise is already in the burrow, and placing the "excavated" tortoise into an occupied burrow would result in stressing both tortoises. Therefore, if conditions are appropriate (section *5.c.ii.*), we recommend that the tortoise be placed *beside* a burrow of similar size or be placed in an artificial burrow as described below.

B.5.f. Constructing burrows - A reasonable amount of time to create an artificial burrow is from 30 minutes to several hours depending on the substrate. A suitable burrow may be created in several minutes using a gas-powered auger.

B.5.f.i. The "traditional method" - An artificial burrow is intended to provide immediate shelter and protection to a tortoise that was hibernating or aestivating when you removed it from its natural burrow. The following are guidelines to assist artificial burrow construction (after Tortoise Group 1994). The USFWS requires that you observe a field demonstration before constructing a burrow.

Dig a burrow that is (a) roughly the same orientation and size as the burrow from which the tortoise was taken, (b) six feet long, and (c) slanted downward about 15 to 20° below the horizontal line of the ground. Next, slide the plywood top onto the shelf. Avoid knocking dirt into the tortoise crawl space by inserting the plywood onto the three-sided shelf from the front end of the burrow. Do not drop the plywood onto the burrow from above. Once you are sure the plywood fits snugly, remove the plywood, smooth out the bottom of the burrow, and be sure that it will accommodate the tortoise. Loosen the soil along the floor of the crawl space to a depth of six inches to allow a tortoise to dig its way out should the plywood sag and possibly trap or pin it in the burrow. Replace the plywood and shovel dirt on top. Mound the dirt so that rain water will not puddle on top of the finished burrow.

We recommend that you cover the opening of the artificial burrow with rocks or wood for two or three days to ensure that the tortoise remains within the burrow and out of harm's way, or that it resumes hibernation or aestivation. This is particularly important if most of a tortoise's burrows have been lost to construction and it would be unable to find an existing burrow in a reasonable amount of time. After several days, when construction activities have left the area (i.e., as on a pipeline or transmission line), or when you are reasonably sure that the tortoise is safely hibernating or aestivating, **it is absolutely essential that you remove the rocks from the opening of the blocked burrow.**

B.5.f.ii. Another method - EnviroPlus (Goodlett 1992) has found that a safe burrow can be created quickly using a gas-powered auger. They have observed wild tortoises voluntarily enter these burrows shortly after they are made. Different-sized augers are available to create burrows for juvenile or large adult tortoises. With an extension, the burrow can be dug to a depth of about five feet. Using an auger, you can make a burrow that meets the criteria suggested above for a traditional burrow.

B.5.f.iii. Mapping and finding blocked burrows - If you block a tortoise inside a burrow, you must find that burrow in a few days to unblock it. Accurately map the burrow so that you can find it again. Additionally, we recommend that you mark the area. For example, Tierra Madre Consultants (LaRue 1993) marks burrows with lath or ribbon placed a standard distance and direction from each burrow. A cryptic message is written on the lath to show burrow location: "B23-2100FTS," to indicate that "Burrow #23 on Reach 2 is 100 feet south of the lath." The area must be discreetly marked to avoid attracting people or ravens to the burrow.

B.6. Handling tortoises

B.6.a. Precautions while handling tortoises

B.6.a.i. Avoiding hyperthermia - Do not expose a tortoise to direct sunlight. Keep it in the shade of your body, a shrub, a truck, etc. Remember that ground temperatures are much hotter than air temperatures. You should not place a tortoise on the hot ground, but may remove the top several inches of hot sand to expose a cooler layer below. Indications of hyperthermia may include aggressive struggling by the tortoise, a tortoise hot to the touch, frothing at the mouth (i.e., excessive salivation), or voiding of the bladder. The critical maximum body temperature for desert tortoises is between 103 °F and 112 °F (Brattstrom 1965, Naegle 1976).

If an animal begins frothing at the mouth (i.e., salivating excessively) it is probably nearing a lethal body temperature and immediate action is required: (a) if already constructed, place the tortoise in the artificial burrow, or create a pallet burrow in the shade of a bush and place the tortoise inside; (b) pour water on the ground beneath a shrub and place the tortoise in the shade on the water; (c) pour tepid (approximately 68-95 °F) water over the shell and/or wipe the skin and shell with a wet cloth; and, (d) if an air conditioned vehicle is available, place the tortoise into a box and take it into the cool vehicle (section *B.5.d.ii.*). Heat-stressed tortoises should not be released until they resume normal behavior. They should be monitored after release.

B.6.a.ii. Avoiding transmission of Upper Respiratory Tract Disease - At all times, you should handle a tortoise as if it has URTD, and in such a way that you will not transmit the disease from one tortoise to another. Much of the following information was developed by Dr. Kristin Berry (Berry 1993, 1988).

B.6.a.ii.(a). Treating clothing - Do not allow a tortoise to contact your clothing. If it does, change your clothes before handling another tortoise. Contaminated clothes should be washed before you wear them again while handling tortoises. It is advisable to have a change of clothes on-hand. Change your clothes, including your shoes, before leaving the site for another geographical region; (e.g., another valley or mountain range would be considered a separate region). Dipping the bottoms of your shoes into a sterilizing solution [section *B.6.a.ii.(d).*] or wiping them with a rag dipped in the solution may be sufficient for the shoes to be worn at another location. When visiting multiple sites on a single trip, always visit sites with known occurrence of URTD last. This will minimize the probability of spreading disease.

B.6.a.ii.(b). Treating vehicles - The USFWS recommends that you wash vehicle undercarriages and tires prior to traveling from a site where URTD is known or expected to occur to a site where URTD has not been reported. With appropriate planning, you should be able to accomplish this task.

B.6.a.ii.(c). Treating processing implements - The tips of calipers, which contact tortoises during shell measurements (section *B.7.h.*), may be covered with material to avoid direct contact with a tortoise and therefore contamination of the calipers. However, as with all other implements not directly contacting a tortoise, handling a tortoise, then handling the calipers results in contamination, and we believe that the instrument should be sterilized even if the tips are "protected." Alice Karl, who has handled tortoises for many years, only touches a tortoise with one hand, leaving the other one free and uncontaminated to handle the implements and record the data (personal communication, 6 August 1993). In such a case, the covered caliper tips are sufficiently protected. A metal or plastic rule may be used to measure the plastron (section *B.7.h*), but do not use wooden rules, which are too porous and cannot be properly sterilized. Although using a file to notch tortoises is not used for construction monitoring, if a researcher uses this technique (only with prior approval from the USFWS), the file should also be sterilized before use on another tortoise.

B.6.a.ii.(d). Sterilizing solutions - The USFWS requires that you sterilize all materials that contact a tortoise in one of the following solutions: (a) 95% isopropyl alcohol, (b) 95% ethyl alcohol, or (c) 25% solution of chlorine bleach and water. However, given that the organism is now known to be a mycoplasma, Berry (personal communication, 1 March 1994), citing discussions with Dr. Elliot Jacobson, indicated that of these three solutions, only bleach would be effective against the organism. All implements should be soaked in the solution for at least 20 minutes prior to using them on a different tortoise.

B.7. Processing tortoises

Processing a tortoise (i.e., weighing, measuring, sexing, and photographing it) should only be done by experienced monitors. If you have never handled or processed a tortoise, we recommend that you obtain experience before doing so in the field. Careful practice on pet tortoises, or observing more experienced biologists handling tortoises in the field, are recommended. Experts say that with practice you should be able to process a tortoise in 15 - 20 minutes. We do not recommend that you process a tortoise if the temperature is too hot, or if there is a chance that a second tortoise may be endangered while you are processing the first one. If processing a tortoise will endanger it or other tortoises, or if you have little or no experience in processing tortoises, skip this section and continue with section **B.8.**

B.7.a. Maintaining sterile conditions - Before touching a tortoise, the USFWS requires that you put on clean latex disposable gloves, and that you have them on during the entire process. Even if you do not process the tortoise, but only move it out of harm's way, you should wear gloves. We recommend that if a glove is torn while handling the tortoise, which is likely when its toenails scrape the glove, you should put a new glove on over the torn one. Once used, disposable materials such as latex gloves, t-shirt bags, or surveyor's tape (section *B.7.b.*) must be disposed of promptly. We recommend that each monitor have a garbage bag on hand, and that disposable materials be placed in the bag immediately after use. For non-disposable materials, the USFWS requires that each item be sterilized before it is used on a separate tortoise [section *B.6.a.ii.(c).*]. Additional recommendations and USFWS requirements are given in subsections of section *B.6.a.ii.*

B.7.b. Weighing tortoises - If the situation allows, you may weigh a tortoise. Experts recommend weighing a tortoise immediately after it is removed from the burrow. This way you have a true weight should the tortoise void its bladder, and can weigh it afterwards to determine how much fluid has been lost. One reason for weighing a tortoise is to determine if it is underweight, which may be one sign that it has URTD or another disease.

B.7.b.i. Using spring scales - If you are using a spring scale, a plastic grocery bag, cotton string, or surveyor's tape may be used to suspend the tortoise from the scale. If you use string or surveyor's tape as a sling, be sure that the material is strong enough to support the tortoise. The tape may be doubled for use with very heavy tortoises. Smaller tortoises may be placed inside a grocery bag or ziplock bag and weighed. Larger tortoises can be weighed by making a sling with one loop of the bag placed posterior to its forelimbs and the other loop placed anterior to its hindlimbs. Never suspend a tortoise far from the ground; suspend the tortoise over sand rather than large rocks; keep weighing time to a minimum; and take every precaution to prevent the tortoise from falling.

The following scale sizes are recommended: (a) 0 to 100 g scale with a 1.0 g precision for small tortoises, (b) 1 kg scale with a 10 g precision for moderate-sized tortoises, and (c) 5 kg scale with a 50 g precision for large tortoises. *Pesola* brand spring scales have been recommended. It is best to use the smallest scale that will accommodate the weight of a tortoise. Occasionally a tortoise will weigh more than 5 kg; mark that information on the data sheet. Keep scales clean. When weighing a tortoise, hold the ring at the top of the scale to ensure that the scale is suspended vertically and the correct weight is being taken. Record the information on the data sheet. Note: Some researchers use electronic *Mettler* scales or *Chantillon* balances for more accurate weights.

B.7.c. Immobilizing tortoises

B.7.c.i. Using coffee cans - A desert tortoise may be placed on the top of a coffee can or other large can to facilitate observations and measurements as described in the following sections. The can should be large enough to support the tortoise and small enough to prevent any waving appendages from touching the can. (Note that coffee cans come in several sizes and can be "nested" in one another for ease of transport and for handling different-sized tortoises). Freedom to move its appendages may encourage a tortoise to extend its head, which allows you to observe the eyes, nares, chin glands, and beak where most signs of URTD are observed. The can must be sterilized before using it with another tortoise, or you may place waterproof plastic, such as a baggy, on top of the can, the tortoise on top of the plastic, and discard the plastic afterwards.

B.7.c.ii. Using towels - A tortoise may be held on a clean cloth between your knees as you kneel. Use your body to shade the tortoise during processing. You may scrape away the hot, upper surface of the soil down to a cooler level onto which you can place the towel and the tortoise. While holding the tortoise firmly between your knees, carefully press down on its back to immobilize it. The cloth prevents direct tortoise contact with your clothing, but may not prevent urine or nasal exudate from soaking through the towel and contaminating your clothes. If this happens, you should change your clothes before processing another tortoise. In either case, the cloth must be soaked in a disinfecting solution and laundered before it can be used on another tortoise. Disposable baby changing sheets have been suggested in place of cloth towels.

B.7.d. Observing tortoises - If the situation allows, we recommend that you observe a tortoise and record ectoparasites, shell lesions, signs of osteoporosis or osteomalacia, injuries, and evidence of URTD. Much of this information is taken from Berry (1993, 1988).

B.7.d.i. Ectoparasites - Potentially encountered parasites of tortoises include adobe tick (*Ornithodorus turicata*), mites (*Trombicula* sp.), and bot fly larvae (Family: Cuterebridae). In some areas, ticks are the most common parasite observed on wild tortoises. They generally adhere to the growth areas between scutes, particularly on rear marginal scutes. If present, mites will be found on the skin. Bot fly larvae would appear as a large swelling or bulge (1.0 - 1.5 cm long) on the neck, leg, or tail. There will be a small hole through which you may observe the larva. Experts recommend that you do not try to remove parasites. Such unnecessary handling would likely injure and/or stress the tortoise. We recommend that the numbers and locations of each parasite be recorded on the data sheet.

B.7.d.ii. Shell lesions - There are many types of lesions, ranging from injuries caused by predators to diseases of scute and bone. The field worker should look for and record any observations on scute and bone irregularities, discoloration, apparent damage (healed or healing), open wounds, holes, pits, etc. Since we do not know much about shell diseases in the desert tortoise at this time, photographs and written descriptions will be very useful. See section **B.7.h.** for taking photographs of plastrons.

B.7.d.iii. Osteoporosis and Osteomalacia - These diseases can manifest themselves to the observer by depressed scutes and/or thinning scutes with exposed bone beneath. Some scute depression and thinning is part of the normal aging process of the shell, or may result from nutritional deficiencies or pathologies. It is recommended that the field worker photograph such conditions and record the information on the data sheet.

B.7.d.iv. Upper Respiratory Tract Disease - Tortoises may have this disease and not show any obvious sign of it. Therefore, **treat every tortoise as if it has URTD to avoid spreading the disease to healthy tortoises**. Observe all tortoises for the following signs of URTD: (a) wheezy, rattling breath; (b) clear to green mucous coming from the nostrils or dirt caked around the nostrils; (c) dirt caked on forelimbs due to mucous being rubbed there; (d) puffy eyes or eyes sunken and dull; (e) swollen, oozing chin glands; (f) lethargic, with legs or head listlessly distended from shell; etc. Very low body weight, lack of skin luster, or a dry mummified appearance may be evidence of URTD or another disease (Kristin Berry, personal communication, 2 February 1994). We recommend that these signs or abnormal behavior be recorded on the data sheet. Photo-documentation of signs of URTD is strongly recommended.

B.7.e. Recording distinctive features - If the situation allows, we recommend that you record on the data sheet diagram any marks or anomalies (e.g., unique morphological features, damaged limbs, damaged shell, manmade marks on the shell, etc.). Captive tortoises may be marked with paint, have initials carved in their carapaces, have holes drilled in their marginal scutes, or have raised centers on their carapace scutes due to abnormally high growth rates. Some anomalies may include irregular gulars, extra vertebral scutes (normal is five), paired or malformed costal scutes (normal is four on each side), extra marginal scutes (normal is 11 on each side), or missing scutes. There may be too many or too few toes, or malformed toe nails. We recommend that you describe a tortoise in enough detail that another monitor would recognize it from your description. This information may be important to distinguish "problem" tortoises that persistently enter construction sites.

B.7.f. Sexing tortoises - If the situation allows, we recommend determining the sex of a tortoise if its midline carapace length (MCL) is greater than or equal to 180 mm (section *B.7.h.*); the sex of smaller tortoises is not easily, if at all, determinable. If the MCL is less than 180 mm, mark "sex unknown" on the data sheet. Generally, the following **male** characteristics may help differentiate them from females: (a) concave plastron; (b) longer, more curved gulars; (c) larger size; (d) longer, broader, more conical tail; (e) shorter, thicker toenails; and (f) larger, well-developed chin glands. For less experienced monitors, pay particular attention to the gular projection and the shape of the plastron, which are the two best characters for differentiating the sexes. For very large tortoises, you can feel the concave (male) or flattened (female) plastron or see it by holding the tortoise at eye level without turning the tortoise over on its back. When in doubt, record all other information and mark "sex unknown" on the data sheet.

B.7.g. Marking tortoises - If the situation allows and if you are required to mark a tortoise by painting an identification number on a scute, we recommend the following. Use a clean, sterile toothbrush to remove dirt from the left fourth costal scute, where the tortoise will be marked. If this scute is damaged, use the right fourth costal scute. The number is likely to last longer if placed on a rough, off-centered surface where shell-wear is less common, which is one reason only the fourth costal scutes are used for marking. Next, place a small dot (i.e., no larger than 1/4 inch diameter) of "white-out" or acrylic paint on the scute. Once the spot is dry, write the pre-arranged number on the spot using a waterproof, permanent black ink pen. Some biologists recommend using a capillary type technical pen with a point diameter of about 0.25 mm.

Allow the number to dry before applying epoxy. Devcon brand, five-minute epoxy has been recommended by some field-workers. It is advisable to mix the epoxy on a file card or piece of paper, then transfer the mixed epoxy to the number on the shell with something such as a toothpick, wooden coffee stirrer, or tongue depressor. Wait several seconds until the epoxy starts to thicken but is still liquid enough to spread over the numbered spot with ease. Cover the paint spot overlapping its edges just enough to seal the paint. **Never allow the epoxy to spill over onto the growth area, which occurs at the border between two scutes.** Anticipate this when applying the paint so there will be space for the epoxy to overlap the paint without entering the seams. It may be helpful to cover the margins of the scute with 1/2" wide masking tape before applying the epoxy, to ensure that the epoxy does not touch the growth area, especially on smaller tortoises. Record the assigned number on the data sheet.

B.7.h. Measuring tortoises - If the situation allows, while the epoxy is drying (be careful to avoid smearing the epoxy), we recommend that you measure the tortoise and record the following information on the data sheet: (a) carapace length at the midline (MCL), (b) plastron length from the gular notch to the anal notch (PLN), (c) width at the junction of the seventh and eighth marginal scutes (Width M7/M8), and (d) maximum height from the intersection of the abdominal and femoral scutes (i.e., at the junction of the two largest scutes on the plastron and the two immediately posterior) to the corresponding position on the carapace (Max height). The USFWS requires that all measurements be in millimeters. Use calipers for the most accurate measurements, or a plastic/metal rule as an alternative.

While taking measurements, tortoises are to be handled carefully. Do not turn the tortoise over to measure its plastron. This measurement can be made with the tortoise in an upright position. Mishandling may result in pulmonary edema, psychogenic shock, or intestinal torsion. If eggs inside a female are broken while you are handling her, she may die from egg yolk peritonitis.

B.7.i. Photographing tortoises - If the agency requires that you photograph processed tortoises, we recommend that you take the following color, **slide** photographs: (a) dorsal view of the carapace, (b) ventral view of the plastron, (c) the numbered scute, and (d) frontal view of the tortoise's face and forelegs. If the tortoise is too large for you to hold while taking a photograph of the plastron from the underside, do not take this photo. If present, have another monitor hold the tortoise while you take the plastral photograph. It is important that each object fill 80 - 90% of the frame and that the object be clearly focused. Kodachrome film has been suggested because the slides last longer with less discoloration than Ektachrome, for example. We recommend that the following information appear in the photograph: date, biologist's name, project name, and tortoise number. Two types of labels have been recommended:

(a) hold a small card adjacent to the tortoise so that the above information is clearly visible on the photograph without blocking the part of the tortoise being photographed; or,

(b) attach a 1/2" x 1/2", adhesive "Avery label" to the tortoise to allow for closer, more detailed photographs of the subject.

It is suggested that you keep a log of the photographs in your field notes (e.g., "Roll 1, Slide 23, carapace of Tortoise 4.") If you are inexperienced with photography, we recommend that you not photograph tortoises. If you are only somewhat experienced, we recommend that you shoot several test rolls of film prior to photographing tortoises in the field. Use only camera settings that produce the clearest slides. If available, we recommend that a second monitor take the photograph while you, the processor, hold the tortoise. We recommend that processed slides be labeled with the following information: date, biologist's name, project name, tortoise number, township, range, section, county, and state.

B.8. Releasing tortoises

B.8.a. Translocating tortoises - Once a tortoise has been processed, or moved out of harm's way, do not move the tortoise more than 1,000 feet from the collection site unless otherwise directed by the USFWS. You should carefully consider the situation before you release tortoises (section *B.5.c.ii.*). The minimum distance from the edge of the construction zone that a tortoise can be translocated will be determined by its age and sex (different home range sizes), the presence or absence of tortoise-proof fencing around the perimeter of the construction zone, and the duration of the construction activity. The USFWS has required that tortoises removed from construction sites be placed in the shade of a shrub, in a natural unoccupied burrow, or in an artificial burrow (section *B.5.*). We do not recommend that tortoises found aboveground be placed inside an artificial burrow, but rather released as described elsewhere (section *B.8.b.*). Further, the DTC recommends that tortoises **not** be put into existing burrows for reasons given in section *B.5.e.* A tortoise should not be placed on private land without the written permission of the landowner.

B.8.b. Releasing tortoises

B.8.b.i. Temperature considerations - The USFWS requires that tortoises be released at a temperature that is suitable for activity, with reasonable expectation that the temperature will remain within the tortoise's thermal preference long enough for it to adjust to its surroundings. McGinnis and Voigt (1971) found the preferred daytime body temperature of tortoises to be 80.6 °F to 100.4 °F during July, and somewhat lower during May (section *B.5.c.*). Some situations and recommended procedures are given in section *B.5.c.ii.*

B.8.b.ii. Discouraging urination - Many experts state that tortoises are most likely to urinate while being carried, and that the longer you handle them, the more likely they are to urinate. A tortoise may be more prone to void its bladder during drought conditions, which is also when water availability is at its lowest. You may discourage bladder voiding by pressing the tortoise's tail against its vent while you are carrying it. Also, press the tail against its vent if it starts to urinate. If it

does, record on the data sheet the quantity, color, and viscosity of the urine. If the tortoise has already been weighed, weigh it again to estimate the amount of lost fluid.

B.8.b.iii. Monitoring released tortoises - Upon releasing a tortoise, the USFWS requires: (a) that each tortoise be accompanied by an authorized monitor, (b) that each tortoise be monitored at the release site until it is exhibiting normal behavior, and (c) that there be no mass releases of animals.

C. FOLLOW-UP SUGGESTIONS

C.1. Caring for field supplies

Some of the materials you may use are very sensitive to desert conditions. Spring scales will register incorrect weights if they become clogged or rusty; surveyor's tape may become brittle and not support the weight of a tortoise; masking tape will dry up and be useless. It is best if you have well-maintained materials for handling tortoises. Non-disposable materials should be cleaned and sterilized between uses on different tortoises, and may need to be cleaned before using them at the beginning of a project if they have not been used in a long time. Care for field materials is equivalent to the care you can offer a desert tortoise.

C.2. Information sharing

The USFWS typically requires a follow-up report to construction projects authorized by their Biological Opinions. We recommend that each project be considered an opportunity to provide information to the resource agencies on the best ways to accomplish tortoise monitoring. We feel that a consistent approach to handling and processing tortoises and recording the data will ultimately benefit the conservation effort for the species. The DTC is very appreciative of the many individuals, representing many organizations, who have already shared information to develop these Guidelines. Their names are listed in Attachment 1, and they are to be commended for their invaluable input.

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DATA SHEET FOR HANDLING DESERT TORTOISES

Complete both sides of this data sheet when either a tortoise is moved out of harm's way, or a burrow is excavated and a tortoise found.

Project Identification

Date:_____ Project Name:_____ Monitor's Name(s)_____

Location: State:_____ County:_____

USGS quadrangle:_____ T:_____ R:_____ 1/4 of_____ 1/4_____

Comments:_____

Project Description

Slope:_____ Aspect:_____ Elevation:_____

Topography	**Soil Type**	**Vegetation**	**Location found**	
_____ Flat	_____ Sandy loam	_____ Creosote bush	_____ Burrow	
_____ Small hills	_____ Blow sand	_____ Saltbush scrub	_____ Pallet burrow	
_____ Large hills	_____ Gravel	_____ Blackbrush	_____ Other	
_____ Small wash	_____ Cobble	_____ Desert wash	_____ Under shrub	
_____ Large wash	_____ Caliche	_____ Joshua tree	_____ In open	
_____ Bajada	_____ Rocky	_____ Thorn scrub	_____ Caliche cave	
_____ Dune	_____ Pavement	_____ Grassland	_____ Rock shelter	

Describe:_____

_____

_____

_____

Tortoise Burrow Data

Time of excavation: Start:_____ End:_____ Burrow #: _____

Temperature during excavation (1.5m/1.0cm): Start:_____ End:_____

Burrow: Width:_____ Height:_____ Length:_____

Orientation:_____ Condition:_____

Burrow description/contents:_____

_____

_____

_____

TORTOISE MEASUREMENTS AND OBSERVATIONS

Tortoise #:_____ Numbered Scute:_____ Tortoise Weight (g):_____ Sex:_____

Measurements (mm): MCL:_____ PLN:_____ Width M7/M8:_____ Max Height:_____

Photos Taken: Carapace:_____ Plastron:_____ Frontal:_____ Numbered Scute:_____

Comments:_____

_____

Tortoise Health Profile (indicate the best description with an "x" in the appropriate space).

Nasal Description	**Breathing**	**URTD Determination**
_____ Nostrils dry	_____ Clear	_____ Sufficient sign present
_____ Nostrils damp	_____ Wheezing	_____ Insufficient sign present
_____ Nostrils wet	_____ Rasping	_____
_____ Nasal exudate present	_____ Bubbly	_____
_____ Bubbles from nostrils	_____ Normal	_____

Describe:_____

_____

Posture and Behavior	**Shell Disease***	**Trauma***
_____ Alert, responsive	_____ Lesions present	_____ Head
_____ Lethargic	_____ Sunken scutes	_____ Forelimbs
_____ Appendages limp	_____ Thinning scutes	_____ Hindlimbs
_____ Head hanging	_____ None observed	_____ Shell, gular horn

Describe:_____

_____

* Sketch all features mentioned above, including the epoxied number, gular horn, anomalies, and other identifying features.

F. CHECKLIST FOR HANDLING DESERT TORTOISES

The following sequence is recommended for handling and processing tortoises. If this differs from an established sequence that you, as an experienced monitor, have developed, the DTC does not require that you abandon your approach, but that you consider the information. For the inexperienced monitor, we **do** recommend that you follow this sequence. Each step is cross-referenced with sections in the Guidelines. See the Table of Contents for page numbers. The bold word, "**data**," follows a given instruction where we recommend information be recorded on your data sheet, maps, or personal journal.

Before going to the field, be authorized (A.1.) and trained (A.2.), determine if tortoises are to be marked (A.3.), if so, develop a numbering scheme (A.4.), and have your materials organized (A.5.).

Upon finding a burrow, determine if it will be excavated (B.1.a.). If so, describe it beforehand (B.1.b. **data**) and decide if an artificial burrow is needed (B.1.c.). Map (B.2. **data**) and number (B.3. **data**) excavated and artificial burrows.

Before excavating a burrow, check for eggs (B.4.a.) and, if found, follow USFWS protocol for handling them (Attachment 3). Then, excavate the burrow (B.4.b.) and be absolutely sure that it is empty or that you have removed all tortoises (B.4.c.).

When you find a tortoise in a burrow, take the temperature (B.5.a. **data**) and decide if the tortoise should be processed (B.5.b. and B.5.c.).

Before you handle a tortoise, determine if it will be processed and how it will be disposed during hot temperatures [B.5.c.ii.(a).], during cold temperatures [B.5.c.ii.(b).], at or near sunset [B.5.c.ii.(c).], if the tortoise is seriously ill [B.5.c.ii.(d).], or during other situations [5.c.ii.(e).]. If the tortoise must be transported in a vehicle, use a new cardboard box (B.5.d.i.) and take precautions (B.5.d.ii.).

If an artificial burrow needs to be constructed (B.5.e.), use either the traditional method (B.5.f.i.) or another acceptable method (B.5.f.ii.). Take every precaution to ensure that the tortoise, if blocked in its burrow, is unblocked after several days (B.5.f.iii.).

When removing a tortoise from its burrow, avoid hyperthermia (B.6.a.i.), and take precautions to prevent the transmission of URTD (B.6.a.ii.) with proper treatment of clothing [B.6.a.ii.(a).], vehicles [B.6.a.ii.(b).], and processing implements [B.6.a.ii.(c).], using appropriate sterilizing materials [B.6.a.ii.(d).].

If the tortoise is to be processed, put on disposable gloves and maintain sterile conditions (B.7.a.), weigh the tortoise (B.7.b.i. **data**), immobilize it using a can (B.7.c.i.) or a towel (B.7.c.ii.), observe it for ectoparasites (B.7.d.i. **data**), shell lesions (B.7.d.ii. **data**), osteoporosis and osteomalacia (B.7.d.iii. **data**), and URTD (B.7.d.iv. **data**). Record distinctive features (B.7.e. **data**), sex the tortoise (B.7.f. **data**), mark it (B.7.g. **data**), measure it (B.7.f. **data**), and photograph it (B.7.i. **data**).

After the tortoise has been processed, release it into the adjacent area or place it in the artificial burrow (B.8.a.). Be careful of temperature extremes (B.8.b.i.), discourage tortoise urination (B.8.b.ii.), and monitor the tortoise (B.8.b.iii.).

After you leave the field, maintain your field materials in good working order (C.1.), and share your experiences with the USFWS (C.2.).

ATTACHMENT 1: PERSONS CONTACTED

Edward L. LaRue, Jr. assembled the information and drafted the Guidelines in 1994, and, with input from USFWS field offices in California, Arizona, Nevada, and Utah, revised them in April 1996 and again in July 1999. The following individuals were contacted to develop and/or review preliminary drafts. Not all of them responded to the initial or subsequent requests for information. For those who did, thank you very much for your invaluable assistance. When known, contributors' July 1999 affiliations are given rather than their 1994 affiliations. Tierra Madre Consultants, Inc. is given special thanks for its commitment to this project, and for much of the funding to complete it.

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Tom Dodson, Tom Dodson & Associates, San Bernardino, California
Sharon Dougherty, Circle Mountain Biological Consultants, Wrightwood, California
Todd Esque, U. S. Geological Survey - Biological Resources Division, Las Vegas, Nevada
Jerry Freilich, The Nature Conservancy, Lander, Wyoming
Rick Fridell, Utah Division of Wildlife Resources, Cedar City, Utah
Mike Giusti, California Department of Fish and Game, California
Gilbert Goodlett, EnviroPlus Consulting, Ridgecrest, California
Marc Graff, DTC, California Turtle and Tortoise Club, Northridge, CA
Brad Hardenbrook, Nevada Division of Wildlife, Las Vegas, Nevada
Judy Hohman, U.S. Fish and Wildlife Service, Ventura, California
Frank Hoover, Retired from California Department of Fish and Game
Jeff Howland, U.S. Fish and Wildlife Service, Phoenix, Arizona
Becky Jones, California Department of Fish and Game, Long Beach, California
Karen Jones, Current affiliation unknown
Alice Karl, Independent Consultant, Davis, California
Lisa Kegarice, Tom Dodson & Associates, San Bernardino, California
Mark Maley, U.S. Fish and Wildlife Service, Reno, Nevada
David McCullough, McCullough Ecological Systems, Las Vegas, Nevada
Jim Mueller, Current affiliation unknown
Ted Mullen, Science Applications International Corp., Santa Barbara, California
Al Muth, Deep Canyon Desert Research Center, Palm Desert, California
Tom Olson, Current affiliation unknown
Danny Rakestraw, Current affiliation unknown
Kurt Rautenstrauch, Current affiliation unknown
Jim Rorabaugh, U.S. Fish and Wildlife Service, Phoenix, Arizona
Marc Sazaki, California Energy Commission, Sacramento, California
Cecil Schwalbe, U. S. Geological Survey - Biological Resources Division, Tucson, Arizona
Jay Slack, U.S. Fish and Wildlife Service, Vero Beach, Florida
Glenn Stewart, DTC, California State Polytechnic University, Pomona, California
Kirk Waln, U.S. Fish and Wildlife Service, Ventura, California
John Wear, Private Consultant, San Bernardino, California
Bob Williams, U.S. Fish and Wildlife Service, Reno, Nevada
Peter Woodman, Kiva Biological Consulting, Inyokern, California
Marilet Zablan, U.S. Fish and Wildlife Service, Honolulu, Hiwaii

ATTACHMENT 2: HANDLING SUPPLIES

Burrow excavation and construction
Thermometer (to measure air and ground temperatures)
Watch or clock (to record start and finish processing times)
Measuring tape (for burrow dimensions)
Compass (for burrow orientation)
Hand held mirror (for viewing inside burrow)
Leather or cloth gloves (to avoid animal stings and/or bites)
Blunt-nosed shovel(s) (for excavating burrow)
Garden trowel (for excavating burrow)
1" x 2" plank (to insert in small burrows)
2" x 4" plank (to insert in larger burrows)
4' x 8' x 1/4" thick plywood (for artificial burrow construction)
Hand saw (to cut plywood into appropriate size and shape)
Surveyor's tape (for marking a burrow or making a weighing harness/sling)

Tortoise handling and marking
Disposable latex gloves (for handling tortoise)
Different sizes of coffee cans/sterilized towel (for immobilizing tortoise)
Toothbrush, sterilized (for cleaning dirt from scute to be numbered)
Acrylic paint or typewriter correction fluid (for making dot to number tortoise)
Waterproof, capillary pen (for numbering the tortoise and keeping notes)
1/2" masking tape (to cover growth areas prior to applying epoxy)
Epoxy, toothpicks, wooden coffee stirrer, tongue depressors (to cover the number on the scute and to apply the epoxy)
Plastic, ziplock bags (for holding used latex gloves and weighing juvenile tortoises)
Hand lens (for observing parasites)
95% ethyl or isopropyl alcohol, or 25% chlorine solution (for sterilizing equipment)
Rubber/plastic container and lid (for soaking instruments)
New, disposable cardboard boxes (for holding and/or transporting tortoises)
Garbage bags (for disposing of used gloves, t-shirt bags, etc.)

Tortoise measurements and photography
Grocery, t-shirt bags, surveyor's tape, cotton string (to weigh the tortoise)
Calipers (for measuring carapace length, width, and height)
Metal or plastic rule (to measure plastron length)
100 g, 1.0 kg, and 5.0 kg tubular spring scale (to weigh small and large tortoises)
3" x 5" file cards (for mixing epoxy and identifying photographic slides)
Avery labels or other stickers (to attach to tortoise to identify photograph)
35 mm camera (for taking photographs)
Slide film (for taking photographs)

Egg handling
Felt-tipped pen (for marking eggs)
Bucket (for transporting eggs)

Miscellaneous
Agency document(s) regulating the specific project (e.g., USFWS Biological Opinion, State Memorandum of Understanding, BLM Stipulations, etc.)
Handling Guidelines and checklist
Agency approved, sequential numbering scheme for marking tortoises
Project maps for mapping tortoise burrows
Clipboard
Data sheets
Pads or blanket for truck bed to cushion transported tortoise and reduce heat
Phone number and contact person of local USFWS field office, State fish and game departments, BLM field office, etc.
Phone number of nearest qualified veterinarian to treat injured tortoise
Extra change of clothing, including extra shoes

(Much of this list is taken from McCullough et al. 1993)

ATTACHMENT 3: EGG HANDLING PROTOCOL

This Egg Handling Protocol is taken verbatim from U.S. Fish and Wildlife Service File No. 1-5-93-TA-390. Wording concerning placing eggs on private lands was added to be consistent with USFWS recommendations for the Tortoise Handling Guidelines.

Tortoise eggs shall be moved to artificial nests either in the wild or at an approved facility. Biologists must receive special training in the procedures outlined below, but such training can be obtained after a nest is actually found. If this is done, the nest shall be carefully covered with soil so as not to move the eggs and protected until on-site training is provided. The responsible federal agency shall ensure that this training is made available.

Any nest that is found shall be carefully excavated by hand at a time of day when the air temperature six inches above the ground is approximately equal to the soil temperature at egg level. Immediately upon finding a nest, large tool use shall be discontinued and the nest excavated by the biologist using his or her hands. [DTC recommends that the monitor put on disposable latex gloves before marking and handling eggs]. Before disturbance of nest contents, each egg shall be gently marked with a small dot on the top using a felt-tipped pen to establish the egg's orientation in the nest. In handling nest contents, eggs must be maintained in this orientation at all times. Because egg shells become extremely fragile in the last few weeks before hatching, special care shall be taken with eggs found from August to mid-October. Because these eggs are very fragile, some may break during handling. This will be lethal to egg contents. Such an accident can be expected to occur until techniques are developed to avoid this type of incident. Broken eggs shall be buried nearby and left in the field, or the contents preserved and provided to qualified researchers.

The biologist shall measure and record the depth of the nest below the soil surface, the location of the nest in relation to any adjacent shrub (i.e, whether on the north, south, east, or west side of the shrub), the species of shrub and its approximate foliage volume, and the soil type. Place approximately 1 inch of soil from the nest area in a bucket and carefully transfer the eggs to the bucket, maintaining egg orientation. Cover the eggs with soil that is free of cobbles and pebbles, to a depth equivalent to that of the original nest.

If good tortoise habitat is available in the general area, the eggs shall be relocated between 150 to 1,000 feet from outer boundary of the project site, unless directed differently by USFWS. [Eggs should only be placed on lands administered by a federal agency, or on private lands when a written authorization to bury the eggs there has been obtained]. Prepare a nest with the same depth, orientation, location in relation to a specific shrub species, and in the same soil type as the original nest. Carefully transfer the eggs, maintaining their original orientation, to the new nest. The eggs shall be replaced so that they touch one another. Gently cover with soil from which cobbles and pebbles have been removed so that all the air spaces around the eggs are filled. Relocated nests in the wild shall be monitored by a qualified biologist. The monitoring program shall be developed in consultation with the Fish and Wildlife Service.

If a suitable site for a nest is not available in the wild, the eggs shall be prepared for incubation in a suitable holding facility. Place a small amount of soil in a bucket and transfer the eggs to the bucket using the technique specified above, making sure that the eggs are touching one another. Carefully fill the bucket to the depth of the original nest, but leave the top of the soil layer three inches below the rim of the bucket so that future hatchlings cannot escape. Bury the bucket in soil in a safe location at an approved holding facility.

The biologist shall record in detail all the procedures used in moving eggs. Personnel caring for incubating eggs at a facility shall maintain a record of where the eggs were found, method of incubation, length of time and conditions under which the eggs were incubated, observations of eggs during the incubation period, information about hatchling health and behavior, and disposition of the hatchlings.

APPENDIX F

Desert Tortoise Habitat Assessment for Proposed Translocation/Relocation Areas

Appendix F

Ivanpah SEGS – Desert Tortoise Habitat Assessment for Proposed Translocation/ Relocation Areas

Background

The U.S. Fish and Wildlife Service provided 'Guidelines for Clearance and Translocation of Desert Tortoises from the Ivanpah SEGS Project' as technical assistance for this Project. The guidelines included:

> I. Translocation Area Identification
>
> C. To minimize potentially adverse genetic effects and to provide suitable habitat for translocated individuals, the translocation area(s) must be in Ivanpah Valley, below 4200 feet, and it must be composed of desert tortoise habitat that resembles the habitat on the project site. Analysis of the habitat must consider precipitation, soils, vegetation community, vegetation density and abundance, perennial plant cover, forage species, geomorphology, and slope.

The California Energy Commission, USFWS, and CDFG later provided comments on the 'Draft Desert Tortoise Translocation/Relocation Plan for the Ivanpah Solar Electric Generating System' requesting a habitat assessment be completed prior to finalizing the Translocation/Relocation Plan.

The CDFG comment stated:

> The translocation sites should be surveyed, as described, prior to finalization of this translocation plan. The survey results and proposed individual translocation locations should be part of the document in order to determine if the proposed translocation sites are appropriate for translocating desert tortoise (habitat, predators and host tortoise population health). If not, then alternative sites may have to be evaluated. The Department cannot concur with any Plan does not contain this basic information.

Objective

Based on the agencies' direction the objective of the habitat assessment will be to determine whether habitat of the proposed relocation/translocation area (Figure BR5-3 in Draft

Translocation/Relocation Plan) sufficiently resembles that of the proposed project sites such that it could support relocated tortoises. Further, if the habitats are not similar, we will assess the differences relative to its suitability as tortoise habitat.

Data Acquisition

CH2M HILL will quantitatively and qualitatively compare the specified habitat characteristics of the proposed translocation area with that of the ISEGS solar plant sites.

Data is currently available for precipitation, soil types, geomorphology, and slope. It is assumed that the precipitation would not appreciably vary over the study area. GIS layers will be developed for soil type, geomorphology, and slope based on available data, topographic maps (slope), and aerial photography.

The vegetation communities have been generally characterized for the solar plant sites as well as a one-mile buffer around the ISEGS sites. Vegetation types present are Creosote Bush Scrub: Larrea-Ambrosia Subtype, Cheesebush-Dominated Washes, Mojave Wash Scrub, and Creosote Bush Scrub: Larrea-Mixed Subtype. Three 12-meter radius releve' plots have been sampled within each Ivanpah unit (Ivanpah 1, 2, and 3) as part of other studies. Releve'plots were centered on a cactus, or if none are available, randomly placed. Releve' plots were sampled for shrub diversity by counting the number of individuals of each species in the plot. CH2M HILL proposes to use the same methodology to sample vegetation characteristics in the proposed relocation/translocation using 16 to 24 releve' plots. If necessary, more plots would be sampled within the ISEGS units to obtain an adequate sample size. This will provide data on vegetation community, species composition, species abundance, and species diversity, for both areas. Given the timing of surveys it may not be possible to assess forage species for tortoises.

Qualitative Surveys

Analysis of the specified habitat characteristics may not be sufficient for comparing the areas similarity and relative value as tortoise habitat. Currently reliable quantitative habitat models for desert tortoises have not been developed. For these reasons, two biologists familiar with desert tortoise habitat preferences based on extensive survey experience in the Mojave Desert will conduct a reconnaissance-level survey of the area. Special attention will be paid to identifying any evidence of previous ground disturbing activity (e.g., OHV tracks, borrow pits) that may have decreased the areas value as tortoise habitat. Also, we will note variations in substrate, vegetation (e.g., plant cover, weedy species, plant vigor), and geomorphology that might not be apparent from other data sources and analysis. For example, caliche caves (potential shelter sites) on the banks of washes or small patches of friable soil are important habitat features for tortoises that may not be detected from other habitat assessments. Also the location of burrows suitable for future translocations would be recorded by GPS and mapped. This effort could be coordinated with assessments being conducted by CalTrans or other stakeholders.

Reporting

The findings of the habitat assessment will be provided in a technical memorandum that could be appended to the final Desert Tortoise Translocation/Relocation Plan.

ATTACHMENT BR5-2A

Response to Comments on the Draft Tortoise Translocation/Relocation Plan

ATTACHMENT BR5-2A

This attachment contains the applicant's responses to comments received from the California Energy Commission (CEC), the US Fish and Wildlife Service (Service) and the California Department of Fish and Game (CDFG) and on the Draft Desert Tortoise Translocation/Relocation Plan for the Ivanpah Solar Energy Generating System (ISEGS). Comments from each agency are presented below followed by a response.

California Energy Commission Comments on the Draft Desert Tortoise Translocation/Relocation Plan for the Ivanpah Solar Electric Generating System, prepared by CH2MHill, dated March 2009 (Supplemental Data Response, Set 2A, Attachment BR5-1A)

The Energy Commission staff concur with comments provided by the California Department of Fish and Game (CDFG) and the U.S. Fish and Wildlife Service (USFWS) on the March 19, 2009 Draft Desert Tortoise Translocation/Relocation Plan. In addition, we have the following comments:

Section 1.2 Plan Goals

- Minimizing stress, disturbance, and injuries to translocated desert tortoise should be explicitly included as one of the goals of the Plan.

Response: This goal has been added.

- Please note that Plan Purpose and Plan Goals are both identified with the same header number of 1.2.

Response: The section numbering has been corrected.

- Please revise the third bullet from "Assess the success of the relocation effort…" to "Assess the success of the translocation/relocation effort…."

Response: Text has been modified.

Section 2.1 Fencing

- Monitoring and maintenance of permanent desert tortoise-exclusion fencing is recommended at least monthly in addition to that performed following high rainfall and wind events. Substantial flows from off-site areas following normal rainfall events and potential for other sources of potential fence damage/failure warrant this increased monitoring/maintenance frequency.

Response: Text has been modified to read 'at least every other month' based on the USFWS's comment (see comment "Section 2.1, Paragraph 7").

- Please define a “major rainfall event” and provide criteria that would trigger an inspection, and specify how soon after such events the fence inspection and repair would occur.

Response: Text has been modified to read: “A major rainfall event would be any rainfall that causes the ephemeral washes in the project vicinity to flow and thereby potentially damage the fencing.”

- Please provide some documentation of coordination with California Department of Transportation, Bureau of Land Management (BLM), and CDFG on the feasibility of coordinating fencing for this project with the proposed Joint Point of Entry project.

Response: Coordination with Caltrans has been occurring since December 2008. A summary of the conversations is provided in Appendix D of the Translocation Plan. The Applicant will continue to talk to the agencies involved in the JPOE project to coordinate activities and will submit records of conversation as they are generated.

Section 2.2 Clearance Surveys

- This section indicates that once areas are cleared of desert tortoises, vegetation salvage may be completed if a program is deemed necessary by BLM, apparently referring to cacti and yucca salvage. However, salvage and seed collection would also be necessary to mitigate special-status plant impacts. Special-status plant salvage would need to occur prior to the vegetation clearing for fence installation and other ground disturbance that could remove special status plants. Please specify “cacti and yucca” salvage in this section and that fence installation and associated clearing would occur after special-status plant salvage and seed collection.

Response: Vegetation salvage of the Site once cleared should not be a component of this Plan. Hence the reference to it has been deleted. Please refer to the Draft Closure, Revegetation and Rehabilitation Plan for such issues.

Section 2.3 Transportation and Release

- Please specify that desert tortoises should be kept upright. Include a section on rehydration as per USFWS guidance item II.B.3. Also include guidelines for safely transporting tortoises by vehicle.

Response: Keeping desert tortoise upright at all times is standard operating procedure and has now been noted in the Plan, as are the guidelines for safely transporting tortoise by vehicle. These procedures are familiar to the ABs and TMs. A specific note on USFWS guidance per II.B.3 has been added to make clear this guidance would be followed.

- Please describe what measures would be taken if tortoises overheat despite the precautions taken.

Response: In the event a tortoise becomes stressed during capture or transport, the AB will have the discretion, and knowledge, to take appropriate measures. This eventuality

is partially addressed by USFWS guidance II.B.3; the tortoise would be re-hydrated and placed in the shade.

- Please describe how relocation/translocation of juveniles would be handled. Please add a section on methods to address and protect juvenile desert tortoises found during clearance surveys that are too small for transmitters. Also, please discuss how desert tortoise eggs would be handled.

Response: Juveniles will be handled similar to adults with the exception of special transmitters and marking. Additional text has been added.

Section 2.5 Scheduling

- On page 5, Scheduling, late August is listed under "fall." Temperatures in August are likely to be too high for translocation. Some areas of the desert experience summer temperatures into September. Why not list fall as September-November? Please address all comments by CDFG and USFWS on the scheduling of translocation. The Energy Commission agrees with these agencies on not translocating desert tortoise during summer and winter months. However, if conditions are suitable and rainfall is normal, translocation could include late November in this part of the Mojave Desert.

Response: Text has been modified based on CDFG and USFWS comments.

- Please include the language from item 1F of the December 12, 2008 USFWS Guidance, which specifies that the applicant must: *"obtain approval of the translocation area and timing of the translocation activities from the Service, CDFG, and the Bureau prior to imitating any translocation activities. Translocations shall not be permitted if these agencies determine that environmental conditions such as an extended drought might significantly reduce the survival of the translocated desert tortoise."*

Response: As previously noted, all Service (2008) guidelines will be followed. The language from item I.F noting the approval requirement has been added.

Section 2.6, Translocation/Relocation Area

- This section states that the proposed area meets the guidelines provided by the Service but does not provide the details that led to this conclusion. Habitat quality and suitability should be priorities in selecting the translocation/relocation area. Please describe the specific habitat or other characteristics that explain how the proposed areas are the most suitable option for translocation/relocation. As detailed in the USFWS guidance (item 1C), please include in the habitat description and analysis a discussion of the translocation site's precipitation, soils, vegetation community, vegetation density and abundance, perennial plant cover, forage species, geomorphology and slope.

Response: By including the potential to translocate tortoises to the area now available as a result of fencing along I-15, it is assumed that there would be sufficient habitat in that location. However, it has not been determined exactly where the translocation area will be. As stated in the Plan, once a translocation area is agreed to by the permitting agencies, a Desert Tortoise Habitat Assessment for Proposed

Translocation/Relocation Areas will be performed per the protocol provided in Appendix D of the Plan.

Section 2.8 Monitoring and Reporting

- Please revise the monitoring frequency for translocated desert tortoises to be consistent with the USFWS guidance (item III.1) of once a month for at least 3 years. Also, the plan should specify that all transmitters will be removed at the end of this monitoring period.

Response: Text has been modified per USFWS guidance and comments.

- Please add more detail on how to affix transmitters properly (see Boarman et al. 1998, and CDFG comments). Transmitters and antennae must be mounted so as not to impede growth or the daily activities of the desert tortoise such as burrow construction, righting of overturned desert tortoises, and mating.

Response: Text has been added to address comments and concerns for affixing transmitters for both adult and juvenile tortoises.

- Please add a section under monitoring and reporting to address the adaptive management and remedial action plan suggested by the USFWS guidance, item III.2.

Response: As stipulated in item III.2, BrightSource would consult with the Service, CDFG, and the Bureau to develop a remedial action plan should monitoring show a mortality rate of 10 percent or higher. At such time, should this occur, measures would be taken to improve survivorship based on an assessment of the situation by the resource agencies.

United States Fish and Wildlife Service Comments

Section 2.1, Paragraph 1

In your discussion of permanent I-beam barriers for use as desert tortoise guards across roads please indicate a program for monitoring and adaptive management of this approach. I am aware that this approach has been used on projects in Nevada, and I have heard that it is effective from anecdotal reports. However, no studies have been done to look at its effectiveness or to identify any flaws that are not readily apparent. Therefore, we need to plan for contingencies and indicate that these barriers will be replaced with another means of exclusion with input from the permitting agencies if monitoring of the facility indicates that they are needed.

Response: Text has been added based on this comment.

Section 2.1, Paragraph 2

You indicate that survey crew vehicles would stay on existing roads. We should also identify a speed limit for these vehicles once they leave I-15 and enter desert

tortoise habitat. This would reduce the potential for road kills by survey crews that are accessing the sites. I would recommend 35 mph on paved roads and 20 to 25 mph on dirt roads.

Response: Text has been modified to specify speed limits.

Section 2.1, Paragraphs 5 and 6

You should indicate that fence installation will be monitored by a desert tortoise monitor and an authorized biologist would be available to move any desert tortoises that are within the path of the fence line work.

Response: Text has been added to specify monitoring.

Section 2.1, Paragraph 7

While it is crucial to monitor the permanent desert tortoise fencing following major rain events, BrightSource should do regular monitoring of the fencing more that once a year. This will ensure that the fencing has not been damaged by events that are not related to water flow. This could be especially important along the highway. It is hard to say how often is often enough, but I think a check of the fencing every other month would probably be the minimum needed to ensure its integrity.

Response: Text has been modified to read "the permanent fencing would be inspected bimonthly (i.e., every other month) and after major rainfall events."

Section 2.2, Paragraph 2

You indicate that tortoise monitors will be used on clearance surveys. Authorized biologists should be used on clearance surveys. This is an activity that requires a degree of experience that an authorized biologist would have. Desert tortoise monitors would not be authorized by the Service, so we would have no ability to determine their skill level in identifying burrows during a clearance survey. Desert tortoise monitors may work on a clearance survey under the direct supervision of an authorized biologist in order to gain experience performing clearance surveys. However, the applicant should ensure that an adequate number of authorized biologists is available to perform the actual transects during the clearance survey.

Response: We agree. The text states that Tortoise Monitors "would be placed between ABs during the surveys." This is to ensure that there would be direct supervision of TMs by an AB.

Section 2.2, Paragraph 4

You allude to the potential for clearance and relocation/translocation of desert tortoises during the summer months. Translocation during the summer months would likely result in poor survival of translocated/relocated animals. Lack of available water during a stressful relocation that is likely to result in desert tortoises voiding their bladders would likely result in mortality of individuals. Desert tortoises are usually inactive during summer months to avoid harsh temperatures. While you may be proposing to move the animals when temperatures are acceptable, the animal is unlikely to take immediately to a new home range or to an existing or artificial burrow that it is placed in. This will likely result in the exposure of translocated/relocated desert tortoises to high temperatures at some point following

release even if the temperature is not high at the exact release time. Movement of desert tortoises during this time period would also result in activity during a typically inactive period, which will require energy from annual plants that would likely be senesced during summer months.

Response: The text has been modified to limit relocation/translocation to the spring and fall months.

Section 2.3, Paragraph 3

You indicate that all desert tortoises will be examined to determine if they have clinical signs of disease. You should also indicate that the person performing these exams would be required to have experience identifying the clinical signs of URTD and herpes virus in desert tortoises.

Response: Text has been modified to reflect comment.

Section 2.3, Paragraph 4

You indicate that no shell notching will be performed to mark translocated/relocated desert tortoises. Please identify what method will be used for marking these animals (epoxy numbered tags?).

Response: Text has been added to address comments and concerns for affixing transmitters and marking both adult and juvenile tortoises with Passive Integrated Transducer (PIT) tags.

Please indicate that a 20% bleach solution will be used to sterilize equipment used to handle desert tortoises.

Response: Text has been added.

Please note that your document jumps from Section 2.3 to Section 2.5.

Response: The formatting has been corrected.

Section 2.5, Paragraph 2

Translocations during summer months are likely to result in poor survival for the reasons described above. Winter translocations are also not recommended because this is typically a less active period for desert tortoises due to low temperatures. Movement of animals during this time period would result in desert tortoises becoming active during a time of year when conditions do not favor its survival.

Response: The text has been modified to limit relocation/translocation to the spring and fall months.

Section 2.6, Paragraph 1

You indicate in the last sentence that the density limit of 39 individuals per square kilometer is the primary constraint and that all desert tortoises would ideally be located within 1000 meters of the project site. This diminishes the importance of habitat quality. Habitat quality should be the first priority in identifying any location for translocation/relocation.

Response: By including the potential to translocate tortoises to the area now available as a result of fencing along I-15, it is assumed that there would be sufficient habitat in that location. However, it has not been determined exactly where the translocation area will be. As stated in the Plan, once a translocation area is agreed to by the permitting agencies, a Desert Tortoise Habitat Assessment for Proposed Translocation/Relocation Areas will be performed per the protocol provided in Appendix D of the Plan.

Section 2.8, Paragraph 1

You indicate that desert tortoises would only be located twice a year during the last two years of post-translocation monitoring. This is not a safe practice because transmitters may die during the intervening time resulting in loss of the desert tortoises location. The animal would then be stuck with a transmitter on its back for the rest of its life, which could hinder appropriate shell growth over the long term. More frequent monitoring as you propose for the first year of the post-translocation program is needed in the 2nd and third year to prevent this from happening.

Response: The text has been modified to reflect the comment.

California Department of Fish and Game Comments

General comments about Draft translocation/relocation Plan

Animals with potential disease: This document states that the authorized biologist will examine tortoises to determine if the individual is showing signs of disease most notably URTD. If the tortoise does have the clinical signs the biologist would call the Service to decide on how to dispose of the animal. Observing a tortoise that may have visible signs of an illness does not mean it does. Tortoises like other animals have various pathogens that have the same clinical signs. This is why the Department usually requires all translocated animals be diseased tested. Since this project is not translocating desert tortoises outside of the existing population's home range, testing all tortoises may not be required; however, any tortoises that appear to have signs of illness should be tested to determine if they actually have a disease. Tortoises that do not actually have the disease should be translocated/relocated and ones that have been shown through testing to be sick should go to either research, homing and or be euthanized (as last resort). The method to be utilized should be detailed within this Plan. It should be noted here, an authorized biologist should also be able to determine if the tortoises have visible signs of the herpes lesions and cutaneous dyskeratosis.

Since disease testing is a foreseeable action, this Plan should discuss where individually quarantined animals will be located and how they will be taken care of until test results came back. Also, since blood testing would be a component of this Plan a discussion on how the blood would be taken and by whom, who it would be shipped to and the type of testing it would get would need to be identified.

Response: Service (2008) Guidance item II. A.5 addresses this concern. The Service would be contacted by the AB with in 24 hours as to the disposition of diseased tortoises. Text has been added to address this comment.

Since disease testing is a foreseeable action, this Plan should discuss where individually quarantined animals will be located and how they will be taken care of until test results came back. Also, since blood testing would be a component of this Plan a discussion on how the blood would be taken and by whom, who it would be shipped to and the type of testing it would get would need to be identified.

Response: Service (2008) Guidance item II. A.5 addresses this concern. The Service would be contacted by the AB with in 24 hours as to the disposition of diseased tortoises. Text has been added to address this comment.

Transmitters: is not appropriate to have desert tortoise roaming in the wild with transmitters on them that no longer serve a purpose due to the end of the monitoring time or the fact hat the batteries have died. The use of transmitters is important to determine the success of implementing the Plan but could also cause foreseeable problems if not utilized correctly. Thus, the Plan needs to give more detail on the type of transmitters that will be used, how they will be attached to the tortoises and if there are any tortoises that will not be able to have transmitters attached (i.e. juveniles). The monitoring of the transmitter batteries and how and when the transmitters will be removed needs to also be discussed in more detail.

Response: Text has been added to address comments and concerns for affixing transmitters and marking tortoises for both adult and juvenile tortoises.

Fencing: The fencing section needs to include the following, at the least:

(1) Equipment and vehicle speed limits

Response: Vehicle speed limits have been included based on Service recommendations.

(2) An authorized biologist will be on site at all times until the site has been fenced and cleared and on call other times

Response: Text has been added that an AB would be available at all times.

(3) Give more detail on how burrows will be determined unoccupied (scoping, digging out etc.) and the temperatures required to perform this action

Response: This determination would be at the discretion of the AB consistent with all guidelines, protocols, and professional experience. Scoping would be one means of making this determination if the end of burrow is not visible.

(4) Discuss what will happen to tortoises discovered during fence installation (Reminder: Tortoises relocated adjacent to the site prior to fence installation may try to reenter area.)

Response: Tortoises discovered during fence installation would be treated in the same manner as any tortoise discovered during a construction activity. The disposition of the tortoise relative to the translocation/relocation effort would be at the discretion of the AB. At all times, the best means of minimizing stress to the tortoise is the primary consideration.

(5) Clearance surveys 24 hrs prior to initiation of fence installation may not be enough. Discuss how the fencing sites will be quickly reexamined prior to installation each morning and how this will be required to be reexamined in greater detail after any 24 hours delays due to situations like the weather and holidays

Response: At the discretion of the AB, timing of clearance surveys may need to be extended to ensure the safety of tortoises. In addition, the AB will be present during the fencing process to move any desert tortoises that are within the path of the fence line work. Text has been added to address this comment.

(6) Discuss how desert tortoise monitors and at least one authorized biologist will be required to be on site anytime the fencing or survey crew are there and how more then one monitor may be required if fencing, surveying or clearing are occurring in multiple locations.

Response: The Plan now stipulates an AB would be on site during these activities.

(7) A discussion on temporary fencing and its location through out this project should be discussed in detail. What will happen to desert tortoises found within a temporary construction area?

Response: Tortoises discovered in a temporary construction area would be treated in the same manner as any tortoise discovered during a construction activity. The disposition of the tortoise relative to the translocation/relocation effort would be at the discretion of the AB. At all times, the best means of minimizing stress to the tortoise is the primary consideration. A section has been added about temporary fencing.

(8) Discuss fencing of any roads and how that will differ from site fencing. An example: A ten foot swath should not be required in road fencing or in temporary fencing locations.

Response: Additional text has been added**.**

(9) Discuss the need for extra fencing material to be kept on site to fix the any damaged fencing and how fencing should be monitored after major storm events and at least monthly during construction.

Response: Text has been to address this concern. Extra fencing would be available onsite.

Site Clearance Surveys

Comment: An assumption that seems to be made in this Plan is that the entire enclosed site will be surveyed and tortoises translocated/relocated in one day. Although this maybe possible in smaller site locations within this project it is foreseeable that this would not be the case on the larger sites. Clearance surveys done correctly are performed slower than normal surveys to ensure as many animals as possible are located. When the temperatures, burrow collapsing and numbers of desert tortoises being moved (many on some sites) are taken into consideration, it is foreseeable that the surveys may not finish in one dawn to dusk time period. A method of what to do if clearance surveys do not finish in one day should be discussed in detail in this document.

Response: It is acknowledged that translocation and relocation activities may require more than one day. As with other contingencies, the AB would be responsible for determining the safest and most effective means of handling and transport of tortoises consistent with all handling protocols, guidelines and professional experience. For example, if tortoises are located towards the end of the day, with high temperatures, the AB would need to assess the appropriate means of locating and transporting the tortoise the following morning. Additional text has been added.

Comment: The guidelines provided by the Service state "Brightsource must perform all clearance survey and translocation procedures for any portion of the project site during the spring (i.e., March –May) or fall (i.e., late August to early October) to avoid extreme temperatures." and "Translocations shall not be permitted if these agencies determine that environmental conditions such as an extended drought might significantly reduce the survival of the translocated desert tortoise." The Department agrees with the Service on both of these points that seem to have been left out or modified within the Plan. The Plan states that both summer and winter translocations would be permitted. Both of these times are not usually permitted due to temperature, lack of food source, impacts on tortoises in estivation/hibernation and unpredictable weather that could substantially reduce animal survival. Thus, the Department does not support translocation/relocation during summer and winter months; however, we would support, if all other conditions are met, extending the fall season to late November since in the east Mojave this time of year may still have good conditions during normal rain years. The Department would, also, like discussed the possibility of not allowing any translocation/relocation if environmental conditions develop that might significantly reduce the survival rate of the translocated/relocated tortoises.

Response: Text has been modified to accommodate comments and concerns relative to limiting the relocation/translocation activity to the spring and fall.

Comment: Also, the Plan states under the fencing section that transects will be no more than 30-feet wide but the Guidance states that transects should be no wider than 10-feet. The Department supports the 10-feet wide transects on clearance surveys. Also, it should be noted that the second survey according to the Guidelines states that it should be perpendicular to those of the first not in the opposite direction as stated in the Plan. In addition, there should be a time period specified between when the fence is installed and the initiation of clearance surveys. Also, this section

should include fitting tortoises with transmitters and how the adaptive management of surveys will occur as suggested in the Guidance document.

Response: Text has been change to 10-foot-wide transects. Transects for surveys would follow Service (2008) Guidelines. Also, text has been added stating that clearance surveys are to commence within 72 hours of completion of the fencing installation.

Data gathered on desert tortoise during clearance surveys:

Comment: The list on data gathered for desert tortoise is different in the clearance survey section and the transportation and release section. Except for desert tortoises that do not require handling the data collected should be what is outlined in the Guidelines for Handling Desert Tortoises During Construction Projects (Revised July 1999 or any updated version) referenced in the Plan; however, pictures can be digital and locations should be GPSed.

Response: Text has been added to clarify that the Guidelines for Handling Desert Tortoises During Construction Projects will be followed. If necessary, the Plan would be modified to reference the most current guidelines for data gathering.

Comment: This section states that tortoises will be placed 300 feet away from the fence, the Department supports this; however, this could mean that more tortoises would be translocated, especially on Site 3, since 1000 meters away from the capture location could be within the 300 feet swath around the fence.

Response: It is acknowledged that this could occur.

Comment: This section should discuss how the biologist would know that the active burrows are unoccupied. Also, it seems that the burrows will be constructed while the tortoise is waiting in a card board box. Discuss how you will ensure the desert tortoise will not get overheated, how long you anticipate it will take to construct the burrows, and how the constructed burrows will be monitored to ensure their integrity. It is foreseeable that automobiles will need to be used discuss this and how getting to each translocation site may differ.

Response: The AB would be responsible for determining whether burrows are occupied prior to removing a tortoise from the burrow consistent with all handling protocols, guidelines and professional experience. It is anticipated that if a suitable unoccupied burrow has not been located an artificial burrow would be constructed prior to capturing and transporting the tortoise. The AB would determine the safest and most efficient means of transporting the tortoise. Additional text has been added.

Comment: Discuss the handling of desert tortoise during information gathering a little more, include temperature constraints, what to do if tortoise dies during processing, how will processing juveniles, if encountered, differ from adults (if it will).

Response: Other than marking and fitting juvenile tortoise with transmitters, they would be treated as adults. Handling and processing details are included in the Guidelines for Handling Desert Tortoises During Construction Projects, which will be followed.

Comment: A detailed discussion on what will occur if eggs are found is important. Desert tortoise eggs within the Mojave Desert can be found during the spring and early fall months not just in the summer season as the document implies. It is important to know what will occur if eggs are found using the Egg Handling Protocol as a guideline.

Response: The AB would be responsible for the relocation of eggs to a suitable off-site burrow consistent with all handling protocols, guidelines and professional experience. Egg Handling protocol is described in detail in Attachment 3 of the Guidelines for Handling Desert Tortoises During Construction Projects. This protocol will be followed.

Translocation Sites

Comment: The translocation sites should be surveyed, as described, prior to finalization of this translocation plan. The survey results and proposed individual translocation locations should be part of the document in order to determine if the proposed translocation sites are appropriate for translocating desert tortoise (habitat, predators and host tortoise population health). If not, then alternative sites may have to be evaluated. The Department cannot concur with any Plan does not contain this basic information.

Response: By including the potential to translocate tortoises to the area now available as a result of fencing along I-15, it is assumed that there would be sufficient habitat in that location. However, it has not been determined exactly where the translocation area will be. As stated in the Plan, once a translocation area is agreed to by the permitting agencies, a Desert Tortoise Habitat Assessment for Proposed Translocation/Relocation Areas will be performed per the protocol provided in Appendix D of the Plan.

Comment: It should also be noted that the relocation area should be surveyed to determine the density and habitat quality to ensure that locating tortoises 1000 meters away from capture is appropriate. The Department believes that this area was included in the survey data for past years so that that information could be used to estimate density but may not have been enough detail to determine habitat quality. This information should, also, be included in this document.

Response: See response to previous comment.

Tortoises During Translocation/Relocation:

Comment: Discuss how the tortoises will be transported to relocation and translocation sites, how tortoises be provided water since card board boxes and not plastic totes will be used, how long it is anticipated to transport and if this could cause a tortoise due to temperatures or weather (rain) not to be translocated/relocated, and discuss or refer to section that discuss attaching transmitters to the tortoises.

Response: The AB would ensure that transport of tortoises relocated or translocated is conducted in the least stressful manner consistent with all established guidelines and

measures in this Plan. The text has been revised to allow either the use of cardboard boxes or plastic totes. The Guidelines for Handling Desert Tortoises During Construction Projects has a section on transporting tortoises. The Guidelines will be followed. The attaching of transmitters and marking tortoise has now been stipulated in the Plan base on methods described in Esque et al. (2005).

Comment: Once the tortoises are translocated/relocated they will need to be monitored until they exhibit normal behavior, as per Guidelines for Handling Desert Tortoises during Project Construction Projects referenced in this Plan, discuss who will do this and how "normal behavior" will be determined.

Response: The onsite AB would determine what constitutes normal behavior as per guidelines and professional experience.

Comment: The Plan states that shell notching will not be used, then please discuss what will be used and how it will be done.

Response: Text has been added to address this comment and the Service's concerns.

Monitoring and Reporting

Comment: As stated above, transmitters have batteries that will go out if not monitored often. It would be inappropriate to only monitor tortoises with transmitters once a year and impossible to find individuals without the transmitters. The Department requires desert tortoise to be monitored monthly or more frequently if warranted. This process should not require unburying desert tortoise unless transmitter batteries are showing signs of weakness. Each animal encountered should be described as completely as possible without handling and harassing the animal. It should be discussed how transmitters will be removed the third year following translocation/relocation, how long will an animal be searched for before it is considered lost, how the information will be used for active adaptive management and what will be included in both monthly/yearly and final reports to the agencies.

Response: Text has been added on this topic to address this and the Service's comments and concerns.

Authorized Biologist and Tortoise Monitor

Comment: At this time the Department has not concurred with the Service's Ventura office guidelines (November 2008) on approving authorized biologist and monitors that states "Authorized Biologist are responsible for approving desert tortoise monitors, if monitors are needed for the project." The Department is required to concur that an authorized biologist and all tortoise monitors have meet the qualifications needed to perform the task.

Response: Comment noted. It is anticipated that requirements for the Authorized Biologist and Tortoise Monitors will be included in the CEC's conditions of certification.

Comment: The Department requires that all tortoise monitors have some basic level of desert tortoise and survey protocol. This usually is accomplished by the monitors taking the Desert Tortoise Council Tortoise Handling Workshops; however, other

ways of being trained are acceptable as long as approved by the Department ahead of time. Monitors used on clearance surveys should have extensive working knowledge on presence/absence surveys before assisting on clearance surveys. The monitors are not authorized to handle the desert tortoises, except when being trained by an authorized biologist that is responsible for the tortoises. When the monitor is handling the tortoises the authorized biologist must be within sight distance of the monitor to intervene if necessary. Due to these requirements, this Plan should delete all references to tortoise monitors relocating desert tortoises inside or outside of the fences.

Response: The text does not state that a TM would be allowed to relocate tortoises unless the TM is under the direct supervision of an AB.

Caltrans/JPOE

Comment: The document states that the north side of the I-15 will be fenced by either the project proponent or California Department of Transportation (Caltrans) and coordination on the location of the proposed Joint Point of Entry (JPOE) in locating the fence. This needs to have more detail. The Department would not be in favor of translocating desert tortoise into an area where they may have to be relocated later due to a foreseeable project or located next to a freeway without desert tortoise fencing. Figure BR5-3 included in the Plan shows the location of the JPOE and shows Translocation Areas 1 and 2 being impacted by it. Thus, the coordination between the project proponent and Caltrans needs to happen prior to any translocation of desert tortoise. The applicant should discover if this area is the JPOE's relocation site and if any coordination for desert tortoise should be completed. To the greatest extent possible, this information should be included in the Plan. This data could modify or change the use or location of the translocations sites.

Response: The applicant is having discussions with Caltrans and plans to work together with them if tortoises are relocated to that area. Since the JPOE is Caltrans' project, additional details are not available to the Applicant at this time. Tortoises would not be translocated near I-15 unless permanent exclusionary fencing has been installed prior to the translocation. Figure BR5-3 has been revised and is included with the Plan. The translocation areas have been revised to be 1 square kilometer in size. Per the JPOE Biological Opinion, only one desert tortoise would be impacted by the JPOE project. Hence, even if this area were used by both projects, it would not be over populated. A fourth translocation area is shown on Figure BR5-3 in case overpopulation becomes a concern. The Applicant is trying to work with the permitting agencies to determine where they would like the translocation areas.

Miscellaneous Comments

Comment: (1) The permanent I-beam design for desert tortoise guard needs to have maintenance and monitoring programs outlined within the Plan. Standard requirements require maintenance quarterly and after rain events to prevent compaction and soil erosion. For this area wind events that may fill up the guard should also be included.

The Department assumes that even though the top of the guard specifications state it is temporary the permanent method on the specifications will be used and the temporary method of putting the "I" beams right on top of the soil will not. (Please verify) The permanent type of approach will need to be coordinated very well with the desert tortoise fence installation. The desert tortoise fence needs to abut the beams so that there is no gap between the fence and beam.

Response: Text has been included based on comments from the Service. Appendix C has been corrected to include the permanent tortoise fencing.

Comment: (2) There are no sections 2.4 or 2.7 in the Plan.

Response: The section numbering has been corrected.

Comment: (3) In this document, plant salvaging is mentioned but does not seem to be associated with any plant salvaging plan. There should be a plant salvaging plan for the Ivanpah project.

Response: Vegetation salvage of the Site once cleared should not be a component of this Plan. Hence the reference to it has been deleted. Please refer to the Draft Closure, Revegetation and Rehabilitation Plan for such issues.

Comment: (4) This Plan needs to state that any actions taken that were unforeseeable during the drafting of this document should be approved by all agencies involved prior to implementation.

Response: This statement has been added in "Plan Purpose" section.

Comment: (5) The Department needs to be included on any plan changes, adaptive management change or any other items in which other agencies are included.

Response: This statement has been added in "Plan Purpose" section.

Comment: In conclusion, this Plan lacks enough detail for the Department to concur that it is adequate for desert tortoise translocation or relocation. The items discussed in this letter should be included in the next draft of the Plan.

Response: We have added more detail, but don't believe that all of the details need to be included in this Plan, especially when they are adequately provided in referenced materials such as the "Guidelines for Handling Desert Tortoises During Construction Projects" which we have included in the appendixes. We look forward to the Department's comments on the revised draft.

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
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APPLICATION FOR CERTIFICATION
FOR THE *IVANPAH SOLAR ELECTRIC GENERATING SYSTEM*

DOCKET NO. 07-AFC-5

PROOF OF SERVICE
(Revised 4/16/09)

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DECLARATION OF SERVICE

I, Mary Finn, declare that on May 27, 2009, I served and filed copies of the attached Supplemental Data Response Set, 2D. 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/ivanpah]. The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

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

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

AND

FOR FILING WITH THE ENERGY COMMISSION:

__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. 07-AFC-5
1516 Ninth Street, MS-4
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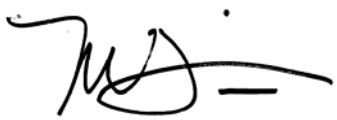
I declare under penalty of perjury that the foregoing is true and correct.



Mary Finn